

The sand and gravel resources of the country around Dorchester and Watlington, Oxfordshire

Description of 1:25 000 resource sheet SU 69 and part of SU 59

C. E. Corser

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

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

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

PREFACE

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

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

This report describes the resources of sand and gravel of 150 km² of country in the vicinity of Dorchester and Watlington, Oxfordshire, shown on the accompanying 1:25 000 map SU 69 and part of SU 59. The survey was conducted in 1971–1976 by H. C. Squirrell, C. E. Corser and P. Robson. C. E. Corser and D. L. Dundas compiled the report. The work is based on a geological survey at 1:10 560 in 1886–1907 by A. J. Jukes-Brown, J. H. Blake, T. I. Pocock and H. B. Woodward, and a resurvey in 1974–1976 by D. Foster, A. W. Kemp and S. P. Mills.

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The sand and gravel resources of sheet SU 69 and part of SU 59 <i>in pocket</i>	
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The sand and gravel resources of the country around Dorchester and Watlington, Oxfordshire

Description of 1:25 000 resource sheet SU 69 and part of sheet SU 59

C. E. CORSER

SUMMARY

The assessment of sand and gravel resources in the Dorchester–Watlington area, Oxfordshire, is based on the geological maps and borehole records of the Institute of Geological Sciences, records made available by the sand and gravel industry, recent field work and 92 boreholes drilled for the Industrial Minerals Assessment Unit.

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 area has been divided into six resource blocks containing between 5.2 and 12.7 km² of potentially workable 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 of the mineral are stated. Detailed borehole data are given. The geology, the position of the boreholes and outlines of the resource blocks are shown on the accompanying map.

INTRODUCTION

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

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

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

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

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

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

Bibliographical reference

CORSER, C. E. 1981. The sand and gravel resources of the country around Dorchester and Watlington, Oxfordshire. Description of 1:25 000 resource sheet SU 69 and part of SU 59. *Miner. Assess. Rep. Inst. Geol. Sci.*, No. 81.

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Note

National Grid references are given in square brackets. In this publication all lie within the 100-km square SU.

The volume and other characteristics are assessed within resource blocks, each of which, ideally, contains approximately 10 km² of sand and gravel. No account is taken of any factors, for example, roads, villages and high agricultural or landscape value, which might stand in the way of sand and gravel being exploited, although towns are excluded. The estimated total volume therefore bears no simple relationship to the amount that could be extracted in practice.

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

DESCRIPTION OF THE DISTRICT

This composite resource sheet covers an area of 150 km² in the Thames valley south-east of Oxford (Figure 1). Dorchester [578 943], the main town in the district, lies near its western margin. The district is served by two main roads, the Oxford–Henley (A423) and the Wallingford–Thame (A429).

The district is largely agricultural, but contains major gravel workings north and west of Dorchester and south of Ewelme [646 915].

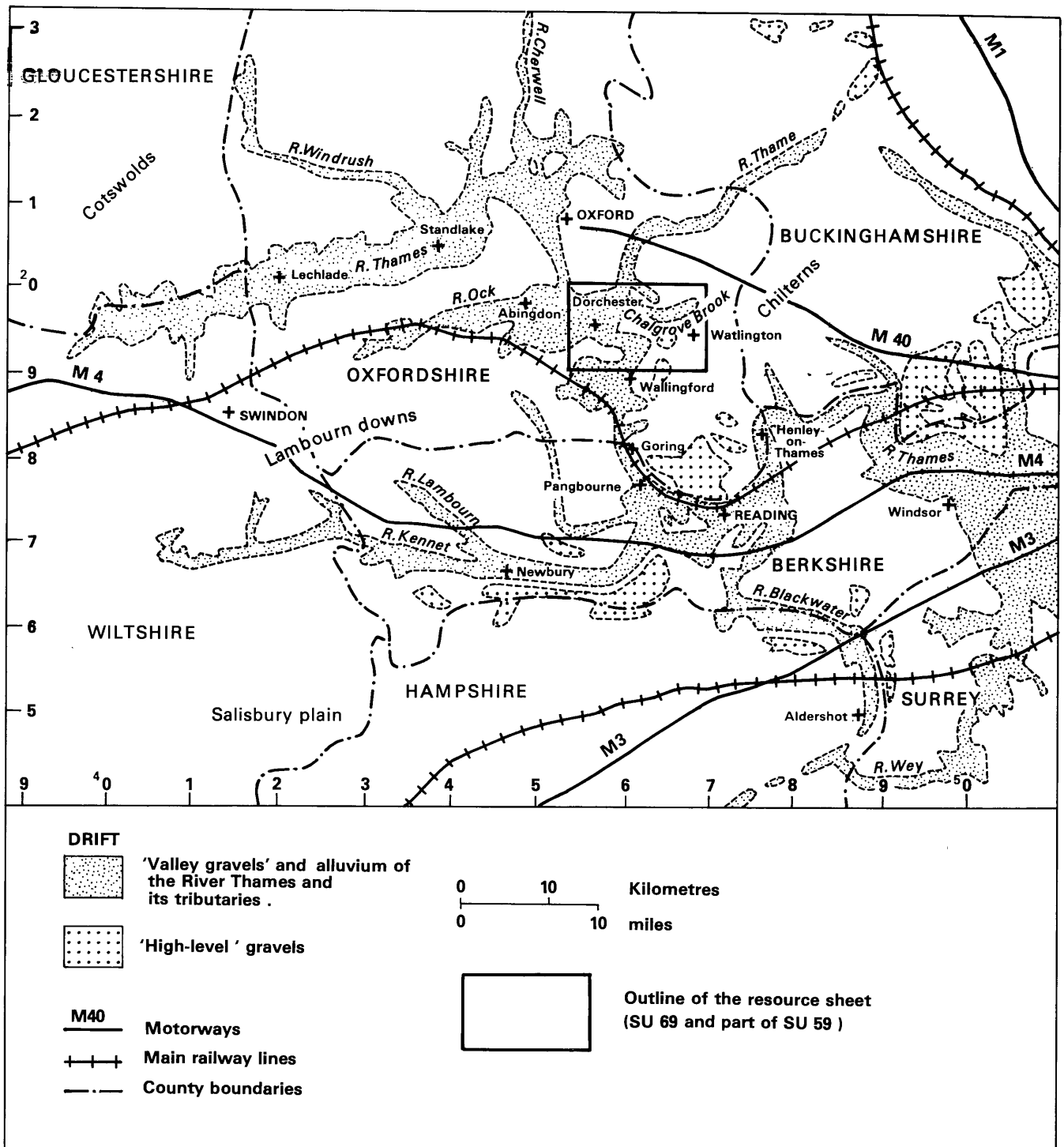


Figure 1 Sketch map showing the location of the resource sheet area.

TOPOGRAPHY

The dominant topographic features are the north-west-facing escarpment of the Chilterns, which crosses the south-east corner of the district and reaches an elevation of 230 m (755 ft) at Britwell Hill [690 915], and the out-lying Sinodun Hills, which rise some 75 m above the Thames south of Dorchester; both features reflect the influence of relatively resistant Chalk bedrock. The remainder of the district is underlain mainly by less resistant clays and sands and has, therefore, a relatively subdued relief, which lies between about 45 m and 100 m above Ordnance Datum.

The lowland area comprises the broad valleys of the Thames and its tributary the Thame; these rivers deposited gravel terraces which they later incised and re-distributed (Figure 2). Their former courses are indicated by dry gaps, clay-filled channels and river-cut cliffs (Figure 3).

The Thames flows from north-west to south-east across the strike of the bedrocks; it has a gentle gradient, falling from 47 m above Ordnance Datum near Burcot [550 956] to 44 m at the southern margin of the area [612 900] south-west of Preston Crowmarsh. At Dorchester it is joined by the Thame which flows south-westwards along the strike of the Lower Cretaceous rocks and which, together with its tributaries, the Haseley, Baldon and Chalgrove (or Cuxham) brooks, drains all but the south-west corner of the district.

GEOLOGY

For the purpose of this sand and gravel survey, a 1:10 000-scale field geological survey was conducted by Land Survey Division colleagues and reference should be made to the recently-published 1:50 000-scale geological sheet 254, Henley-on-Thames, which carries a succinct account of the geology together with references for further reading.

The solid rocks that crop out within the district range in age from Upper Jurassic to Upper Cretaceous (Table 1); they dip gently (usually less than 3°) towards

Table 1 Geological succession

DRIFT

Recent and Pleistocene

Alluvium

River Terrace Deposits

First (Floodplain or Northmoor) Terrace

Second (Summertown–Radley) Terrace

Third (Wolvercote) Terrace

Fourth (Hanborough) Terrace

Sand and Gravel of Unknown Origin

Head

Younger Coombe Deposits

Wallingford Fan Gravels

Clay-with-Flints

SOLID

Upper Cretaceous

Chalk

Lower Cretaceous

Upper Greensand

Gault

~~~~unconformity~~~~

Lower Greensand

~~~~unconformity~~~~

Upper Jurassic

Portland Beds

~~~~unconformity~~~~

Kimmeridge Clay

the south-east. Unconformities in the lower part of the sequence are responsible for the local absence of some members; for example, the Gault in places rests directly upon the Kimmeridge Clay. There is a striking contrast in lithology between the variable Upper Jurassic–Lower Cretaceous sequence of soft clays, sandy limestones and sands, and the Upper Cretaceous succession which consists almost entirely of chalk.

The drift deposits comprise the River Terrace Deposits of the Thames and Thame valleys, formed from well-sorted material brought downstream by these two rivers, and the various deposits of poorly-sorted locally-derived materials, formed essentially by solifluxion in a periglacial environment.

### SOLID

#### *Kimmeridge Clay*

This formation crops out in the north-west of the district and consists predominantly of dark grey, soft, silty, uniformly textured clay, with sporadic fragile iridescent ammonite shells; greenish grey fine sand is present in the top 10 m. The thickness proved in several boreholes in the Marsh Baldon [565 992], Drayton St Leonard [596 964] and Dorchester areas varies between 34 m and 39 m.

#### *Portland Beds*

The Portland Beds likewise crop out only in the north-west of the district; they comprise fine yellowish brown calcareous sands, containing phosphatic nodules, passing up into fine-grained pale green sands and a sandy limestone. Thicknesses of 10.7 m and 16.1 m were proved in boreholes near Marsh Baldon, whereas at Chiselhampton [590 990], 3 km to the east, the Portland Beds are absent, and the Gault Clay directly overlies the Kimmeridge Clay.

#### *Lower Greensand*

The Lower Greensand consists mainly of well sorted, fine- to medium-grained, pale brown sand, composed of rounded quartz grains with some pebbles of ironstone and, more rarely, of iron-cemented sandstone. The formation rests unconformably on the Portland Beds near Marsh Baldon but farther east it oversteps onto the Kimmeridge Clay. Thicknesses of 3.8 m and 10.4 m are recorded in boreholes near Burcot [560 961], but the formation is absent around Chiselhampton.

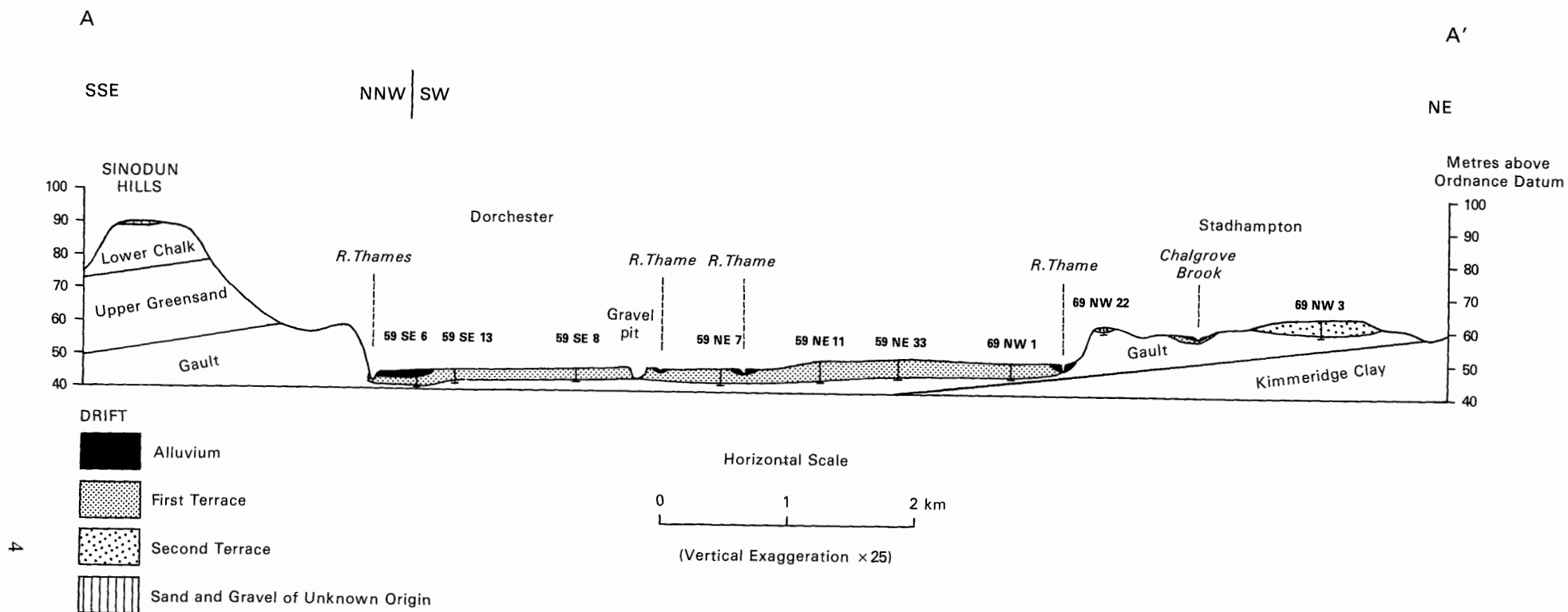
#### *Gault*

The sub-drift outcrop of the Gault extends over an area of some 60 km<sup>2</sup> in the district. It forms small outliers in the north-west of the district and underlies a broad belt of low-lying country between Little Wittenham [565 935] and Adwell [697 997].

A dark grey, or bluish grey, clay, occasionally micaceous and fossiliferous, the Gault becomes silty and buff-coloured in its uppermost beds, which pass gradually into the hard calcareous siltstones of the Upper Greensand. A thickness of 44.3 m of Gault was proved in non-IMAU borehole 59 SE 21, which entered the formation several metres below its top.

#### *Upper Greensand*

The Upper Greensand consists of pale grey or pale green fine-grained, micaceous, glauconitic, calcareous siltstones and sandy limestones. Locally the beds contain fossil sponges, shell fragments and pyritised casts of worm burrows. Pale greyish green tabular cobbles of siltstone derived from the Upper Greensand are often



**Figure 2** Cross-section across the Thames and Thame valleys. The line of section is shown on the resource sheet.



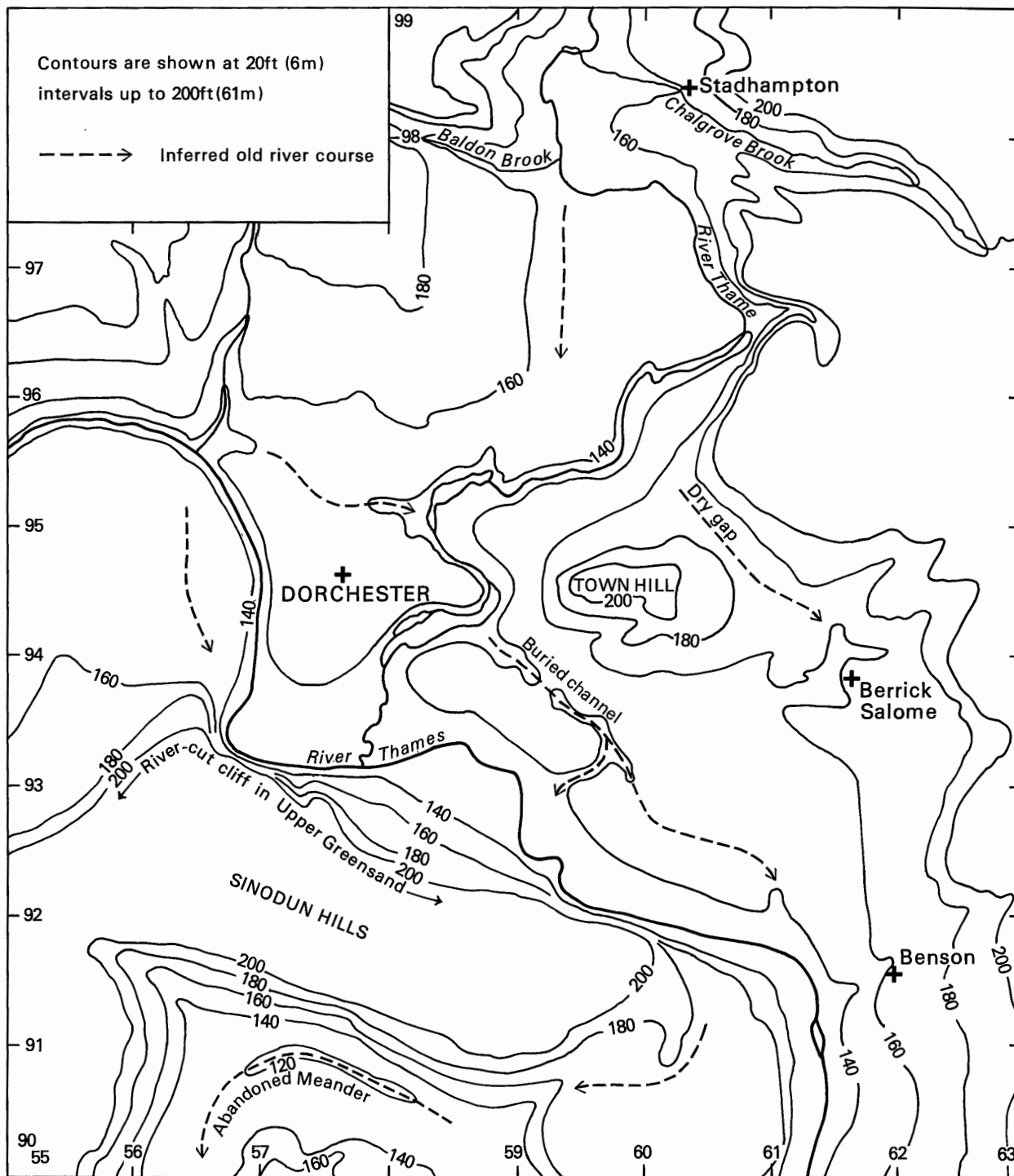


Figure 3 Contours on the sub-Drift surface in the western part of the district.

found in the Thames gravels in the south of the district. A maximum thickness of 30.5 m is given by Jukes-Brown (1908, p. 2), but 31.4 m of Upper Greensand was penetrated in borehole 69SE 17 without reaching the base of the formation.

**Chalk**  
The Chalk, the youngest bedrock formation found in the district, reaches a thickness of about 200 m in the Chiltern escarpment south of Watlington [690 945]; about 20 m of the uppermost beds have here been removed by erosion. The formation consists almost entirely of chalk, but can be divided into three units on the basis of minor variations in lithology.

The *Lower Chalk*, about 65 m thick, consists mainly of

soft grey marly chalk in its lower part and harder grey and white blocky chalk above. The lowermost few metres are glauconitic and sandy and are termed the Glauconitic Marl. A 1-m bed of hard grey chalk with numerous shell fragments, named the Totternhoe Stone, occurs about 35 m above the base of the Lower Chalk.

The *Middle Chalk*, some 60 m thick, is a firm homogeneous white chalk with nodular or tabular flint beds towards the top. Its base is defined by a 3-m band of hard nodular yellowish white chalk (the Melbourn Rock).

About 75 m of the *Upper Chalk* is preserved in the district; it consists of white chalk with sporadic nodular and tabular flint. The Chalk Rock, a 1-m layer of hard glauconitic and phosphatic chalk, forms the basal bed of this unit.

*Clay-with-Flints*

This deposit covers an area of 1.4 km<sup>2</sup> on the crest of the Chiltern escarpment between Britwell Hill [689 916] and Cookley Green [700 900]; its base, which is very uneven, lies at an elevation of over 221 m (725 ft) above OD. Clay-with-Flints generally consists of unstratified brown or reddish brown stiff sandy or loamy clay containing angular or broken flint cobbles, and nodules and pebbles of flint, with sporadic rounded pebbles of quartz, quartzite and ferruginous concretions.

*Wallingford Fan Gravels*

These deposits (Horton and others, *in press*) represent the dissected remnants of a sheet of gravel originally at least 6 km wide at the foot of the Chiltern escarpment. They now extend as a series of isolated tabular features, each between 1 and 2 km wide, from Clare Hill [674 978] in the north to beyond the southern margin of the sheet area south of Ewelme. The gravel patches are separated from one another by relatively steep-sided valleys cut into the underlying Lower Chalk bedrock.

The Wallingford Fan Gravels are composed largely of material derived from the chalk escarpment. Their present-day constitution — mainly angular flint with some chalk in their basal parts (Figures 4 to 8) — probably results from decalcification of gravels that originally may have been chalky throughout. Thicknesses recorded in IMAU boreholes range from 1.4 to 9.5 m, but more than 10 m was seen in the gravel pit [644 904] south of Ewelme. North of Ewelme (borehole 69 SE 8), a clay layer 0.6 m thick, separating a lower, poorly stratified sandy gravel composed of flint with some chalk from an upper 2 m of very sandy unstratified angular-flint gravel, may represent a locally-decalcified chalk silt layer described by Horton and others (1981) as the Goulds Grove Member in the area south of Ewelme.

The highly irregular chalk surface upon which the gravels shown in Plate 2 are resting results from a 'front' of decalcification having proceeded downwards through the gravel and into the underlying Chalk. The brown clay layer at the gravel-chalk interface is probably in part a residue of solution of chalk and in part composed of clay that has percolated downwards through the gravel.

*Younger Coombe Deposits*

The Younger Coombe Deposits, covering an area of 0.7 km<sup>2</sup> just north of Pyrton [689 958], comprise ill-sorted chalk solifluxion deposits which contain occasional pebbles of flint — the sort of constitution that the Wallingford Fan Gravels probably possessed when originally deposited.

*Head*

This deposit comprising solifluxion deposits derived mainly from the Chalk and Upper Greensand, consists of structureless silty or sandy clay with occasional seams of sand and flint gravel. It is usually between 1 and 2 m thick, but, exceptionally, reaches 7.6 m in thickness in IMAU borehole 59 SE 7.

*Sand and Gravel of Unknown Origin*

These deposits occur in small scattered patches capping the high ground in the north-west and south-west of the district. They all lie above 82 m (270 ft) elevation and their combined area amounts to 0.4 km<sup>2</sup> (Figure 9). They are up to 2 m thick and contain, in addition to flint, a

considerable amount of well-rounded pebbles of quartzite, siliceous sandstone and quartz that were presumably derived from the Bunter Pebble Beds of the Midlands.

*River Terrace Deposits*

Four terraces have been recognised (Sandford, 1924) in the Thames and Thame valleys (Figure 9). The combined area over which they extend here amounts to some 50 km<sup>2</sup>. The First Terrace consists mainly of well stratified and well sorted gravels (Figures 4–8; Plate 1). The sandy gravels of the Second Terrace contain somewhat more clay, whilst the Third and Fourth terraces consist mainly of 'very clayey' pebbly sand (Figure 13). In the Thames Valley, the pebbles are mainly of Jurassic limestones, whereas those of the Thame Valley are predominantly flint (Figures 5 and 6; Table 2). The First Terrace, which is often overlain by modern alluvium, constitutes the most important resource of sand and gravel in the district. The other, older terraces are more restricted in extent and generally contain a higher proportion of fines.

Two remnants of the *Fourth (Hanborough) Terrace*, totalling about 0.9 km<sup>2</sup> cap the high ground at Whitehouse Farm [641 950] and at Golden Balls [559 976] (Figure 9). They range in elevation from 73 m (240 ft) to 94 m (310 ft); the deposit at Golden Balls comprises about 1 m of 'very clayey' pebbly sand containing well rounded quartz and flint pebbles. The other remnant of the Fourth Terrace, at Whitehouse Farm, is considerably thicker, about 2.5 m, and consists of 'very clayey' gravel in which the pebbles are mostly of flint. It bears a strong resemblance to the nearby Wallingford Fan Gravels.

Three remnants of the *Third (Wolvercote) Terrace* occur in the centre and north-west of the district. They cover a total area of about 1.1 km<sup>2</sup> and range in elevation from 66 m (217 ft) to 80 m (263 ft). The deposits consist predominantly of 'very clayey' pebbly sand and have an average thickness of 2.5 m. The deposits near Little Baldon Farm [568 985] contain pebbles of quartz and quartzite, whilst that at Starveall [627 959] contains flint pebbles (Figure 6).

The *Second (Summertown–Radley) Terrace* is widespread but discontinuous; it covers 14.3 km<sup>2</sup> and ranges in elevation from 52 m (170 ft) to 72 m (236 ft). In the Thames Valley the Second Terrace lies about 9 m above the present river level, but in the Thame Valley it is about 13 m above river-level. The terrace is thickest, about 3.7 m, and most continuous around Chalgrove Airfield [630 980]; in the south, around Benson [620 918], the deposit is only slightly thinner, 3.5 m, but in the north-west, near Drayton St Leonard [582 965], it is only about 2.3 m thick. The deposits of the Second Terrace are mainly 'clayey' sandy gravels in which Jurassic limestone pebbles predominate in the Thames terraces and flint pebbles in the terraces associated with the Thame.

The *First (Floodplain or Northmoor) Terrace* forms a continuous deposit extending over 33.7 km<sup>2</sup>, of which almost half is covered by Alluvium. The terrace is found in both the Thames and Thame valleys and in their adjoining tributary valleys. It has an average thickness of about 3.0 m in the Thames Valley and 2.6 m in that of the Thame. It consists of well sorted, stratified and occasionally cross-bedded sandy gravels (Plate 1). In the Thame Valley they thin upstream and pass gradually into pebbly clays and silts — notably along the Chalgrove Brook. The gravels of this terrace rest upon a somewhat uneven valley floor, and commonly infill abandoned erosion channels of the Thames and Thame



**Plate 1** First Terrace deposits in a gravel pit [572 939] south of Dorchester (1975). Parallel-bedded layers of sand and sandy gravel are overlain by cross-bedded sandy gravel.

ivers (Figures 2 and 3). Where it borders the Thames, the terrace ranges in elevation from about 45 m at Preston Crowmarsh [617 908] to about 50 m south of Burcot [558 948]. Along the Thame and Chalgrove Brook it ranges in elevation from 46 m (151 ft) at Dorchester to 58 m (190 ft) near Ascott [613 981].

#### *Alluvium*

Alluvium covers an area of 12.9 km<sup>2</sup> in the Thames and Thame valleys. The thicknesses recorded in IMAU boreholes range from 0.7 m to 3.7 m in the Thames Valley and from 0.5 m to 2.4 m in the valley of the Thame. In the tributary valleys only thin spreads of Alluvium overlie the bedrock.

The Alluvium consists of dark brown, grey or black calcareous silt, silty clay or clay containing lenses of sand and fine gravel with traces of peat and other organic matter, and some Recent molluscan shells.

#### *COMPOSITION OF THE SAND AND GRAVEL DEPOSITS*

There are three potentially workable sand and gravel formations in the Drift of the resource area (Figure 9): River Terrace Deposits, Wallingford Fan Gravels, and Sand and Gravel of Unknown Origin. In addition, the Lower Greensand is theoretically potentially workable, but its relatively poor grading characteristics make it unlikely to be worked in the near future. The mean gradings of the potentially workable Drift formations are given in Figure 4 and the mean composition of the fine-gravel fraction of each is given in Figure 5. The mean

compositions of the fine and coarse fractions of the gravel in the potentially workable Drift formations are given in Table 2. Local variations in composition and grade in individual IMAU boreholes are shown in Figures 6 and 7 respectively, whilst Figure 8 illustrates differences in the range of gradings found in the various Drift formations.

#### *River Terrace Deposits*

The River Terrace Deposits of the Thames consist mainly of Jurassic limestone pebbles with greyish white calcareous sand, whereas those of the Thame are composed mainly of flint pebbles with pale brown quartz and flint sand (Figure 5; Table 2).

Jurassic limestone pebbles form about 70 per cent of the fine-gravel fraction in the Thames gravels but only about 20 per cent in those of the Thame; they are usually tabular or ovoid, well rounded, white or greyish white, and locally iron-stained or cemented with secondary calcite.

Flint forms about 16 per cent of the fine-gravel fraction in the Thames gravels and about 58 per cent in those of the Thame (Table 2). The coarse-gravel fraction in all the terrace deposits shows a high concentration of flint owing to its greater resistance to weathering. The flint pebbles usually have a brown, grey or white patina and are mainly angular to subangular, or occasionally sub-rounded. Well-rounded 'Tertiary flints' make up about 3 per cent of the flint component.

The terrace gravels contain minor amounts of rounded, to well-rounded quartz, quartzite, sandstone, chalk and ironstone, which occur more commonly in the older

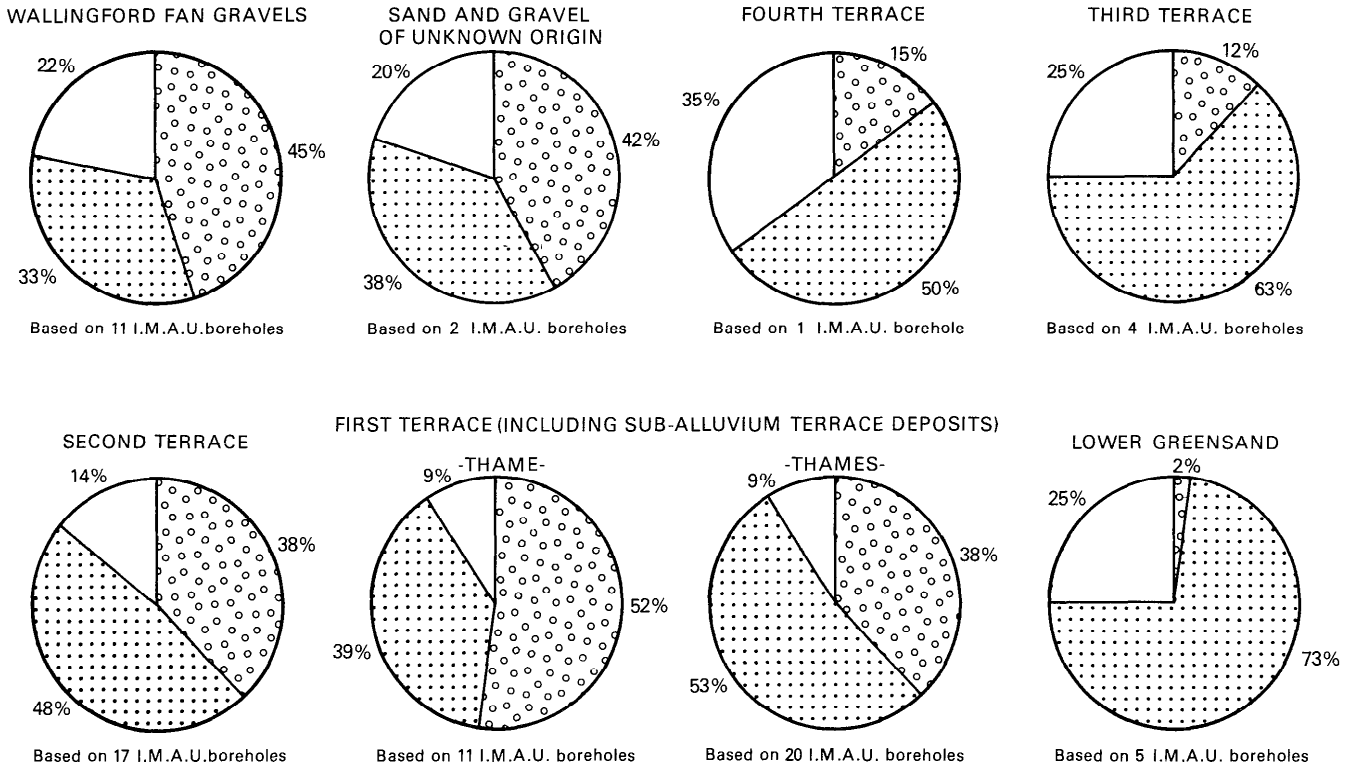
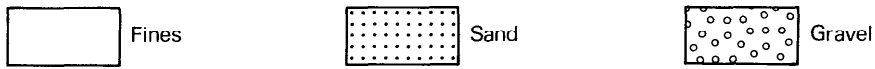


Figure 4 Mean grading of the aggregate-bearing deposits.

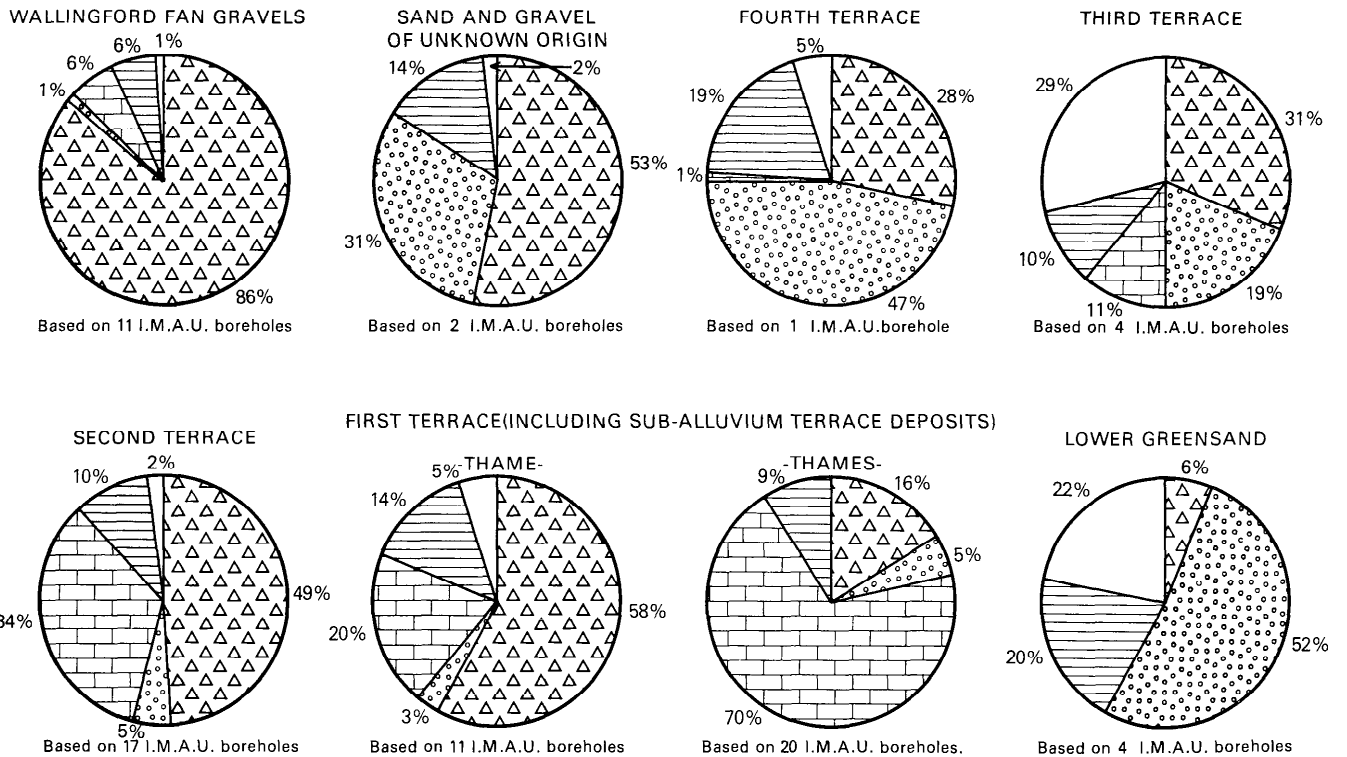
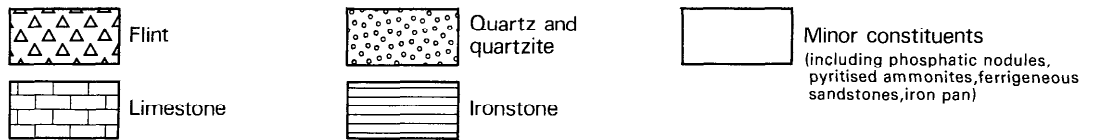


Figure 5 Mean composition of the fine-gravel (+4 - 16 mm) fraction.

**Table 2** The composition of the gravel fraction of the various mineral-bearing deposits

| Pebble type        | Mean percentage by weight |        |                       |        |                |        |               |        |                 |        |                                   |        |                         |        |
|--------------------|---------------------------|--------|-----------------------|--------|----------------|--------|---------------|--------|-----------------|--------|-----------------------------------|--------|-------------------------|--------|
|                    | First Terrace (Thames)    |        | First Terrace (Thame) |        | Second Terrace |        | Third Terrace |        | Fourth Terrace* |        | Sand and Gravel of Unknown Origin |        | Wallingford Fan Gravels |        |
|                    | +4-16 mm                  | +16 mm | +4-16 mm              | +16 mm | +4-16 mm       | +16 mm | +4-16 mm      | +16 mm | +4-16 mm        | +16 mm | +4-16 mm                          | +16 mm | +4-16 mm                | +16 mm |
| Flint              | 16                        | 59     | 58                    | 94     | 84             | 31     | 48            | 28     | 9               | 53     | 69                                | 86     | 98                      |        |
| Quartz/quartzite   | 5                         | 15     | 3                     | 1      | 9              | 19     | 44            | 47     | 82              | 31     | 29                                | 1      | tr                      |        |
| Limestone/chalk    | 70                        | 26     | 20                    | 0      | 0              | 10     | 6             | 1      | 0               | 0      | 0                                 | 6      | tr                      |        |
| Ironstone          | 9                         | tr     | 14                    | 2      | 2              | 11     | 1             | 19     | 1               | 14     | 1                                 | 6      | 1                       |        |
| Minor constituents | tr                        | tr     | 5                     | 3      | 5              | 29     | 1             | 5      | 8               | 2      | 1                                 | 1      | tr                      |        |

\*Excludes data from borehole 69 SW 20, in which gravel is compositionally similar to that of the Wallingford Fan Gravels.

Third and Fourth terraces. There is a progressive diminution in the proportion of quartz and quartzite from the oldest to the youngest terraces. Ironstone usually occurs in the terrace gravels as small (+4-8 mm), black or brown, equant or tabular pebbles. Occasionally there is a hard, iron-cemented layer near the base of the First and Second terraces. Chalk pebbles are found in all the terrace gravels and are locally abundant in the upper parts of First Terrace deposits.

Minor constituents of the gravels include phosphatic nodules (derived from the Gault), glauconitic siltstone (derived from the basal beds of the Lower Chalk), fossils, pyritised burrows and igneous rocks. In the basal gravels of the First Terrace, cobbles and boulders of flint and reddish brown quartzite and, rarely, flint implements are found.

The sand fraction in the terrace gravels is usually pale brown to reddish brown and consists of limestone fragments, flint and quartz. Exceptionally, the sand is glauconitic in places near to or overlying the Upper Greensand. The sand content of the Thames gravels is higher (53 per cent) overall than that of the Thame gravels (39 per cent).

#### Wallingford Fan Gravels

This formation commonly grades as 'clayey' or 'very clayey' gravel. The gravel consists of fine to cobble-size angular flint pebbles which comprise 86 per cent of the fine-gravel fraction and 98 per cent of the coarse fraction. The pebbles commonly have a white patina. The fine-gravel fraction contains some chalk and quartz. Minor constituents of the gravel include sarsens and puddingstones (formed by silicification of Lower Tertiary sands and pebble beds), ironstone, silicified Upper Cretaceous echinoids, and flint implements.

The sand fraction is composed mainly of flint and quartz grains; a brown clayey matrix accounts for the high fines content (22 per cent).

#### Sand and Gravel of Unknown Origin

Only two IMAU boreholes were drilled in these deposits; they proved them to consist of 'clayey' gravel. The pebbles are mostly of flint (53 per cent in the fine-gravel and 69 per cent in the coarse-gravel fraction); the remaining constituents are well rounded brown or reddish brown quartzite, quartz and sandstone pebbles probably derived from the Triassic 'Bunter' Pebble Beds.

The sand fraction comprises rounded quartz and lithic grains of similar composition to the pebbles in the gravel fraction. The fines are a yellow or reddish brown clay.

#### 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 recently surveyed six-inch sheets SU 69 and part of SU 59, being part of the recently published Henley-on-Thames (254) 1:50 000-scale geological map to which the reader is referred for an account of the district and references for further reading. The information was obtained from the Institute's Field Staff and this was supplemented by borehole and pit section data collected during the assessment survey.

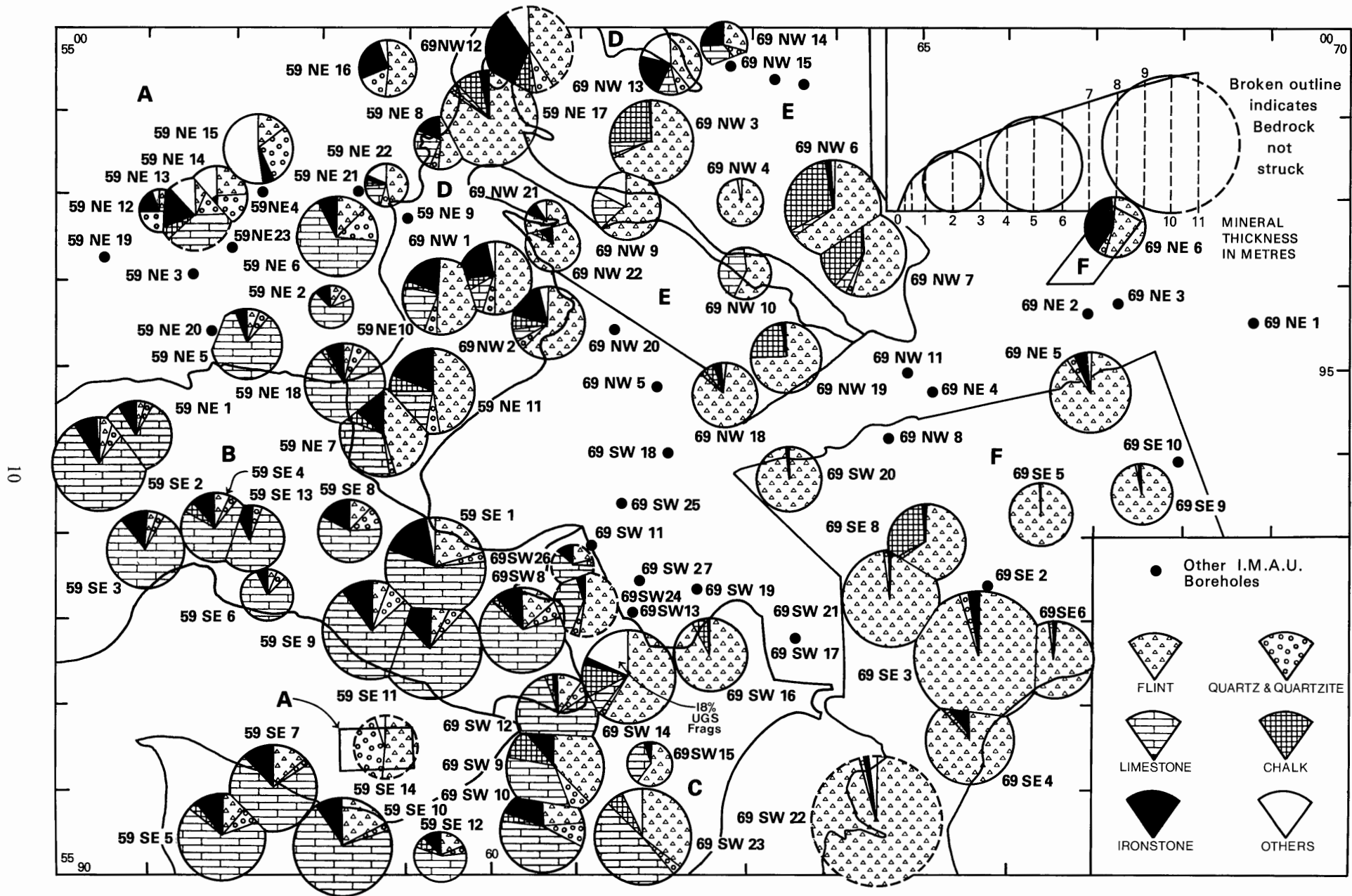


Figure 6 Composition and thickness of sand and gravel in IMAU boreholes.

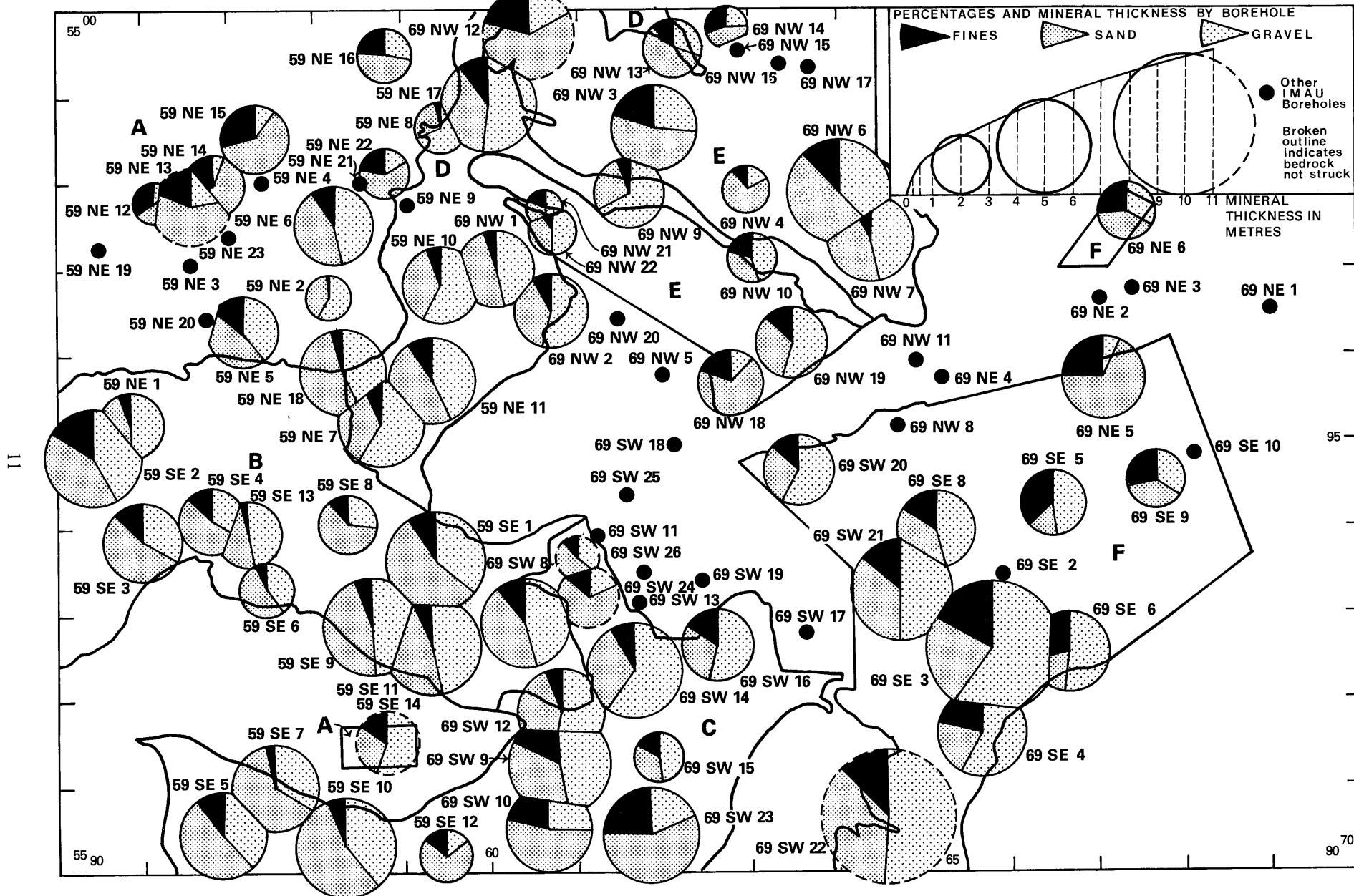


Figure 7 Grading characteristics and thickness of sand and gravel in IMAU boreholes.

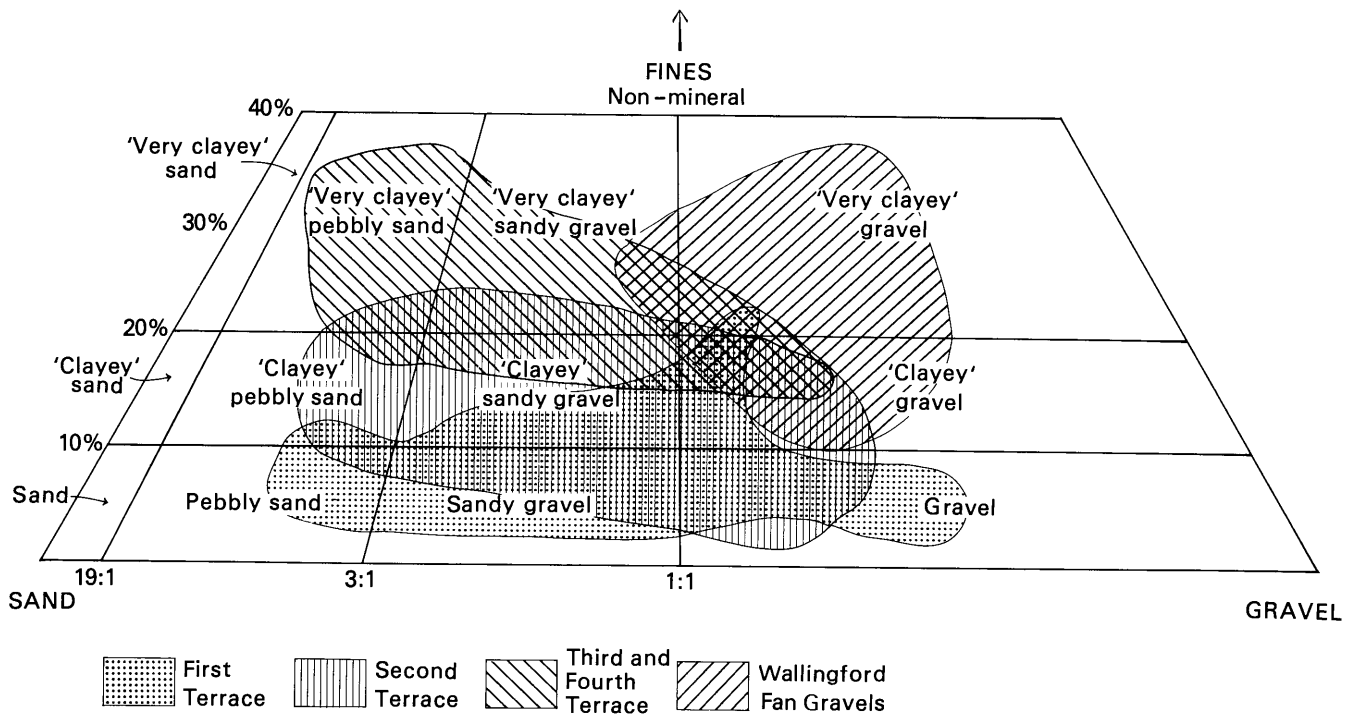


Figure 8 Diagram showing the range in grading of the Drift deposits.

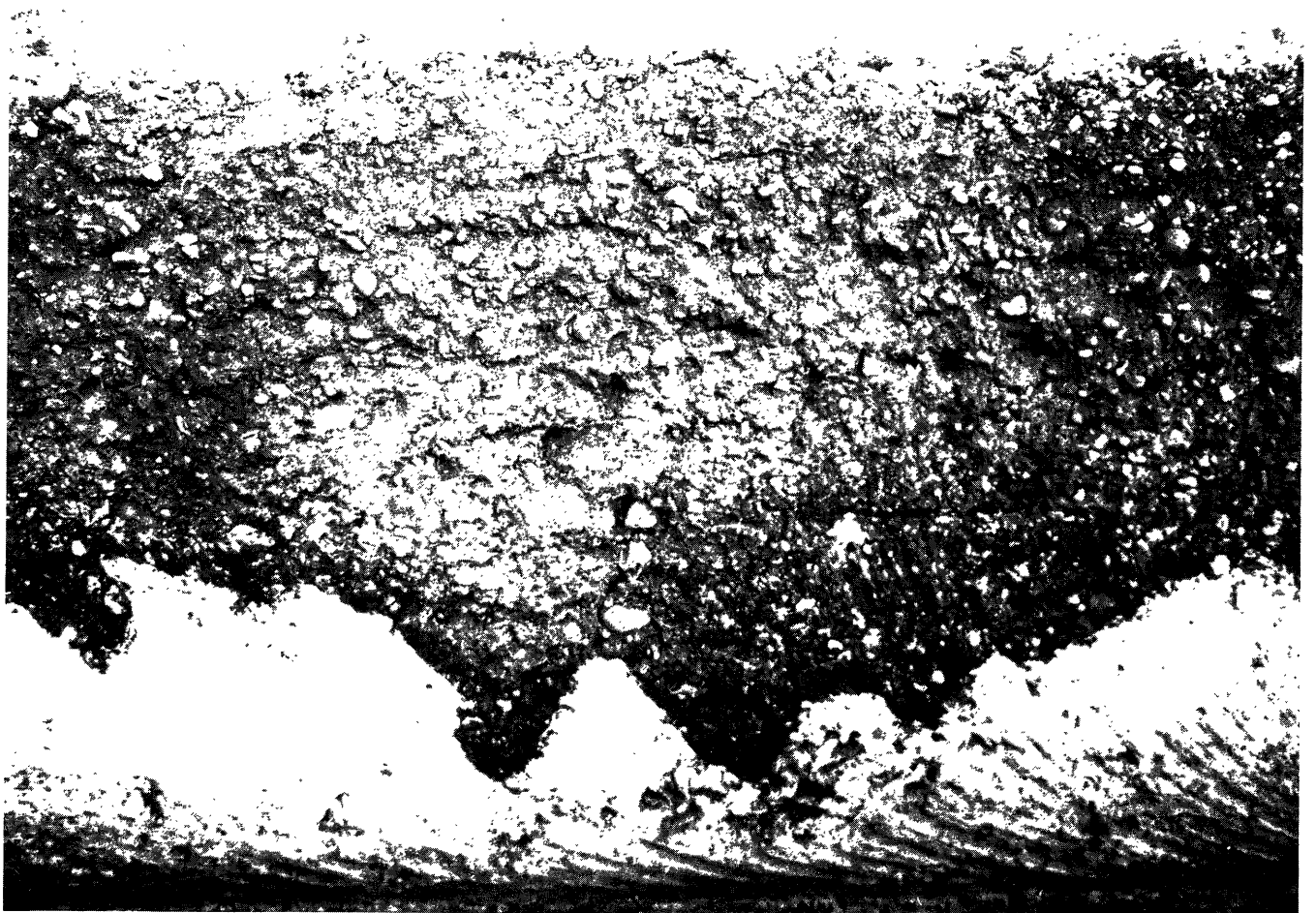


Plate 2 Wallingford Fan Gravels in a trench [656924] near Britwell (1976). The 2.4-m section shows a poorly sorted mass of decalcified, unstratified gravel composed mainly of angular flint pebbles in a clayey sand matrix. At the base of the gravel is a dark brown clay which lines solution hollows in the underlying chalk.



The geological boundaries are the best interpretations of the information available at the time of survey. However, it is still likely that local irregularities or discrepancies will be revealed by subsequent boreholes particularly where solifluxion has blurred the boundaries of the terrace deposits, and the alluvial cover has obscured the extent of the sand and gravel deposits and has concealed clay-filled channels (such as are found in the area of the six-inch sheets 59 NE and SE).

*Mineral resource information* The mineral-bearing ground is divided 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 in thickness. Beneath overburden the mineral may be continuous or discontinuous. As potentially workable sand and gravel was proved in 85 per cent of the boreholes drilled through overburden, the mineral is regarded as continuous.

Areas where bedrock crops out and where sand and gravel does not satisfy the definition of 'mineral' are uncoloured on the map. 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, in 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 (for which a distinctive zig-zag symbol is used) have been drawn between categories of deposits recognised. 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 of this assessment are summarised in Table 3. There are six resource blocks, A to F, which are assessed separately, and the data from the IMAU boreholes in each block are shown in Tables 4, 5, 6, 7, 8 and 9 respectively. The confidence limits at the 95 per cent probability level (that is, it is probable that nineteen times out of twenty the true volume present lies within these limits) for the six resource blocks A-F, vary between 20 per cent and 43 per cent. 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 limits would apply for the estimate of volume of a very much smaller parcel of ground (say, 100 hectares) containing similar sand and gravel deposits if the results from the same number of sample points (as provided by, say, ten boreholes) were used in the calculations. Thus, if closer limits are needed for the quotation of reserves of part of a block, it can be expected that data from more than ten sample points will be required, even if the area is quite small. This point can be illustrated by considering the whole of the potentially workable sand and gravel on this sheet. The total volume (150.6 million m<sup>3</sup>) can be estimated to limits of  $\pm 21$  per cent at the 95 per cent probability level, by a calculation

**Table 3** The sand and gravel resources of the country around Dorchester and Watlington, Oxfordshire: summary of statistical results

| Block         | Area<br>km <sup>2</sup> | Block Mineral                                |                                                         |                                               | Mean thickness<br>m | Volume of sand<br>and gravel<br>m <sup>3</sup> × 10 <sup>6</sup> | Limits at the 95%<br>confidence level<br>±% ±m <sup>3</sup> × 10 <sup>6</sup> | Mean grading<br>percentage       |                      |              |                      |
|---------------|-------------------------|----------------------------------------------|---------------------------------------------------------|-----------------------------------------------|---------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------|----------------------|--------------|----------------------|
|               |                         | River Terrace<br>Deposits<br>km <sup>2</sup> | Sand and Gravel<br>of Unknown Origin<br>km <sup>2</sup> | Wallingford<br>Fan Gravels<br>km <sup>2</sup> |                     |                                                                  |                                                                               | Worked<br>out<br>km <sup>2</sup> | Over-<br>burden<br>m | Mineral<br>m | Fines<br>-16 mm<br>+ |
| A             | 16.6                    | 4.9                                          | 0.4                                                     | 0                                             | 0.6                 | 8.3                                                              | 36                                                                            | 3.0                              | 20                   | 52           | 28                   |
| B             | 14.3                    | 13.3                                         | 0                                                       | 0                                             | 0.9                 | 39.9                                                             | 20                                                                            | 8.0                              | 9                    | 50           | 41                   |
| C             | 12.8                    | 11.7                                         | 0                                                       | 0.01                                          | 1.7                 | 36.9                                                             | 25                                                                            | 9.2                              | 12                   | 53           | 35                   |
| D             | 7.8                     | 7.8                                          | 0                                                       | 0                                             | 1.2                 | 20.3                                                             | 27                                                                            | 5.5                              | 9                    | 39           | 52                   |
| E             | 14.9                    | 6.8                                          | 0                                                       | 0                                             | 0.6                 | 19.7                                                             | 43                                                                            | 8.5                              | 16                   | 53           | 31                   |
| F             | 18.0                    | 0.8                                          | 0                                                       | 6.6                                           | 0.4                 | 25.5                                                             | 31                                                                            | 7.9                              | 21                   | 35           | 44                   |
| Blocks<br>A-F | 84.4                    | 45.3                                         | 0.4                                                     | 6.6                                           | 0.8                 | 150.6                                                            | 21                                                                            | 31.6                             |                      |              |                      |

based on the data from 512 sample points spread across the six 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, since no allowance has been made in the calculations for any restraints (such as existing buildings and roads) on the use of the land for mineral working.

#### NOTES ON THE RESOURCE BLOCKS

The resource block boundaries are drawn to encompass areas of sand and gravel of similar stratigraphy and lithology and to reflect the distribution of potentially workable sand and gravel deposits (Figure 9). The mean grading for each block is shown in Figure 10.

##### Block A

This divided block contains 5.3 km<sup>2</sup> of thin discontinuous spreads of 'clayey' sand and gravel, on the periphery of the main sand and gravel-bearing areas of the Thames and Thame valleys (Figure 1). In the main part of the block the deposits range in elevation from 55 m (180 ft) to 84 m (275 ft) and comprise Second, Third and Fourth terraces. In the south-west of the district (near Sotwell [586 916]) a small detached part of block A (0.2 km<sup>2</sup>) is occupied by a patch of Sand and Gravel of Unknown Origin, lying at an elevation of 91 m (300 ft). The deposits are not worked at present but there is an abandoned working near Broadmoor Barn [578 978].

The bedrock is Gault clay in the east and Lower Greensand and Portland Sand in the west. South of the River Thames patches of Sand and Gravel of Unknown Origin rest on the Lower Chalk.

The assessment is based on 12 IMAU boreholes (Table 4) and 46 other records. The mineral ranges in thickness from 1.0 m in boreholes 59 NE 12 and 22 to 3.2 m in borehole 59 NE 6, and the mean is 1.7 m. The estimated volume of the mineral is 8.3 ± 3.0 million m<sup>3</sup>.

The mean grading of the block is fines 20 per cent, sand 52 per cent and gravel 28 per cent.

The fines content of the mineral ranges from 2 per cent in borehole 59 NE 2 to 35 per cent in borehole 59 NE 12. A higher fines content is commonly associated with a high sand content at the expense of the gravel component as, for example, in borehole 59 NE 14. The sand content ranges from 64 per cent in borehole 59 NE 15 to 29 per cent in borehole 59 SE 14 and grades generally as fine sand. It consists of limestone, flint and quartz with minor amounts of chalk and ironstone. The gravel content ranges from 58 per cent in borehole 59 NE 2 to 6 per cent in borehole 59 NE 14. In the Second Terrace of the Thames Valley it consists of subrounded limestone, with minor amounts of quartz, flint and chalk. Elsewhere it contains subangular flint and subrounded limestone with quartz, quartzite, sandstone, ironstone, phosphatic nodules and fossils. Generally the older terraces have the more variable composition, and higher fines content. The overburden where present ranges in thickness from 0.1 m in borehole 59 NE 15 to 2.0 m in borehole 59 NE 2; the mean is 0.6 m.

##### Block B

This block includes the confluence of the Thames and Thame valleys between Benson and Dorchester. It contains 13.3 km<sup>2</sup> of continuous First Terrace deposits, overlain by Alluvium along the present-day river courses. There are large gravel workings in the vicinity of Dorchester [around 573 939 and 582 957]. Worked-out areas totalling 1.0 km<sup>2</sup> are located to the west and north of Dorchester and at Shillingford [603 923].

The bedrock comprises Gault clay in the south and east and Lower Greensand in the north-west.

The assessment is based on 12 IMAU boreholes (Table 5), and 245 other records. The mineral ranges in thickness from 1.6 m in borehole 59 SE 6 to 5.3 m in

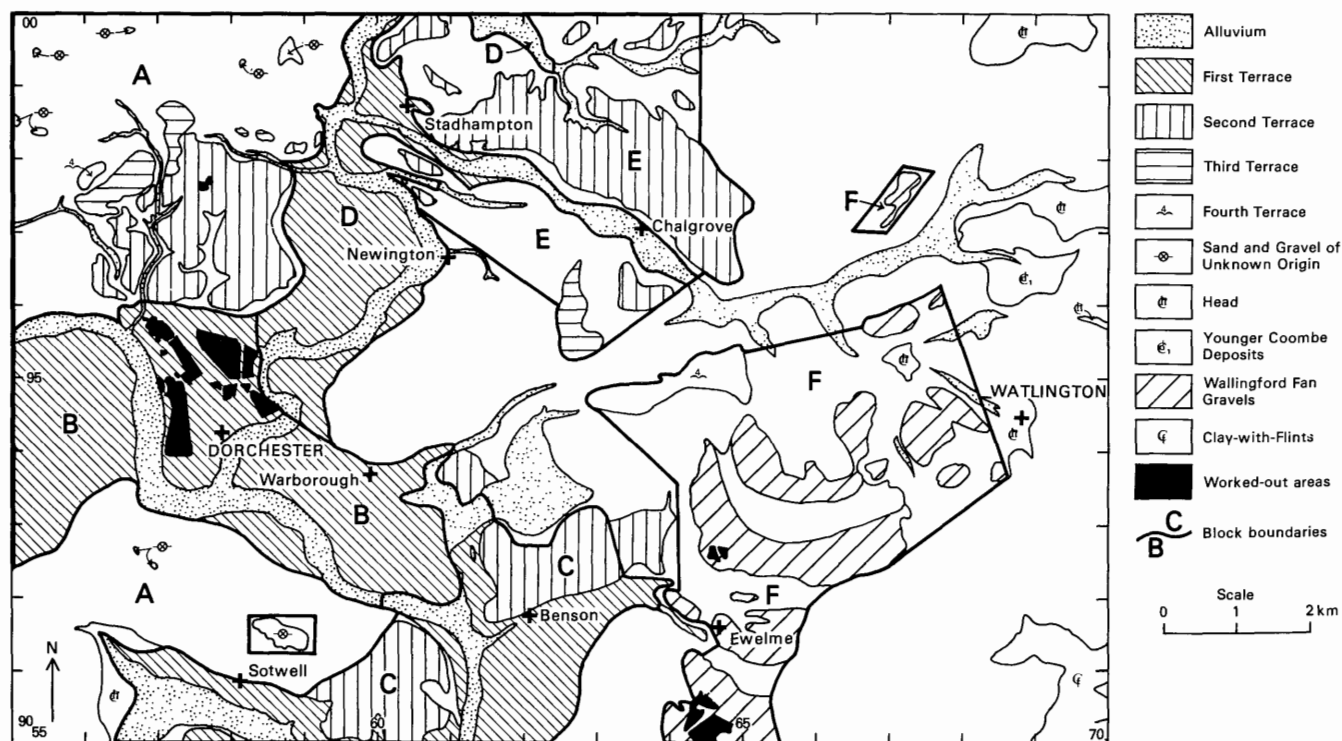
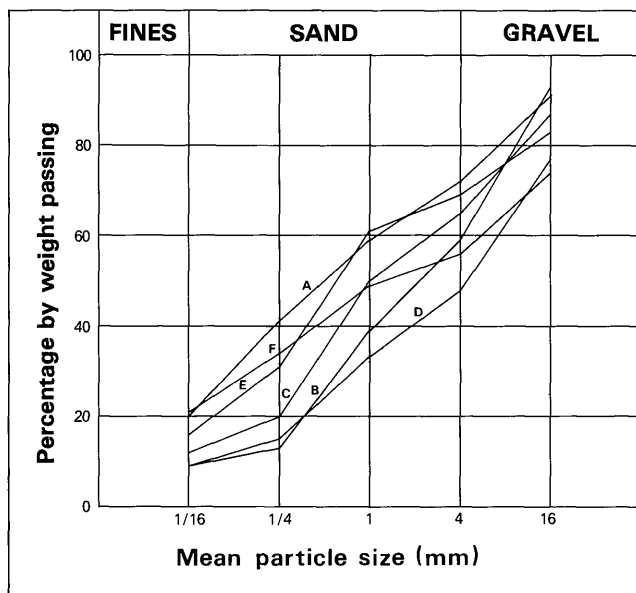


Figure 9 Map showing the resource block boundaries in relation to potentially workable sand and gravel and other Drift deposits.



| Block | Per cent by weight passing |        |      |      |       |
|-------|----------------------------|--------|------|------|-------|
|       | 1/16 mm                    | 1/4 mm | 1 mm | 4 mm | 16 mm |
| A     | 20                         | 41     | 59   | 72   | 91    |
| B     | 9                          | 13     | 39   | 59   | 93    |
| C     | 12                         | 20     | 50   | 65   | 87    |
| D     | 9                          | 15     | 33   | 48   | 77    |
| E     | 16                         | 31     | 61   | 69   | 83    |
| F     | 21                         | 34     | 49   | 56   | 74    |

**Figure 10** Mean particle size distribution for the assessed thickness of mineral in the resource blocks A to F.

59 SE 1; the mean is 3.0 m. The estimated volume of the mineral is  $39.9 \pm 8.0$  million  $m^3$ . The mean grading of the block is fines 9 per cent, sand 50 per cent and gravel 41 per cent.

The fines content of the mineral ranges from 4 per cent in borehole 59 NE 18 to 16 per cent in borehole 59 SE 2. The sand content ranges from 42 per cent in borehole 59 SE 2 to 62 per cent in borehole 59 SE 8. The gravel content ranges from 27 per cent in borehole 59 SE 8 to 50 per cent in borehole 59 NE 1. It consists of well stratified, fine, subrounded limestone with minor amounts of quartz and flint. The overburden ranges from 0.3 m in borehole 59 NE 18 to 2.2 m in borehole 59 SE 6; the mean is 0.9 m. It comprises black clayey soil on clays and silts, and, less commonly, sandy soil on sandy pebbly clays.

#### Block C

This block of 12.8  $km^2$  lying in the south and west of the resource sheet area comprises 11.7  $km^2$  (Table 3) of First and Second Terraces, overlain in places by Head and Alluvium. The deposits, which range in height from 44 m (144 ft) to 65 m (212 ft), lie in the Thames Valley and adjacent to an abandoned meander (Figure 3). Along the line of the break of slope west of Sotwell [576 913] limestone gravel deposits are concealed by soliflucted material. To the east of the Thames flint gravels, which extend over 6.8  $km^2$ , pass eastwards into relatively unsorted, sandy flint and chalk gravels and silty clays.

The bedrock is mostly Upper Greensand, with some Lower Chalk and Gault in the eastern part of the block.

The assessment is based on 13 IMAU boreholes (Table 6) and 126 other records. The mineral ranges in thickness from 1.0 m+ in borehole 69 SW 26 to 5.4 m in borehole 59 SE 10; the mean is 3.0 m. The estimated volume of the mineral  $36.9 \pm 9.2$  million  $m^3$ . The mean grading of the block is fines 12 per cent, sand 53 per cent, gravel 35 per cent.

Grading results (Table 6 and Figure 7) indicate a wide range from gravel in boreholes 69 SW 12 and 14 to 'clayey' pebbly sand in borehole 69 SW 24. The fines con-

**Table 4** Data from IMAU boreholes: Block A

| Borehole             | Recorded thickness |                | Mean grading percentage |                 |              |             |             | Formation |                                 |
|----------------------|--------------------|----------------|-------------------------|-----------------|--------------|-------------|-------------|-----------|---------------------------------|
|                      |                    |                | Fines                   | Fine sand       | Medium sand  | Coarse sand | Fine gravel |           | Coarse gravel                   |
|                      | Mineral (m)        | Overburden (m) | - 1/16 mm               | + 1/16 - 1/4 mm | + 1/4 - 1 mm | + 1 - 4 mm  | + 4 - 16 mm |           | + 16 mm                         |
| 59 NE 2              | 1.1                | 2.0            | 2                       | 0               | 12           | 28          | 42          | 16        | Second Terrace                  |
| 59 NE 3              | Absent             |                |                         |                 |              |             |             |           |                                 |
| 59 NE 4              | Absent             |                |                         |                 |              |             |             |           |                                 |
| 59 NE 5              | 2.5                | 1.4            | 14                      | 3               | 24           | 20          | 31          | 8         | Second Terrace                  |
| 59 NE 6              | 3.2                | 0.8            | 10                      | 3               | 19           | 22          | 40          | 6         | Second Terrace                  |
| 59 NE 12             | 1.0                | 0.0            | 35                      | 26              | 19           | 5           | 5           | 10        | Fourth Terrace                  |
| 59 NE 13             | 3.1+               | 0.2            | 19                      | 13              | 31           | 16          | 16          | 5         | Third Terrace                   |
| 59 NE 14             | 2.0                | 0.3            | 32                      | 53              | 6            | 3           | 2           | 4         | Third Terrace                   |
| 59 NE 15             | 2.6                | 0.1            | 27                      | 50              | 11           | 3           | 4           | 5         | Third Terrace                   |
| 59 NE 16             | 1.5                | 0.2            | 24                      | 11              | 25           | 12          | 18          | 10        | Sand & Gravel of Unknown Origin |
| 59 NE 22             | 1.0                | 0.2            | 21                      | 8               | 31           | 26          | 13          | 1         | Second Terrace                  |
| 59 SE 14             | 2.0+               | 0.2            | 15                      | 13              | 10           | 6           | 29          | 27        | Sand & Gravel of Unknown Origin |
| Overall mean grading |                    |                | 20                      | 21              | 18           | 13          | 19          | 9         |                                 |

**Table 5** Data from IMAU boreholes: Block B

| Borehole             | Recorded thickness |                | Mean grading percentage      |                                                  |                                      |                        |                         | Formation |                         |
|----------------------|--------------------|----------------|------------------------------|--------------------------------------------------|--------------------------------------|------------------------|-------------------------|-----------|-------------------------|
|                      | Mineral (m)        | Overburden (m) | Fines<br>- $\frac{1}{16}$ mm | Fine sand<br>+ $\frac{1}{16}$ - $\frac{1}{4}$ mm | Medium sand<br>+ $\frac{1}{4}$ -1 mm | Coarse sand<br>+1-4 mm | Fine gravel<br>+4-16 mm |           | Coarse gravel<br>+16 mm |
| 59 NE 1              | 2.6                | 0.8            | 5                            | 3                                                | 22                                   | 20                     | 47                      | 3         | First Terrace           |
| 59 NE 18             | 3.8                | 0.3            | 4                            | 11                                               | 29                                   | 13                     | 41                      | 2         | First Terrace           |
| 59 SE 1              | 5.3                | 0.4            | 9                            | 3                                                | 31                                   | 21                     | 28                      | 8         | First Terrace           |
| 59 SE 2              | 4.8                | 1.0            | 16                           | 2                                                | 22                                   | 18                     | 31                      | 11        | First Terrace           |
| 59 SE 3              | 3.3                | 0.4            | 12                           | 5                                                | 32                                   | 18                     | 28                      | 5         | First Terrace           |
| 59 SE 4              | 2.7                | 0.7            | 13                           | 3                                                | 30                                   | 21                     | 29                      | 4         | First Terrace           |
| 59 SE 6              | 1.6                | 2.6            | 7                            | 3                                                | 22                                   | 28                     | 34                      | 6         | First Terrace           |
| 59 SE 8              | 1.9                | 1.7            | 11                           | 7                                                | 39                                   | 16                     | 22                      | 5         | First Terrace           |
| 59 SE 9              | 5.2                | 1.4            | 6                            | 2                                                | 27                                   | 16                     | 35                      | 14        | First Terrace           |
| 59 SE 11             | 5.2                | 0.9            | 7                            | 1                                                | 18                                   | 27                     | 42                      | 5         | First Terrace           |
| 59 SE 13             | 2.5                | 0.7            | 6                            | 4                                                | 21                                   | 23                     | 39                      | 7         | First Terrace           |
| 59 SW 8              | 4.0                | 0.9            | 11                           | 2                                                | 22                                   | 19                     | 34                      | 12        | First Terrace           |
| Overall mean grading |                    |                | 9                            | 4                                                | 26                                   | 20                     | 34                      | 7         |                         |

tent ranges from 4 per cent in borehole 59 SE 7 to 21 per cent in borehole 69 SW 10. The sand content ranges from 30 per cent in borehole 69 SW 16, to 77 per cent in borehole 69 SW 26 and is mainly medium-grained, consisting of quartz, flint and limestone. The gravel ranges from 15 per cent in borehole 59 SE 12 to 60 per cent in borehole 69 SW 14. The fine gravel is mainly limestone with flint; the coarse pebbles and cobbles at the base of the deposits consist of large well rounded flints or tabular and blocky glauconitic siltstone fragments. The thickness of the overburden ranges from 0.2 m in boreholes 69 SW 9, 10 and 23, to 8.1 m in borehole 59 SE 7, and the mean is 1.7 m. Alluvium averaging 1.8 m in thickness is seen in boreholes 59 SE 5 and 10, 69 SW 12, 24 and 26; it consists of greyish black silty and sandy clay with occasional fragile white shells and a trace of fine gravel. In borehole 59 SE 7, 8.1 m of soliflucted material comprises Upper Greensand rubble with clay and occasional pebbles. Elsewhere overburden averaging 0.5 m in thickness comprises brown to dark brown soil or grey sandy clay with sporadic medium to coarse pebbles.

#### Block D

This block extends over 7.8 km<sup>2</sup> and includes deposits of the Thame Valley and its tributaries, the Haseley, Chalgrove and Baldon Brooks (Figure 3).

The bedrock is Gault, except for a small area in the north-west where it is Kimmeridge Clay.

The assessment is based on 12 IMAU boreholes (Table 7) and 8 other records. The mineral ranges in thickness from 1.0 m in borehole 69 NW 21 to 4.7 m in borehole 59 NE 17, and has a mean thickness of 2.6 m. The estimated volume of the mineral is 20.3 ± 5.5 million m<sup>3</sup>. The overburden ranges in thickness from 0.1 m in borehole 59 NE 17 to 2.7 m in borehole 59 NE 10; the mean is 1.2 m. The mean grading of the block is fines 9 per cent, sand 39 per cent and gravel 52 per cent.

Grading results indicate a range from gravel in boreholes 59 NE 7, 8 and 10, and 69 NW 2 and 9, to 'very clayey' gravel in borehole 69 NW 10. The fines content ranges from 3 per cent in borehole 59 NE 8 to 21 per cent in borehole 69 NW 10. The sand fraction ranges from 27 per cent in borehole 69 NW 9 to 57 per cent in borehole

**Table 6** Data from IMAU boreholes: Block C

| Borehole             | Recorded thickness |                | Mean grading percentage      |                                                  |                                      |                        |                         | Formation |                         |
|----------------------|--------------------|----------------|------------------------------|--------------------------------------------------|--------------------------------------|------------------------|-------------------------|-----------|-------------------------|
|                      | Mineral (m)        | Overburden (m) | Fines<br>- $\frac{1}{16}$ mm | Fine sand<br>+ $\frac{1}{16}$ - $\frac{1}{4}$ mm | Medium sand<br>+ $\frac{1}{4}$ -1 mm | Coarse sand<br>+1-4 mm | Fine gravel<br>+4-16 mm |           | Coarse gravel<br>+16 mm |
| 59 SE 5              | 4.1                | 3.7            | 10                           | 7                                                | 25                                   | 20                     | 32                      | 6         | First Terrace           |
| 59 SE 7              | 3.8                | 8.1            | 4                            | 4                                                | 28                                   | 31                     | 26                      | 7         | First Terrace           |
| 59 SE 10             | 5.4                | 2.3            | 6                            | 5                                                | 23                                   | 27                     | 30                      | 9         | First Terrace           |
| 59 SE 12             | 1.4                | 1.6            | 14                           | 8                                                | 46                                   | 17                     | 14                      | 1         | First Terrace           |
| 69 SW 9              | 5.2                | 0.2            | 18                           | 2                                                | 22                                   | 11                     | 26                      | 21        | First Terrace           |
| 69 SW 10             | 4.0                | 0.2            | 21                           | 3                                                | 33                                   | 18                     | 19                      | 6         | First Terrace           |
| 69 SW 12             | 3.6                | 2.2            | 6                            | 2                                                | 19                                   | 20                     | 39                      | 14        | First Terrace           |
| 69 SW 14             | 5.0                | 0.6            | 8                            | 2                                                | 20                                   | 10                     | 25                      | 35        | First Terrace           |
| 69 SW 15             | 1.3                | 0.5            | 16                           | 5                                                | 24                                   | 7                      | 20                      | 28        | First Terrace           |
| 69 SW 16             | 3.0                | 0.4            | 16                           | 4                                                | 17                                   | 9                      | 26                      | 28        | First Terrace           |
| 69 SW 23             | 4.7                | 0.2            | 13                           | 15                                               | 26                                   | 11                     | 21                      | 14        | First Terrace           |
| 69 SW 24             | 2.1+               | 1.2            | 12                           | 16                                               | 40                                   | 15                     | 12                      | 5         | First Terrace           |
| 69 SW 26             | 1.0+               | 1.0            | 6                            | 14                                               | 45                                   | 18                     | 15                      | 2         | First Terrace           |
| Overall mean grading |                    |                | 12                           | 8                                                | 30                                   | 15                     | 22                      | 13        |                         |

**Table 7** Data from IMAU boreholes: Block D

| Borehole             | Recorded thickness |                | Mean grading percentage |                                     |                       |             |             |               | Formation     |
|----------------------|--------------------|----------------|-------------------------|-------------------------------------|-----------------------|-------------|-------------|---------------|---------------|
|                      | Mineral (m)        | Overburden (m) | Fines                   | Fine sand                           | Medium sand           | Coarse sand | Fine gravel | Coarse gravel |               |
|                      |                    |                | — $\frac{1}{16}$ mm     | + $\frac{1}{16}$ — $\frac{1}{4}$ mm | + $\frac{1}{4}$ —1 mm | +1—4 mm     | +4—16 mm    | +16 mm        |               |
| 59 NE 7              | 3.9                | 0.4            | 8                       | 2                                   | 16                    | 15          | 33          | 26            | First Terrace |
| 59 NE 8              | 1.4                | 2.4            | 3                       | 1                                   | 11                    | 16          | 38          | 31            | First Terrace |
| 59 NE 9              | Absent             |                |                         |                                     |                       |             |             |               |               |
| 59 NE 10             | 3.3                | 2.7            | 6                       | 3                                   | 14                    | 20          | 32          | 25            | First Terrace |
| 59 NE 11             | 4.2                | 1.4            | 10                      | 4                                   | 26                    | 17          | 28          | 15            | First Terrace |
| 59 NE 17             | 4.7                | 0.1            | 10                      | 10                                  | 19                    | 9           | 25          | 27            | First Terrace |
| 69 NW 1              | 2.8                | 0.9            | 6                       | 5                                   | 24                    | 18          | 31          | 16            | First Terrace |
| 69 NW 2              | 3.0                | 2.4            | 8                       | 2                                   | 14                    | 23          | 33          | 20            | First Terrace |
| 69 NW 9              | 2.5                | 0.7            | 6                       | 3                                   | 15                    | 9           | 26          | 41            | First Terrace |
| 69 NW 10             | 1.4                | 0.6            | 21                      | 11                                  | 16                    | 7           | 19          | 26            | First Terrace |
| 69 NW 13             | 1.9                | 1.3            | 13                      | 18                                  | 31                    | 8           | 18          | 12            | First Terrace |
| 69 NW 21             | 1.0                | 0.5            | 16                      | 6                                   | 12                    | 19          | 33          | 14            | First Terrace |
| Overall mean grading |                    |                | 9                       | 6                                   | 18                    | 15          | 29          | 23            |               |

69 NW 13 and is predominantly medium- to coarse-grained. The gravel content ranges from 30 per cent in borehole 69 NW 13 to 69 per cent in borehole 69 NE 8. Jurassic limestone and flint gravels predominate in the Thame Valley. In the valleys of the Haseley, Chalgrove and Baldon Brooks the gravels contain much locally derived material which includes fresh flint and glauconitic siltstone (from the Chalk escarpment), secondary flint (from the Wallingford Fan Gravels) and phosphatic nodules, calcareous sandstone and black chert (from the Gault and Portland Beds). The overburden comprises soil on brown to grey silty clay with sporadic pebbles and rare shells.

#### Block E

This block, located on the slightly elevated ground to the east of the Thame Valley, comprises 6.8 km<sup>2</sup> of discontinuous and scattered spreads of Second and Third terrace deposits. The exception is the large continuous deposit at Chalgrove Airfield [630 980] which constitutes the bulk of the mineral area. The block excludes the Chalgrove Brook and Haseley Brook valley deposits (Figure 9) which are included with similar deposits in Block D. The deposits lie between 64 m (210 ft) and 73 m

(240 ft) above Ordnance Datum and slope gently in the general direction of the various valley floors.

The bedrock is Gault clay, except in the south and north where it is Upper Greensand, Portland Beds and Kimmeridge Clay.

The assessment of resources is based on 9 IMAU boreholes (Table 8). The mineral ranges in thickness from 1.0 m in borehole 69 NW 14 to 5.6 m in borehole 69 NW 6, and the mean is 2.9 m. The estimated volume of the mineral is  $19.7 \pm 8.5$  million m<sup>3</sup>. The mean grading of the block is fines 16 per cent, sand 53 per cent and gravel 31 per cent.

The fines content of the mineral ranges from 10 per cent in boreholes 69 NW 4, 7 and 22 to 23 per cent in borehole 69 NW 14. The sand content which ranges from 32 per cent in borehole 69 NW 19 to 72 per cent in borehole 69 NW 4 consists predominantly of medium-grained quartz and flint. The gravel content ranges from 12 per cent in borehole 69 NW 18 to 55 per cent in borehole 69 NW 19. It is fine to coarse with some cobbles, and consists of limestone and flint with some chalk, sandstone, quartz, chert and phosphatic nodules. The thickness of the overburden ranges from 0.1 m in boreholes 69 NW 14 and 18 to 1.3 m in borehole 69 NW 4; the mean is 0.6 m. It comprises soil on brown sandy clay.

**Table 8** Data from IMAU boreholes: Block E

| Borehole             | Recorded thickness |                | Mean grading percentage |                                     |                       |             |             |               | Formation      |
|----------------------|--------------------|----------------|-------------------------|-------------------------------------|-----------------------|-------------|-------------|---------------|----------------|
|                      | Mineral (m)        | Overburden (m) | Fines                   | Fine sand                           | Medium sand           | Coarse sand | Fine gravel | Coarse gravel |                |
|                      |                    |                | — $\frac{1}{16}$ mm     | + $\frac{1}{16}$ — $\frac{1}{4}$ mm | + $\frac{1}{4}$ —1 mm | +1—4 mm     | +4—16 mm    | +16 mm        |                |
| 69 NW 3              | 3.7                | 1.2            | 20                      | 6                                   | 38                    | 9           | 18          | 9             | Second Terrace |
| 69 NW 4              | 1.3                | 1.3            | 10                      | 28                                  | 41                    | 3           | 8           | 10            | Second Terrace |
| 69 NW 6              | 5.6                | 1.0            | 12                      | 6                                   | 39                    | 5           | 16          | 22            | Second Terrace |
| 69 NW 7              | 4.2                | 0.9            | 10                      | 9                                   | 35                    | 5           | 16          | 25            | Second Terrace |
| 69 NW 12             | 4.0+               | 0.2            | 21                      | 15                                  | 30                    | 17          | 15          | 2             | Second Terrace |
| 69 NW 14             | 1.0                | 0.1            | 23                      | 21                                  | 20                    | 8           | 11          | 17            | Second Terrace |
| 69 NW 18             | 2.2                | 0.1            | 22                      | 30                                  | 27                    | 9           | 4           | 8             | Third Terrace  |
| 69 NW 19             | 2.7                | 0.3            | 13                      | 10                                  | 15                    | 7           | 21          | 34            | Second Terrace |
| 69 NW 22             | 1.5                | 0.4            | 10                      | 9                                   | 17                    | 12          | 23          | 29            | Second Terrace |
| Overall mean grading |                    |                | 16                      | 15                                  | 30                    | 8           | 14          | 17            |                |

*Block F*

This block, which is in two parts, lies in the south-east of the resource sheet area (Figure 9). It contains 7.4 km<sup>2</sup> of Wallingford Fan Gravels, overlain by Head at Brightwall Grove [656 930], and Fourth Terrace deposits. These deposits are discontinuous and are spread unequally between fourteen scattered patches, for the most part capping a north-south ridge between 85 m and 137 m (280 ft to 450 ft) in elevation at the foot of the Chiltern escarpment.

The Wallingford Fan Gravels comprise an ill-sorted sandy or clayey flint gravel. The Fourth Terrace and Head deposits contain material which is lithologically indistinguishable from that of the Wallingford Fan Gravels but generally laboratory results show that they have a higher proportion of clay. The bedrock beneath the Wallingford Fan Gravels is exclusively Lower and Middle Chalk while that beneath the Fourth Terrace is Lower Chalk and Upper Greensand. Gravel workings exist at several localities in the vicinity of Ewelme [645 915] and in 1976 the worked-out areas totalled 0.3 km<sup>2</sup>.

The assessment of resources is based on 13 IMAU boreholes (Table 9) and 94 other records. The mineral ranges in thickness from 1.4 m in borehole 69 SE 9 to 9.5 m+ in borehole 69 SW 22; the mean thickness is 2.9 m. A clay layer about 0.6 m thick divides the mineral into an upper and lower part in borehole 69 SE 8. The estimated volume of the mineral is 25.5 ± 7.9 million m<sup>3</sup>. The mean grading for the block is fines 21 per cent, sand 35 per cent and gravel 44 per cent.

The fines content of the mineral ranges from 12 per cent in borehole 69 SW 22 to 37 per cent in borehole 69 SE 5. The sand content ranges from 15 per cent in borehole 69 SE 5 to 69 per cent in borehole 69 NE 6, and consists of quartz and flint. The gravel content ranges from 6 per cent in borehole 69 NE 6 to 60 per cent in borehole 69 SE 3, and consists of a predominantly fine to coarse angular flint. The overburden ranges in thickness from 0.1 m in borehole 69 NE 5 to 0.9 m in borehole 69 SE 8; its mean thickness is 0.4 m. It consists of brownish grey sandy soil with angular flint pebbles.

**Table 9** Data from IMAU boreholes: Block F

| Borehole             | Recorded thickness |                | Mean grading percentage |                                     |                       |             |             |               | Formation               |
|----------------------|--------------------|----------------|-------------------------|-------------------------------------|-----------------------|-------------|-------------|---------------|-------------------------|
|                      | Mineral (m)        | Overburden (m) | Fines                   | Fine sand                           | Medium sand           | Coarse sand | Fine gravel | Coarse gravel |                         |
|                      |                    |                | - $\frac{1}{16}$ mm     | + $\frac{1}{16}$ - $\frac{1}{4}$ mm | + $\frac{1}{4}$ -1 mm | +1-4 mm     | +4-16 mm    | +16 mm        |                         |
| 69 NW 8              | Absent             |                |                         |                                     |                       |             |             |               |                         |
| 69 SW 20             | 2.5                | 0.2            | 13                      | 10                                  | 10                    | 9           | 29          | 29            | Fourth Terrace          |
| 69 SW 21             | 5.2                | 0.2            | 14                      | 15                                  | 13                    | 8           | 23          | 27            | Fourth Terrace          |
| 69 SW 22             | 9.5+               | 0.3            | 12                      | 12                                  | 20                    | 5           | 23          | 28            | Wallingford Fan Gravels |
| 69 NE 5              | 1.7                | 0.1            | 26                      | 15                                  | 17                    | 9           | 17          | 16            | Wallingford Fan Gravels |
| 69 NE 6              | 3.7                | 0.3            | 25                      | 41                                  | 27                    | 1           | 2           | 4             | Wallingford Fan Gravels |
| 69 SE 2              | Absent             |                |                         |                                     |                       |             |             |               | Wallingford Fan Gravels |
| 69 SE 3              | 9.2                | 0.2            | 17                      | 1                                   | 12                    | 10          | 25          | 35            | Wallingford Fan Gravels |
| 69 SE 4              | 4.0                | 0.4            | 21                      | 3                                   | 9                     | 9           | 17          | 41            | Wallingford Fan Gravels |
| 69 SE 5              | 2.4                | 0.2            | 37                      | 2                                   | 10                    | 3           | 17          | 31            | Wallingford Fan Gravels |
| 69 SE 6              | 3.1                | 0.3            | 29                      | 3                                   | 9                     | 7           | 20          | 32            | Wallingford Fan Gravels |
| 69 SE 8              | 3.1                | 0.9            | 16                      | 13                                  | 19                    | 6           | 16          | 30            | Wallingford Fan Gravels |
| 69 SE 9              | 1.4                | 0.3            | 28                      | 22                                  | 13                    | 3           | 15          | 19            | Wallingford Fan Gravels |
| Overall mean grading |                    |                | 21                      | 13                                  | 15                    | 7           | 18          | 26            |                         |

## APPENDIX A

### FIELD AND LABORATORY PROCEDURES

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

The mineral shown on each 1:25 000 sheet is divided into resource blocks. The arbitrary size selected, 10 km<sup>2</sup>, 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 (1967). Random checks on the accuracy of the grading are made in the Institute's laboratories.

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

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

## APPENDIX B

### STATISTICAL PROCEDURE

#### *Statistical assessment*

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

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

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

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

4 The above relationship may be transposed such that

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

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

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

5 Given that the number of approximately evenly spaced sample points in the sampled area is  $n$ , with mineral thickness measurements  $l_{m1}, l_{m2}, \dots, l_{mn}$ , then the best estimate of mean thickness,  $\bar{l}_m$ , is given by

$$\Sigma(l_{m1} + l_{m2} \dots l_{mn})/n \quad .$$

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

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

where  $l_m$  is any value in the series  $l_{m1}$  to  $l_{mn}$ .

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

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

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

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

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

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

9 In calculating confidence limits for volume,  $L_v$ , the following inequality corresponding to equation [3] is applied:

$$L_{i_m} \leq L_v \leq 1.05 L_{i_m}$$

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

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

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

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

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

11 The application of this procedure to a fictitious area is illustrated in Figures 11 and 12.

#### Inferred assessment

12 If the sampled area of mineral in a resource block is between 0.25 km<sup>2</sup> and 2 km<sup>2</sup> 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<sup>2</sup>.

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 thickness 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.

#### Block calculation

1:25 000 block: Fictitious

#### Area

Block: 11.08 km<sup>2</sup>  
Mineral: 8.32 km<sup>2</sup>

#### Mean thickness

Overburden: 2.5 m  
Mineral: 6.5 m

#### Volume

Overburden: 21 million m<sup>3</sup>  
Mineral: 54 million m<sup>3</sup>

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):  $54 \pm 11$  million m<sup>3</sup>

#### Thickness estimate (measurements in metres)

$l_o$  = overburden thickness  $l_m$  = mineral thickness

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

#### Calculation of confidence limits

| $wl_m$ | $ (wl_m - \bar{wl}_m) $ | $(wl_m - \bar{wl}_m)^2$ |
|--------|-------------------------|-------------------------|
| 9.4    | 2.9                     | 8.41                    |
| 5.8    | 0.7                     | 0.49                    |
| 6.9    | 0.4                     | 0.16                    |
| 6.4    | 0.1                     | 0.01                    |
| 4.1    | 2.4                     | 5.76                    |
| 6.4    | 0.1                     | 0.01                    |
| 7.2    | 0.7                     | 0.49                    |
| 5.8    | 0.7                     | 0.49                    |

$$\Sigma(wl_m - \bar{wl}_m)^2 = 15.82$$

$$n = 8$$

$$t = 2.365$$

$L_v$  is calculated as

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

$$= 1.05 \times (2.365/6.5) \sqrt{[15.82/(8 \times 7)]} \times 100$$

$$= 20.3$$

$$\approx 20 \text{ per cent.}$$

Figure 11 Example of resource block assessment: calculation and results.



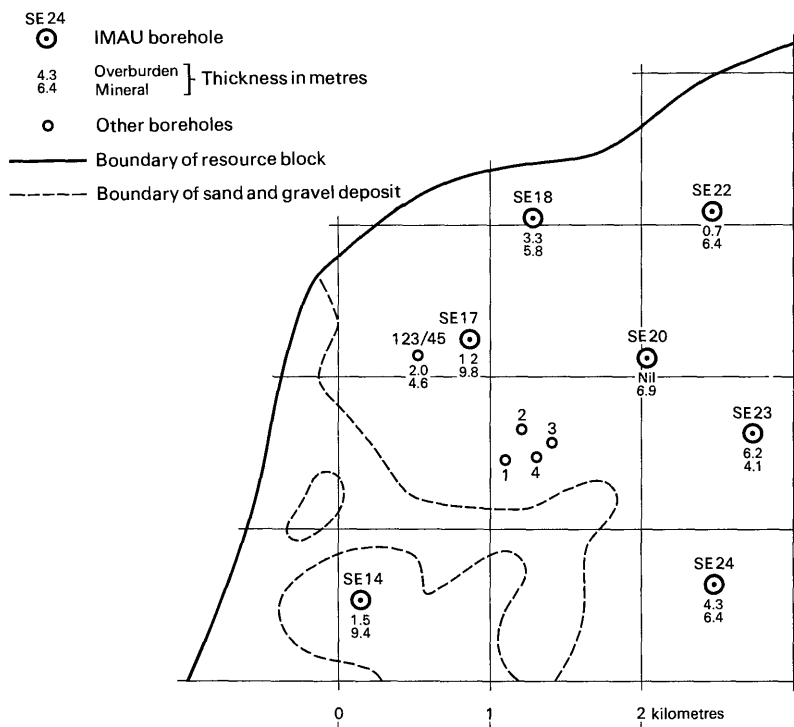


Figure 12 Example of resource block assessment: map of a fictitious block.

## APPENDIX C

### CLASSIFICATION AND DESCRIPTION OF SAND AND GRAVEL

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

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

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

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

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

Thus it is possible to classify the mineral into one of twelve descriptive categories (see Figure 13). The procedure is as follows:

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

For example, a deposit grading 11 per cent gravel, 70 per

cent sand and 19 per cent fines is classified as 'clayey' pebbly sand. This short description is included in the borehole log (see Note 11, Appendix D).

Many differing proposals exist for the classification of the grain size of sediments (Atterberg, 1905; Udden, 1914; Wentworth, 1922; Wentworth, 1935; Allen, 1936; Twenhofel, 1937; Lane and others, 1947). As Archer (1970a, b) has emphasised, there is a pressing need for a simple metric scale acceptable to both scientific and engineering interests, for which the class limit sizes correspond closely with certain marked changes in the natural properties of mineral particles. For example, there is an important change in the degree of cohesion between particles at about the  $\frac{1}{16}$ -mm size, which approximates to the generally accepted boundary between silt and sand. These and other requirements are met by a system based on Udden's geometric scale and a simplified form of Wentworth's terminology (Table 10), which is used in this Report.

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

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

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

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

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

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

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

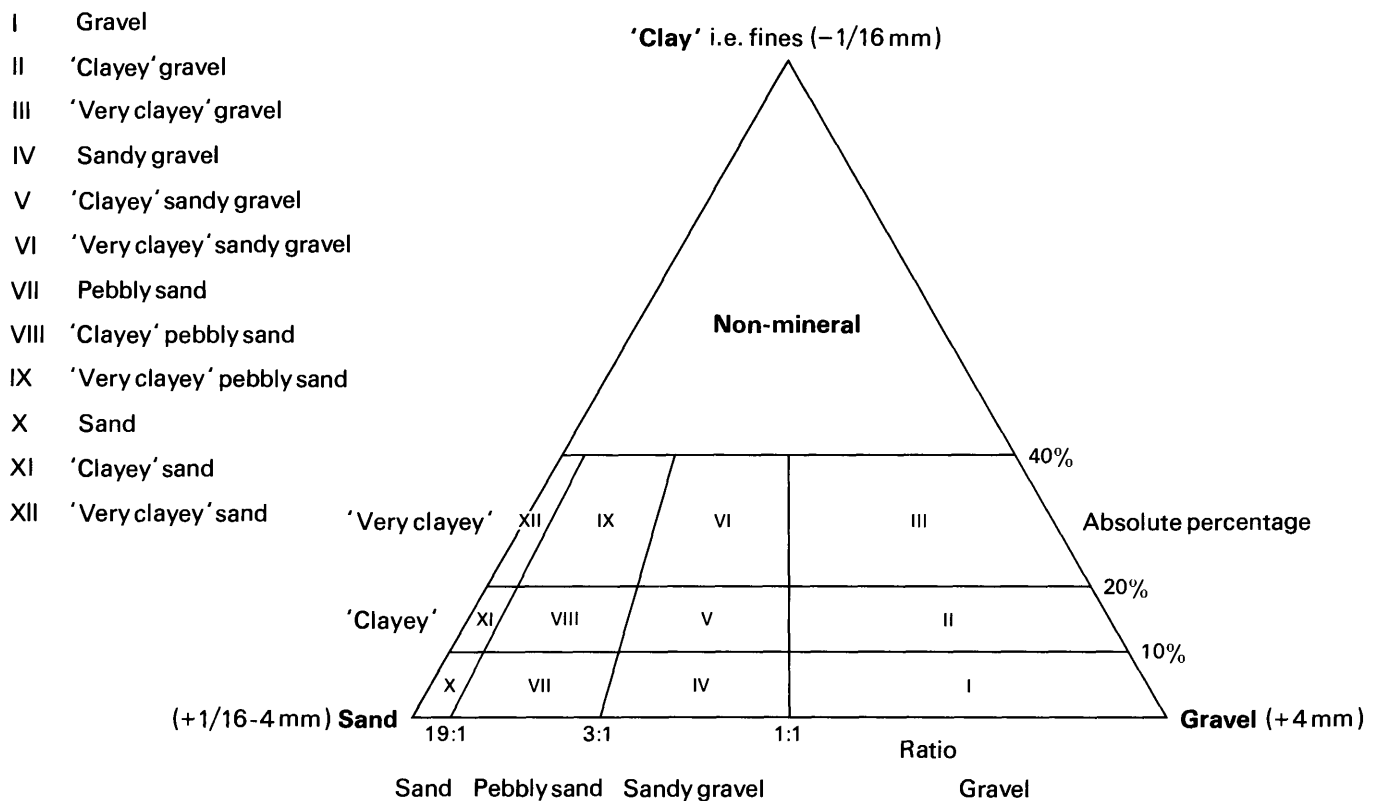
**Subrounded:** showing considerable wear. The edges and corners are rounded off to smooth curves. Original grain shape is still distinct.

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

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

**Table 10** Classification of gravel, sand and fines

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



**Figure 13** Diagram showing the descriptive categories used in the classification of sand and gravel.

## APPENDIX D

### EXPLANATION OF THE BOREHOLE RECORDS

#### Annotated example

SU 69 SW 8<sup>1</sup> 6038 9291<sup>2</sup> Gallows Leaze<sup>3</sup>, Warborough

Block B

Surface level (+49.1 m) +161 ft<sup>4</sup>

Overburden 0.9 m (3.0 ft)<sup>7</sup>

Water struck at (+46.6 m)<sup>5</sup>

Mineral 4.0 m (13.0 ft)

Shell and auger (modified), 6 inch (152 mm) diam.<sup>6</sup>

Bedrock 0.5 m+ (1.5 ft+)<sup>9</sup>

September 1972

#### LOG

| Geological classification                               | Lithology                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                                         | Soil, clayey and silty with scattered subangular flint and rounded brown quartzite pebbles; dark brown                                                                                                                                                                                                                                                                           | 0.2            | 0.2        |
| River Terrace Deposits <sup>10</sup><br>(First Terrace) | Clay, very sandy, some silt, with scattered flint and weathered green siltstone pebbles; orange brown                                                                                                                                                                                                                                                                            | 0.7            | 0.9        |
|                                                         | 'Clayey' gravel, silty in upper 2.0 m <sup>11</sup><br>Gravel: fine with coarse dominantly subrounded brown oolitic limestone and subrounded hard white chalk pellets, some subangular flint, and brown ironstone, occasional rounded brown quartzite and yellowish white quartz<br>Sand: medium to coarse with a trace of fine, mainly quartz and limestone with some haematite | 4.0            | 4.9        |
| Gault                                                   | Clay: silty; greyish blue                                                                                                                                                                                                                                                                                                                                                        | 0.5+           | 5.4        |

#### GRADING

| Mean for deposit percentages |                                  |                    |      | Depth below surface (m) |     | Bulk samples percentages <sup>13</sup> |      |        |    |
|------------------------------|----------------------------------|--------------------|------|-------------------------|-----|----------------------------------------|------|--------|----|
| Fines <sup>14</sup>          |                                  | Sand               |      | Gravel                  |     | Fines                                  | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4 | +4-16                   | +16 |                                        |      |        |    |
| 11                           | 2                                | 22                 | 19   | 34                      | 12  | 0.9-1.9 <sup>12</sup>                  | 19   | 57     | 24 |
|                              |                                  |                    |      |                         |     | 1.9-2.9                                | 14   | 41     | 45 |
| 11                           | 43                               |                    |      | 46                      |     | 2.9-3.9* <sup>15</sup>                 | 3    | 40     | 57 |
|                              |                                  |                    |      |                         |     | 3.9-4.9*                               | 7    | 37     | 56 |

#### COMPOSITION

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction <sup>16</sup> |                                    |                         |                     |           |                                  |
|-------------------------|---------------------------------------------------------|------------------------------------|-------------------------|---------------------|-----------|----------------------------------|
|                         | Flint                                                   | Quartz and Quartzite <sup>17</sup> | Limestone <sup>18</sup> | Chalk <sup>19</sup> | Ironstone | Minor Constituents <sup>20</sup> |
| 0.9-1.9                 | 19                                                      | 3                                  | 71                      | 1                   | 6         |                                  |
| 1.9-2.9                 | 16                                                      | 7                                  | 65                      | 2                   | 10        |                                  |
| 2.9-3.9                 | 12                                                      | 6                                  | 65                      | 2                   | 15        |                                  |
| 3.9-4.9                 | 10                                                      | 8                                  | 67                      | 3                   | 12        |                                  |
| Mean <sup>21</sup>      | 14                                                      | 6                                  | 67                      | 2                   | 11        |                                  |

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

#### 1 Borehole registration number

Each Industrial Minerals Assessment Unit (IMAU) borehole is identified by a registration number. This consists of two statements.

1 The number of the 1:25 000 sheet on which the borehole lies, for example SU 69

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 SW 8.

Thus the full Registration Number is SU 69 SW 8. Usually this is abbreviated to 69 SW 8 in the text.

#### 2 The National Grid reference

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

### 3 Location

The position of the borehole is generally referred to the nearest 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 feet, approximate conversions are given in brackets. Where the surface level has been estimated, it is prefixed by a letter 'c'.

### 5 Groundwater conditions

If groundwater was present the level at which it was encountered is normally given (in metres above Ordnance Datum).

### 6 Type of drill and date of drilling

Modified shell and auger rigs were used in this survey. In addition, some boreholes were hand augered. The type of machine, or type of hand auger used, the external diameter of the hole, 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

Although most measurements were made in metres, some were recorded in feet; the conversions appear in brackets. Metric conversions of measurements of the thicknesses of beds and the depth from the surface of their bases have been rounded off to the nearest 0.1 m because quotation to two places of decimals would imply a higher order of accuracy than could be justified by the original figures. Similarly, imperial conversions have been rounded off to the nearest 0.5 ft. 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. When mineral occurs beneath Alluvium it is assumed to be a terrace deposit.

### 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,  $-\frac{1}{16}$  +4 mm; fines,  $-\frac{1}{16}$  mm.

### 14 Mean grading

The grading of the full thickness of the mineral horizon identified in the log is the mean of the individual sample gradings weighted by the thicknesses represented, if these vary. The classification used is shown in Table 10.

Fully representative sampling of sand and gravel is difficult to achieve, particularly where groundwater levels are high. Comparison between boreholes and adjacent exposures suggests that in borehole samples the proportion of sand may

be higher and the proportions of fines and coarse gravel (+16 mm) may be lower.

### 15 Bailed samples

Samples obtained by the bailing technique (that is from deposits below the water table) are indicated by an asterisk.

### 16 Composition

Details are given of the composition on a percentage by weight basis for each of the constituents in the +4–16 mm (fine gravel) fractions in each of the original bulk samples, and for some bulk samples in the 16 mm+ fraction.

17 The quartz and quartzite component includes mostly Bunter-derived material with some Jurassic cherts, but they rarely exceed 10 per cent of the total. Bunter sandstones are counted with quartzites. In some bulk samples quartz and quartzite have been assessed separately.

18 In some bulk samples limestone and chalk have not been separated because of their close similarities in appearance and properties; but where possible chalk has been separately counted.

19 This component includes in addition to ironstone, 'ironpan' and iron-cemented sandstones.

20 Minor constituents include igneous, metamorphic and sedimentary rocks, glauconitic siltstones (marl), puddingstones, sarsens, cherts and fossils.

### 21 Mean composition

The composition of the full thickness of the mineral horizon identified in the log is the mean of the individual samples which have previously been weighted with respect to thickness and gravel content of the bulk sample.

APPENDIX E

LIST OF BOREHOLES AND EXPOSURES USED IN THE ASSESSEMENT OF RESOURCES

| Borehole number*               | Grid reference† | Resource block | Borehole number* | Grid reference† | Resource block | Borehole number*                                                                                                                 | Grid reference† | Resource block |   |
|--------------------------------|-----------------|----------------|------------------|-----------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|---|
| 1 MINERAL ASSESSMENT BOREHOLES |                 |                | 69 NW 5‡         | 6194 9572       |                | 69 SW 26                                                                                                                         | 6069 9372       | C              |   |
|                                |                 |                | 6                | 6397 9784       | E              | 27‡                                                                                                                              | 6173 9344       |                |   |
| 59 NE 1                        | 5583 9518       | B              | 7                | 6433 9730       | E              | 69 SE 2                                                                                                                          | 6581 9335       | F              |   |
| 2                              | 5811 9667       | A              | 8                | 6463 9512       | F              | 3                                                                                                                                | 6571 9256       | F              |   |
| 3                              | 5651 9707       | A              | 9                | 6158 9786       | D              | 4                                                                                                                                | 6561 9159       | F              |   |
| 4                              | 5734 9804       | A              | 10               | 6298 9710       | D              | 5                                                                                                                                | 6642 9421       | F              |   |
| 5                              | 5713 9628       | A              | 11‡              | 6487 9590       |                | 6                                                                                                                                | 6659 9252       | F              |   |
| 6                              | 5819 9750       | A              | 12               | 6042 9974       | E              | 7§                                                                                                                               | 6845 9375       | F              |   |
| 7                              | 5872 9519       | D              | 13               | 6025 9956       | D              | 8                                                                                                                                | 6508 9391       | F              |   |
| 8                              | 5941 9865       | D              | 14               | 6267 9979       | E              | 9                                                                                                                                | 6758 9448       | F              |   |
| 9                              | 5901 9773       | D              | 15‡              | 6282 9950       |                | 10‡                                                                                                                              | 6809 9480       |                |   |
| 10                             | 5940 9681       | D              | 16‡              | 6332 9935       |                | 2 OTHER BOREHOLES                                                                                                                |                 |                |   |
| 11                             | 5930 9571       | D              | 17‡              | 6363 9930       |                | 59 NE 24‡                                                                                                                        | 5561 9592       |                |   |
| 12                             | 5610 9782       | A              | 18               | 6271 9566       | E              | 25‡                                                                                                                              | 5593 9902       |                |   |
| 13                             | 5653 9776       | A              | 19               | 6343 9611       | E              | 26                                                                                                                               | 5736 9687       | A              |   |
| 14                             | 5677 9798       | A              | 20‡              | 6148 9639       |                | 32‡                                                                                                                              | 5652 9973       |                |   |
| 15                             | 5726 9856       | A              | 21               | 6063 9770       | D              | 33                                                                                                                               | 5969 9620       | D              |   |
| 16                             | 5877 9951       | A              | 22               | 6069 9746       | E              | 34‡                                                                                                                              | 5530 9988       |                |   |
| 17                             | 5993 9892       | D              | 69 NE 1‡         |                 |                | 6888 9650                                                                                                                        | 59 SE 21        | 5932 9265      | B |
| 18                             | 5822 9572       | B              | 2‡               | 6696 9661       |                | 69 NW 30                                                                                                                         | 6015 9855       | D              |   |
| 19‡                            | 5553 9726       |                | 3‡               | 6732 9672       |                | 69 NE 13‡                                                                                                                        | 6703 9739       |                |   |
| 20‡                            | 5678 9640       |                | 4‡               | 6516 9569       |                | 14‡                                                                                                                              | 6935 9518       |                |   |
| 21‡                            | 5852 9799       |                | 5                | 6723 9760       | F              | 69 SW 28                                                                                                                         | 6256 9211       | C              |   |
| 22                             | 5880 9815       | A              | 6                | 6698 9568       | F              | 31                                                                                                                               | 6173 9023       | C              |   |
| 23‡                            | 5698 9739       |                | 69 SW 8          |                 |                | 32                                                                                                                               | 6291 9210       | C              |   |
|                                |                 |                | 9                | 6038 9291       | B              | 69 SE 15‡                                                                                                                        | 6907 9380       |                |   |
| 59 SE 1                        | 5935 9361       | B              | 10               | 6077 9128       | C              | 17‡                                                                                                                              | 6934 9342       |                |   |
| 2                              | 5541 9484       | B              | 11‡              | 6119 9385       |                | 3 CONFIDENTIAL RECORDS                                                                                                           |                 |                |   |
| 3                              | 5598 9384       | B              | 12               | 6080 9185       | C              | 425 borehole records provided by gravel companies are held in confidence. Details of these records are not quoted in this report |                 |                |   |
| 4                              | 5678 9408       | B              | 13‡              | 6167 9309       |                |                                                                                                                                  |                 |                |   |
| 5                              | 5690 9046       | C              | 14               | 6161 9232       | C              |                                                                                                                                  |                 |                |   |
| 6                              | 5741 9330       | B              | 15               | 6190 9131       | C              |                                                                                                                                  |                 |                |   |
| 7                              | 5749 9102       | C              | 16               | 6255 9259       | C              |                                                                                                                                  |                 |                |   |
| 8                              | 5834 9402       | B              | 17‡              | 6359 9275       |                |                                                                                                                                  |                 |                |   |
| 9                              | 5861 9287       | B              | 18‡              | 6211 9409       |                |                                                                                                                                  |                 |                |   |
| 10                             | 5829 9033       | C              | 19‡              | 6245 9333       |                |                                                                                                                                  |                 |                |   |
| 11                             | 5929 9264       | B              | 20               | 6350 9466       | F              |                                                                                                                                  |                 |                |   |
| 12                             | 5945 9019       | C              | 21               | 6466 9323       | F              |                                                                                                                                  |                 |                |   |
| 13                             | 5718 9389       | B              | 22               | 6451 9063       | F              |                                                                                                                                  |                 |                |   |
| 14                             | 5878 9152       | A              | 23               | 6181 9044       | C              |                                                                                                                                  |                 |                |   |
|                                |                 |                | 24               | 6111 9317       | C              |                                                                                                                                  |                 |                |   |
| 69 NW 1                        | 6005 9704       | D              | 25‡              | 6154 9435       |                |                                                                                                                                  |                 |                |   |
| 2                              | 6065 9650       | D              |                  |                 |                |                                                                                                                                  |                 |                |   |
| 3                              | 6185 9861       | E              |                  |                 |                |                                                                                                                                  |                 |                |   |
| 4                              | 6292 9788       | E              |                  |                 |                |                                                                                                                                  |                 |                |   |

\* By sheet quadrant.

† All fall within 100-km square SU.

‡ These boreholes fall outside the assessed areas.

§ Central and South Midlands Unit borehole.

APPENDIX F

INDUSTRIAL MINERALS ASSESSMENT UNIT  
BOREHOLE AND EXPOSURE RECORDS

SU 59 NE 1 55839518 Northfield Farm, Long Wittenham

Block B

Surface level (+48.8 m) +160 ft  
Water struck at (+47.2 m)  
Shell and auger (modified), 6 inch (152 mm) diam.  
November 1971

Overburden 0.8 m (2.5 ft)  
Mineral 2.6 m (8.5 ft)  
Bedrock 0.6 m+ (2.0 ft+)

LOG

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil                                                                                                                                                                                                                                                                                                                                        | 0.1            | 0.1        |
| River Terrace Deposits<br>(First Terrace) | Clay, reddish brown, with sporadic limestone and quartzite pebbles, sandy and silty in parts                                                                                                                                                                                                                                                | 0.7            | 0.8        |
|                                           | Gravel, silty in upper 1.0 m<br>Gravel: fine with a trace of coarse, dominantly subrounded to rounded greyish brown limestone, with some subrounded brown ironstone, occasional subangular to subrounded flint and rounded quartz and quartzite<br>Sand: medium and coarse with a trace of fine, reddish brown; mainly limestone and quartz | 2.6            | 3.4        |
| Gault Clay                                | Clay and mudstone: dark blue, sandy in parts                                                                                                                                                                                                                                                                                                | 0.6+           | 4.0        |

GRADING

| Mean for deposit<br><i>percentages</i> |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|-----------------------------|------------------|--------|----------------------------|-------|------------------------------------|------|--------|----|
| Fines                                  | Sand                        |                  | Gravel |                            |       | Fines                              | Sand | Gravel |    |
| $-\frac{1}{16}$                        | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                                    |      |        |    |
| 5                                      | 3                           | 22               | 20     | 47                         | 3     | 0.8-1.8*                           | 13   | 52     | 35 |
| 5                                      | 45                          |                  |        | 50                         |       | 1.8-3.4*                           | 0    | 41     | 59 |

COMPOSITION

| Depth below<br>surface (m) | <i>Percentage by weight in 4-64 mm fraction</i> |                         |                        |           |
|----------------------------|-------------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                           | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 0.8-1.8                    | 6                                               | 4                       | 82                     | 8         |
| 1.8-3.4                    | 2                                               | 2                       | 87                     | 9         |
| Mean                       | 4                                               | 3                       | 85                     | 8         |

Surface level (+57.6 m) +189 ft  
 Water struck at (+55.1 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 2.0 m (6.5 ft)  
 Mineral 1.1 m (3.5 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, with numerous pebbles of flint and brown quartzite; brown                                                                                                                                                                                                                                                                          | 0.2            | 0.2        |
|                                            | Clay, very sandy with occasional flint, pebbles, silty in parts; orange brown                                                                                                                                                                                                                                                            | 0.5            | 0.7        |
|                                            | Clay, very silty with small chalk pellets, streaked and spotted white; light green                                                                                                                                                                                                                                                       | 1.3            | 2.0        |
|                                            | Gravel<br>Gravel: fine with coarse, dominantly subrounded brown oolitic and shelly oolitic limestone, with some rounded brown ironstone, subangular to subrounded flint and rounded brown quartzite and white quartz, traces of hard white chalk<br>Sand: coarse with some medium and traces of fine limestone and quartz; brownish grey | 1.1            | 3.1        |
| Gault                                      | Clay, silty in upper 0.2 m, becoming less silty with depth; bluish grey                                                                                                                                                                                                                                                                  | 0.9+           | 4.0        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 2                            | 0                           | 12               | 28     | 42                      | 16    | 2.0-3.1*                 | 2    | 40     | 58 |
| 2                            | 40                          |                  | 58     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 2.0-3.1                 | 9                                         | 9                    | 71                  | 11        |

**SU 59 NE 3 5651 9707 Burcot Farm, Clifton Hampden****Block A**

Surface level (+58.8 m) +193 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Waste 1.8 m (6.0 ft)  
 Bedrock 1.0 m+ (3.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                            | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, with occasional well rounded reddish brown quartzite and yellowish white quartz pebbles; brown                                 | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, very sandy with well rounded quartz pebbles; reddish brown                                                                     | 1.6            | 1.8        |
| Lower Greensand                            | Sand, dense and hard, fine to coarse quartz with dark green glauconite grains, ironstained in parts and mildly clayey; reddish brown | 1.0+           | 2.8        |

**SU 59 NE 4 5734 9804 Little Baldon Farm, Marsh Baldon****Block A**

Surface level (+63.7 m) +209 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Waste 3.5 m (11.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                      | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, with pebbles of flint and quartzite; brown                                                                               | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, silty and sandy with occasional well rounded quartzite pebbles, mottled greenish grey; orange brown                      | 1.8            | 2.0        |
|                                            | Clay, with occasional quartzite pebbles, speckled black and mottled orange brown; pale greenish grey                           | 0.6            | 2.6        |
|                                            | Clay, very sandy and silty with occasional rounded brown quartzite pebbles and limestone concretions; greenish grey            | 0.4            | 3.0        |
|                                            | Clay, very silty and sandy, some chalk pellets and occasional rounded white and brown quartzite pebbles; brownish green        | 0.5            | 3.5        |
| Lower Greensand                            | Sand, clayey, glauconitic with scattered white quartz and well rounded black flint pebbles, limonitic in parts; greenish brown | 0.5+           | 4.0        |



Surface level (+55.2 m) +181 ft  
 Water struck at (+52.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 1.4 m (4.5 ft)  
 Mineral 2.5 m (8.0 ft)  
 Bedrock 1.2 m+ (4.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, with trace of rounded quartz pebbles; reddish brown                                                                                                                                                                                                                                                        | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, silty and sandy with rare quartz pebbles, mottled yellowish grey in lower 0.2 m; reddish brown                                                                                                                                                                                                             | 1.2            | 1.4        |
|                                            | 'Clayey' sandy gravel<br>Gravel: fine with coarse predominantly subrounded greyish brown limestone with well rounded reddish brown quartzite and whitish yellow quartz, subangular flint and rounded brownish black ironstone<br>Sand: medium to coarse with a trace of fine, mainly quartz and limestone; brown | 2.5            | 3.9        |
| Lower Greensand                            | Sand, predominantly fine, uniform grain size with occasional fine well rounded yellowish white quartz pebbles, locally ironstained; dark brown with dark green horizons                                                                                                                                          | 1.2+           | 5.1        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|-----------------------------|------------------|--------|----------------------------|-------|------------------------------------|------|--------|----|
| Fines                                  | Sand                        |                  | Gravel |                            |       | Fines                              | Sand | Gravel |    |
| $-\frac{1}{16}$                        | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                                    |      |        |    |
| 14                                     | 3                           | 24               | 20     | 31                         | 8     | 1.4-2.4                            | 14   | 47     | 39 |
|                                        |                             |                  |        |                            |       | 2.4-3.4*                           | 12   | 50     | 38 |
| 14                                     | 47                          |                  |        | 39                         |       | 3.4-3.9*                           | 20   | 37     | 43 |

**COMPOSITION**

| Depth below<br>surface (m) | <i>Percentage by weight in +4-16 mm fraction</i> |                         |                        |           |
|----------------------------|--------------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                            | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 1.4-2.4                    | 4                                                | 3                       | 87                     | 6         |
| 2.4-3.4                    | 8                                                | 7                       | 78                     | 7         |
| 3.4-3.9                    | 6                                                | 5                       | 87                     | 2         |
| Mean                       | 6                                                | 5                       | 84                     | 5         |

Surface level (+58.5 m) +192 ft  
 Water struck at (+57.0 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.8 m (2.5 ft)  
 Mineral 3.3 m (11.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, brown                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, silty with occasional fine flint pebbles, very sandy in lower 0.2 m;<br>orange brown                                                                                                                                                                                                                                                                                                                                         | 0.6            | 0.8        |
|                                            | 'Clayey' gravel, with a higher fines content in upper 1.0 m, gravel content<br>increases with depth<br>Gravel: fine with some coarse mainly subrounded grey and buff<br>limestone with well rounded reddish brown quartzite and<br>subangular flint, some subangular brownish black ironstone and<br>well rounded yellow white quartz<br>Sand: medium to coarse with a trace of fine flint, quartz and<br>limestone; reddish brown | 3.3            | 4.1        |
| Gault                                      | Clay, stiff with occasional buff fragile iridescent shells, pebbly in upper<br>0.1 m; brown to greyish blue                                                                                                                                                                                                                                                                                                                        | 0.4+           | 4.5        |

**GRADING**

| Mean for deposit<br>percentages |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------------------------|------------------|--------|----------------------------|-------|-----------------------------|------|--------|----|
| Fines                           | Sand                        |                  | Gravel |                            |       | Fines                       | Sand | Gravel |    |
| $-\frac{1}{16}$                 | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                             |      |        |    |
| 10                              | 3                           | 19               | 22     | 40                         | 6     | 0.8-1.8*                    | 21   | 55     | 24 |
| 10                              | 44                          |                  |        | 46                         |       | 1.8-2.8*                    | 9    | 51     | 40 |
|                                 |                             |                  |        |                            |       | 2.8-4.1*                    | 3    | 30     | 67 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 0.8-1.8                    | 26                                        | 30                      | 38                     | 6         |
| 1.8-2.8                    | 6                                         | 9                       | 75                     | 10        |
| 2.8-4.1                    | 4                                         | 3                       | 85                     | 8         |
| Mean                       | 12                                        | 14                      | 66                     | 8         |

Surface level (+47.2 m) +155 ft  
 Water struck at (+45.2 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.4 m (1.5 ft)  
 Mineral 3.9 m (13.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                              | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | Clay, very pebbly, silty, locally mottled reddish brown; brown                                                                                                                                                                                                                                                                | 0.2            | 0.4        |
|                                           | Gravel, clayey in upper 1.6 m<br>Gravel: fine to coarse subangular to subrounded flint and subrounded to rounded limestone with brown ironstone, some chalk and a trace of well rounded reddish brown quartzite and yellowish white quartz<br>Sand: medium to coarse with a trace of fine, dominantly flint and quartz; brown | 3.9            | 4.3        |
| Gault                                     | Clay, stiff; brownish to greyish blue                                                                                                                                                                                                                                                                                         | 0.2+           | 4.5        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 8                            | 2                                | 16                 | 15     | 33                      | 26  | 0.4-1.0                  | 16   | 18     | 66 |
|                              |                                  |                    |        |                         |     | 1.0-2.0                  | 14   | 44     | 42 |
| 8                            | 33                               |                    |        | 59                      |     | 2.0-3.0*                 | 1    | 33     | 66 |
|                              |                                  |                    |        |                         |     | 3.0-4.3*                 | 6    | 33     | 61 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.4-1.0                 | 78                                        | 0                    | 15        | 0     | 7         |
| 1.0-2.0                 | 46                                        | 2                    | 24        | 7     | 21        |
| 2.0-3.0                 | 34                                        | 6                    | 36        | 7     | 17        |
| 3.0-4.3                 | 22                                        | 1                    | 60        | 5     | 12        |
| Mean                    | 45                                        | 2                    | 34        | 5     | 14        |

**SU 59 NE 8 5941 9865 Camoys Court, Stadhampton**

**Block D**

Surface level (+50.3 m) +165 ft  
 Water struck at (+47.9 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 2.4 m (8.0 ft)  
 Mineral 1.4 m (4.5 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                         | 0.4            | 0.4        |
| Alluvium                                  | Clay, soft and silty with occasional small white fragile shells, occasionally mottled grey or brown; greyish green                                                                                                                                                                                                                                                       | 2.0            | 2.4        |
| River Terrace Deposits<br>(First Terrace) | Gravel<br>Gravel: fine to coarse with occasional cobbles, dominantly subangular flint with subrounded buff limestone, and subangular brownish black ironstone, some rounded reddish brown quartzite and yellowish white quartz, occasional <i>Gryphaea</i> shells, and belemnite fragments<br>Sand: medium and coarse with a trace of fine mainly flint and quartz; grey | 1.4            | 3.8        |
| Kimmeridge Clay                           | Clay, with occasional buff fragile shell fragments; bluish grey                                                                                                                                                                                                                                                                                                          | 0.4+           | 4.2        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 3                            | 1                           | 11               | 16     | 38                      | 31    | 2.4-3.8*                 | 3    | 28     | 69 |
| 3                            | 28                          |                  | 69     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 2.4-3.8                 | 52                                        | 5                    | 21        | 4     | 18        |

**SU 59 NE 9 5901 9773 South of Chislehampton, Stadhampton**

**Block D**

Surface level (+52.1 m) +171 ft  
 Water struck at (+50.4 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Waste 1.9 m (6.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, with occasional flint and quartz pebbles; dark brown                                                                 | 0.3            | 0.3        |
| River Terrace Deposits<br>(First Terrace) | Clay, silty with some pebbles of flint and quartzite, occasional black carbonaceous patches and iron staining; dark brown  | 0.5            | 0.8        |
|                                           | Clay, very sandy, soft, with occasional pebbles; yellowish brown                                                           | 0.6            | 1.4        |
|                                           | Clay, very sandy and gravelly, fine to coarse flint, quartz and quartzite with minor amounts of limestone; yellowish brown | 0.5            | 1.9        |
| Gault                                     | Clay with occasional white fragile shell fragments; greyish blue                                                           | 0.4+           | 2.3        |

Surface level (+51.5 m) +169 ft  
 Water struck at (+48.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 2.7 m (9.0 ft)  
 Mineral 3.3 m (11.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                            | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | Clay, silty and sandy with occasional flint quartz and quartzite pebbles;<br>reddish brown                                                                                                                                                                                                                                                                                  | 1.0            | 1.2        |
|                                           | Clay, very silty with occasional pebbles; yellowish brown                                                                                                                                                                                                                                                                                                                   | 0.2            | 1.4        |
|                                           | Sandy, very clayey, with some of pebbles; brown                                                                                                                                                                                                                                                                                                                             | 0.8            | 2.2        |
|                                           | Sand, very silty, some pebbles of flint and quartz; yellowish brown                                                                                                                                                                                                                                                                                                         | 0.5            | 2.7        |
|                                           | Gravel<br>Gravel: fine to coarse with some cobbles dominantly subangular to<br>subrounded flint with subrounded brown to buff limestone and<br>blackish brown ironstone, minor amounts of reddish brown<br>quartzite and clear quartz, occasional worn <i>Gryphaea</i> and<br>Belemnite shell fragments<br>Sand: medium to coarse flint quartz and limestone; brownish grey | 3.3            | 6.0        |
| Gault                                     | Clay, bluish grey                                                                                                                                                                                                                                                                                                                                                           | 0.4+           | 6.4        |

**GRADING**

| Mean for deposit percentages |                                  |                    |      |        |     | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|----------------------------------|--------------------|------|--------|-----|-------------------------|--------------------------|------|--------|
| Fines                        | Sand                             |                    |      | Gravel |     |                         | Fines                    | Sand | Gravel |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4 | +4-16  | +16 |                         |                          |      |        |
| 6                            | 3                                | 14                 | 20   | 32     | 25  | 2.7-3.7*                | 13                       | 29   | 58     |
|                              |                                  |                    |      |        |     | 3.7-4.7*                | 3                        | 47   | 50     |
| 6                            | 37                               |                    |      | 57     |     | 4.7-6.0*                | 4                        | 34   | 62     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 2.7-3.7                 | 52                                        | 3                    | 24        | 3     | 18        |
| 3.7-4.7                 | 51                                        | 3                    | 21        | 3     | 22        |
| 4.7-6.0                 | 53                                        | 10                   | 18        | 3     | 16        |
| Mean                    | 52                                        | 5                    | 22        | 3     | 18        |

Surface level (+50.0 m) +164 ft  
 Water struck at (+47.5 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 1.4 m (4.5 ft)  
 Mineral 4.2 m (14.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                            | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, pebbly; dark brown                                                                                                                                                                                                                                                                                             | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | Clay, silty and pebbly; reddish brown                                                                                                                                                                                                                                                                                | 1.0            | 1.2        |
|                                           | Sand, silty with occasional pebbles; brownish grey                                                                                                                                                                                                                                                                   | 0.2            | 1.4        |
|                                           | 'Clayey' sandy gravel with a higher fines content in upper 1.0 m                                                                                                                                                                                                                                                     | 4.2            | 5.6        |
|                                           | Gravel: fine to coarse with occasional cobbles dominantly subangular to subrounded flint with subrounded brown to buff subrounded and rounded limestone, and brown ironstone, some rounded reddish brown quartzite and clear quartz, rare sandstone<br>Sand: mainly quartz and flint with traces of limestone; brown |                |            |
| Gault                                     | Clay, greyish blue                                                                                                                                                                                                                                                                                                   | 0.4+           | 6.0        |

**GRADING**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |         |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 10                           | 4                           | 26               | 17     | 28      | 15                      | 1.4-2.4                  | 27   | 50     | 23 |
|                              |                             |                  |        |         |                         | 2.4-3.4*                 | 4    | 57     | 39 |
| 10                           | 47                          |                  |        | 43      |                         | 3.4-4.4*                 | 4    | 45     | 51 |
|                              |                             |                  |        |         |                         | 4.4-5.6*                 | 6    | 37     | 57 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 1.4-2.4                 | 43                                        | 7                    | 30        | 8     | 12        |
| 2.4-3.4                 | 57                                        | 4                    | 18        | 7     | 14        |
| 3.4-4.4                 | 37                                        | 9                    | 22        | 5     | 27        |
| 4.4-5.6                 | 49                                        | 2                    | 20        | 1     | 28        |
| Mean                    | 47                                        | 5                    | 22        | 6     | 20        |

Surface level (+73.8 m) +242 ft  
 Water struck at (+72.4 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Mineral 1.0 m (3.5 ft)  
 Bedrock 5.1 m+ (17.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Fourth Terrace) | 'Very clayey' pebbly sand<br>Gravel: fine to coarse with occasional cobbles, mostly well rounded white quartz with some well rounded reddish brown and greyish white quartzite; and angular brown and grey flint, some brownish black ironstone, occasional light brown ferruginous sandstone<br>Sand: fine with medium and some coarse, mainly quartz and flint, clayey throughout; brown to dark brown | 1.0            | 1.0        |
| Gault                                      | Clay, stiff and sandy in parts, brown becoming greyish brown and finally bluish grey                                                                                                                                                                                                                                                                                                                     | 0.8            | 1.8        |
| Lower Greensand                            | Sand, very clayey, mainly well rounded whitish brown quartz with some ironstone and flint; a trace of predominantly fine gravel comprising well rounded spherical whitish brown and white quartz, iron cemented sandstone nodules, occasional well rounded flint and well rounded black chert; dark brown                                                                                                | 4.3+           | 6.1        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 35                           | 26                          | 19               | 5      | 5                       | 10    | 0.0-0.7                  | 30   | 58     | 12 |
| 35                           | 50                          |                  |        | 15                      |       | 0.7-1.0                  | 46   | 35     | 19 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.0-0.7                 | 36                                        | 51                   | 0                   | 9         | 4                  |
| 0.7-1.0                 | 20                                        | 42                   | 1                   | 30        | 7                  |
| Mean                    | 28                                        | 47                   | 1                   | 19        | 5                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.0-0.7                 | 18                                        | 79                   |                     | 0         | 3                  |
| 0.7-1.0                 | 0                                         | 86                   |                     | 1         | 13                 |
| Mean                    | 9                                         | 82                   |                     | 1         | 8                  |

**Lower Greensand — Bedrock**

**GRADING**

| Mean for deposit percentages |                             |                  |        |         |       | Depth below surface (m) | Bulk samples percentages |        |   |
|------------------------------|-----------------------------|------------------|--------|---------|-------|-------------------------|--------------------------|--------|---|
| Fines                        | Sand                        |                  | Gravel |         | Fines |                         | Sand                     | Gravel |   |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$ |                         |                          |        |   |
| 20                           | 15                          | 49               | 14     | 2       | 0     | 1.8-2.8                 | 20                       | 77     | 3 |
|                              |                             |                  |        |         |       | 2.8-3.6                 | 27                       | 70     | 3 |
| 20                           | 78                          |                  |        | 2       |       | 3.6-6.1                 | 18                       | 81     | 1 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.8-2.8                 | 0                                         | 16                   | 0                   | 7         | 77                 |
| 2.8-3.6                 | 5                                         | 95                   | 0                   | 0         | 0                  |
| 3.6-6.1                 | 5                                         | 95                   | 0                   | 0         | 0                  |
| Mean                    | 5                                         | 69                   | 0                   | 1         | 25                 |



Surface level (+66.6 m) +219 ft  
 Water struck at (+63.9 m)  
 Hand auger, 6 inch (152 mm) diam.  
 August 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 3.1 m+ (10.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, sandy with clay and occasional quartz, quartzite and flint pebbles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.2            | 0.2        |
| River Terrace Deposits<br>(Third Terrace) | 'Clayey' sandy gravel, getting less clayey and more gravelly with depth<br>Gravel: fine with some coarse and occasional cobble. In the coarse fraction (+16 mm) size range, well rounded white quartz and well rounded reddish brown quartzite the main components, while well rounded brown limestone predominates in the finer fractions. Some angular and rarely well rounded brown, white or grey flint with ironstone and sandy 'iron pan' concretions and a trace of brown sandstone, shell fragments and chert occur throughout the deposit<br>Sand: medium, with fine and coarse, clayey; yellowish brown | 3.1+           | 3.3        |

**GRADING**

| Mean for deposit percentages |           |        |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|-----------|--------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand      |        | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 19                           | 13        | 31     | 16     | 16                      | 5   | 0.2-0.8                  | 41   | 46     | 13 |
| 19                           | 60        |        |        | 21                      |     | 0.8-1.8                  | 15   | 70     | 15 |
|                              |           |        |        |                         |     | 1.8-3.3                  | 13   | 60     | 27 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.2-0.8                 | 19                                        | 42                   | 0         | 1     | 30        | 8                  |
| 0.8-1.8                 | 24                                        | 21                   | 30        | 4     | 20        | 1                  |
| 1.8-3.3                 | 12                                        | 5                    | 61        | 7     | 15        |                    |
| Mean                    | 18                                        | 17                   | 39        | 4     | 19        | 3                  |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
| 0.2-0.8                 | 4                                         | 72                   | 11        | 1     | 2         | 10                 |
| 0.8-1.8                 | 16                                        | 67                   | 11        | 2     | 2         | 2                  |
| 1.8-3.3                 | 16                                        | 27                   | 50        | 0     | 7         | 0                  |
| Mean                    | 12                                        | 55                   | 24        | 1     | 4         | 4                  |

Surface level (+66.1 m) +217 ft  
 Water struck at (+62.9 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 2.0 m (6.5 ft)  
 Bedrock 5.7 m+ (18.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, sandy with occasional well rounded quartz and quartzite, subangular to angular flint pebbles, light brown                                                                                                                                                                                                                                                                                                                                                                                                  | 0.3            | 0.3        |
| River Terrace Deposits<br>(Third Terrace) | 'Very clayey' pebbly sand<br>Gravel: fine to coarse; well rounded white and cream quartz, reddish brown quartzite, and angular to subangular brown, grey and occasionally white coated flint; brown tabular iron cemented sandstone ('iron pan') with some ironstone and traces of siltstone and shell fragments predominates in the fine size range (4-16 mm)<br>Sand: predominantly fine with some medium and a trace of coarse, clayey throughout, some iron staining, mainly quartz and flint; reddish brown | 2.0            | 2.3        |
| Lower Greensand                           | Sand, very clayey, predominantly fine, and well graded with occasional pebbles of fine to cobble size tabular or platy greyish black cemented sandstone, some pyrite and occasional fragile iridescent shell fragment and pyritised fossil shell fragments, uniformly greyish black throughout                                                                                                                                                                                                                   | 5.7+           | 8.0        |

**GRADING**

| Mean for deposit percentages |           |        |        | Depth below surface (m) |     | Bulk samples percentage |      |        |   |
|------------------------------|-----------|--------|--------|-------------------------|-----|-------------------------|------|--------|---|
| Fines                        | Sand      |        | Gravel |                         |     | Fines                   | Sand | Gravel |   |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                   | +16 |                         |      |        |   |
| 32                           | 53        | 6      | 3      | 2                       | 4   | 0.3-1.3                 | 31   | 64     | 5 |
| 32                           | 62        |        |        | 6                       |     | 1.3-2.3                 | 33   | 60     | 7 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.3-1.3                 | 7                                         | 51                   | 1                   | 2         | 39                 |
| 1.3-2.3                 | 41                                        | 0                    | 7                   | 28        | 24                 |
| Mean                    | 24                                        | 25                   | 4                   | 15        | 32                 |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.3-1.3                 | 13                                        | 87                   |                     |           |                    |
| 1.3-2.3                 | 96                                        | 4                    |                     |           |                    |
| Mean                    | 55                                        | 45                   |                     |           |                    |

**Lower Greensand — Bedrock**

**GRADING**

| Mean for deposit percentages |           |        |        | Depth below surface (m) |     | Bulk samples percentages |      |        |   |
|------------------------------|-----------|--------|--------|-------------------------|-----|--------------------------|------|--------|---|
| Fines                        | Sand      |        | Gravel |                         |     | Fines                    | Sand | Gravel |   |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                   | +16 |                          |      |        |   |
| 33                           | 60        | 2      | 1      | 2                       | 2   | 2.3-3.3*                 | 27   | 72     | 1 |
| 33                           | 63        |        |        | 4                       |     | 3.3-4.5*                 | 36   | 55     | 9 |
|                              |           |        |        |                         |     | 4.5-8.0*                 | 38   | 62     | 0 |

Surface level (+66.8 m) +219 ft  
 Water struck at (+64.2 m)  
 Hand auger, 6 inch (152 mm) diam.  
 August 1975

Overburden 0.1 m (0.5 ft)  
 Mineral 1.4 m (4.5 ft)  
 Waste 1.1 m (3.5 ft)  
 Mineral 1.2 m (4.0 ft)  
 Bedrock 0.1 m+ (0.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, sandy and mildly clayey, with some fine to cobble size quartz and quartzite pebbles                                                                                                                                                                                                                                                                                                                        | 0.1            | 0.1        |
| River Terrace Deposits<br>(Third Terrace) | <p><b>a</b> 'Very clayey' pebbly sand, getting very 'clayey' in lower 0.4 m</p> <p>Gravel: fine to coarse with occasional cobbles predominantly well rounded white quartz with some well rounded reddish brown quartzite; some angular to subrounded brown and grey flint, iron cemented sandstone and hardpan</p> <p>Sand: mainly fine with medium and some coarse, clayey throughout; brown to light brown</p> | 1.4            | 1.5        |
|                                           | Clay, sandy to very sandy in parts; greyish brown                                                                                                                                                                                                                                                                                                                                                                | 1.1            | 2.6        |
|                                           | <p><b>b</b> 'Clayey' sand</p> <p>Gravel: fine only, mainly whitish grey mildly calcareous iron cemented sandstone, with some well rounded white to transparent quartz, rare quartzite, some angular brown flint flakes</p> <p>Sand: predominantly fine with clay bands; yellowish brown becoming greyish brown</p>                                                                                               | 1.2            | 3.8        |
| Portland Beds                             | Sand, very hard and compact                                                                                                                                                                                                                                                                                                                                                                                      | 0.1+           | 3.9        |

**GRADING a**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 34                           | 28                          | 18               | 5      | 7                       | 8     | 0.1-1.1                  | 31   | 49     | 20 |
| 34                           | 51                          |                  |        | 15                      |       | 1.1-1.5                  | 42   | 53     | 5  |

**COMPOSITION a**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.1-1.1                 | 19                                        | 52                   | 0                   | 0         | 29                 |
| 1.1-1.5                 | 20                                        | 37                   | 0                   | 18        | 25                 |
| Mean                    | 20                                        | 44                   | 0                   | 9         | 27                 |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.1-1.1                 | 30                                        | 70                   |                     |           |                    |
| 1.1-1.5                 | 25                                        | 75                   |                     |           |                    |
| Mean                    | 27                                        | 73                   |                     |           |                    |

**GRADING b**

| Mean for deposit percentages |                             |                  |        | Gravel  | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|
| Fines                        | Sand                        |                  |        |         |                         | Fines                    | Sand | Gravel |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ |                         |                          |      |        |
| 18                           | 77                          | 3                | 1      | 1       | 2.6-3.8                 | 18                       | 81   | 1      |
| 18                           | 81                          |                  |        | 1       | -                       |                          |      |        |

**COMPOSITION b**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 2.6-3.8                 | 7                                         | 7                    | 0                   | 5         | 81                 |
|                         | No gravel in +16 mm size range            |                      |                     |           |                    |

Surface level (+88.7 m) +291 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 September 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 1.5 m (5.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification         | Lithology                                                                                                                                                                                                                                                                                                                                                                                               | Thickness<br>m | Depth<br>m |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                   | Soil, clayey with occasional well rounded quartz and quartzite pebbles; brown                                                                                                                                                                                                                                                                                                                           | 0.2            | 0.2        |
| Sand and Gravel of Unknown Origin | 'Very clayey' sandy gravel, getting 'sandier' towards base<br>Gravel: fine to coarse, angular to subangular, white and occasionally brown flint, and well rounded, white quartz, reddish brown and black quartzite, and tabular brownish black ironstone, trace of sandstone and siltstone<br>Sand: medium with fine and coarse quartz and flint, clayey throughout, some iron staining in parts; brown | 1.5            | 1.7        |
| Gault                             | Clay, stiff initially mottled brown becoming bluish grey                                                                                                                                                                                                                                                                                                                                                | 0.2+           | 1.9        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 24                           | 11                          | 25               | 12     | 18                      | 10    | 0.2-1.1                  | 29   | 40     | 31 |
| 24                           | 48                          |                  |        | 28                      |       | 1.1-1.7                  | 16   | 61     | 23 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor constituents |
| 0.2-1.1                 | 55                                        | 21                   | 0                   | 24        | 0                  |
| 1.1-1.7                 | 45                                        | 13                   | 0                   | 32        | 10                 |
| Mean                    | 51                                        | 18                   | 0                   | 27        | 4                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.2-1.1                 | 88                                        | 11                   | 0                   | 0         | 1                  |
| 1.1-1.7                 | 90                                        | 4                    | 0                   | 4         | 2                  |
| Mean                    | 89                                        | 8                    | 0                   | 2         | 1                  |

Surface level (+53.0 m) +174 ft  
 Water struck at (+50.7 m)  
 Shell and auger (modified), 8 inch (203 mm) diam.  
 September 1975

Overburden 0.1 m (0.5 ft)  
 Mineral 4.7 m (15.5 ft)  
 Waste 0.4 m (1.5 ft)  
 Bedrock 0.8 m+ (2.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                    | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(First Terrace) | Soil, clayey and sandy with occasional flint pebbles; grey                                                                                                                                                                                                                   | 0.1            | 0.1        |
|                                           | 'Clayey' gravel, with chalk content increasing with depth                                                                                                                                                                                                                    | 4.7            | 4.8        |
|                                           | Gravel: fine to coarse with occasional cobbles, predominantly angular to subangular (rare rounded) grey and white coated flint with occasional well rounded black chert, well rounded brown quartzite, well rounded white quartz, chalk pellets and brownish black ironstone |                |            |
|                                           | Sand: medium with coarse and fine mainly flint with some chalk and ironstone; brown becoming light brown                                                                                                                                                                     |                |            |
| Kimmeridge Clay                           | Clay, silty with occasional coarse and cobble size flint, some fine, rusty brown streaking; grey (possible eroded surface of Kimmeridge Clay?)                                                                                                                               | 0.4            | 5.2        |
|                                           | Clay, soft and silty, no gravel, uniform texture and consistent lithology throughout; dark grey                                                                                                                                                                              | 0.8+           | 6.0        |

**GRADING**

| Mean for deposit percentages |           |        |      |        |     | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|-----------|--------|------|--------|-----|-------------------------|--------------------------|------|--------|
| Fines                        | Sand      |        |      | Gravel |     |                         | Fines                    | Sand | Gravel |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4 | +4-16  | +16 |                         |                          |      |        |
| 10                           | 10        | 19     | 9    | 25     | 27  | 0.1-1.0                 | 18                       | 48   | 34     |
|                              |           |        |      |        |     | 1.0-1.4                 | 13                       | 36   | 51     |
| 10                           | 38        |        |      | 52     |     | 1.4-2.1                 | 14                       | 44   | 42     |
|                              |           |        |      |        |     | 2.1-3.1*                | 5                        | 41   | 54     |
|                              |           |        |      |        |     | 3.1-4.1*                | 2                        | 27   | 71     |
|                              |           |        |      |        |     | 4.1-4.8*                | 10                       | 33   | 57     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.1-1.0                 | 95                                        | 1                    | 0         | 1     | 3         |
| 1.0-1.4                 | 92                                        | 1                    | 0         | 3     | 4         |
| 1.4-2.1                 | 90                                        | 0                    | 0         | 8     | 2         |
| 2.1-3.1                 | 89                                        | 1                    | 0         | 9     | 1         |
| 3.1-4.1                 | 80                                        | 2                    | 0         | 16    | 2         |
| 4.1-4.8                 | 68                                        | 1                    | 11        | 13    | 7         |
| Mean                    | 85                                        | 1                    | 2         | 9     | 3         |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |
| 0.1-1.0                 | 99                                        | 1                    |           |       |           |
| 1.0-1.4                 | 100                                       | 0                    |           |       |           |
| 1.4-2.1                 | 99                                        | 1                    |           |       |           |
| 2.1-3.1                 | 99                                        | 1                    |           |       |           |
| 3.1-4.1                 | 100                                       | 0                    |           |       |           |
| 4.1-4.8                 | 100                                       | 0                    |           |       |           |
| Mean                    | 100                                       | 0                    |           |       |           |

Surface level (+49.7 m) +163 ft  
 Water not struck  
 Gravel pit sample site  
 May 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 3.8 m (12.5 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, sandy with occasional pebbles; light brown                                                                                                                                                                                                                                                                                                                                                                                  | 0.3            | 0.3        |
| River Terrace Deposits<br>(First Terrace) | Sandy gravel, sandy in upper 1 m; gravel content increases with depth;<br>occasional cobbles at base of deposit<br>Gravel: with some coarse, angular to subrounded dominantly brown<br>platy or tabular limestone, with some well rounded quartz, angular<br>flint, and ironstone, rare quartzite and shell fragments<br>Sand: medium and coarse with fine, limestone and quartz with<br>ironstone grains, occasional clay layers | 3.8            | 4.1        |
| Gault                                     | Clay, stiff, top 0.1 m brown and faintly mottled, (erosion surface) otherwise<br>black, no fossils                                                                                                                                                                                                                                                                                                                                | 0.2+           | 4.3        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|------------------------------------|------|--------|----|
| Fines                                  | Sand                             |                    | Gravel |                            |     | Fines                              | Sand | Gravel |    |
| - $\frac{1}{16}$                       | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                                    |      |        |    |
| 4                                      | 11                               | 29                 | 13     | 41                         | 2   | 0.3-1.1                            | 5    | 78     | 17 |
| 4                                      | 53                               |                    |        | 43                         |     | 1.1-2.1                            | 2    | 32     | 66 |
|                                        |                                  |                    |        |                            |     | 2.1-3.1                            | 6    | 58     | 36 |
|                                        |                                  |                    |        |                            |     | 3.1-4.1                            | 2    | 55     | 43 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 0.3-1.1                    | 12                                        | 11                      | 67        | 1     | 9         |
| 1.1-2.1                    | 3                                         | 8                       | 74        | 5     | 10        |
| 2.1-3.1                    | no sample                                 |                         |           |       |           |
| 3.1-4.1                    | 8                                         | 1                       | 93        | 0     | 6         |
| Mean                       | 4                                         | 6                       | 80        | 2     | 8         |
|                            | Percentage by weight in +16 mm fraction   |                         |           |       |           |
| 0.3-1.1                    | 29                                        | 13                      | 55        |       | 2         |
| 1.1-2.1                    | no sample                                 |                         |           |       |           |
| 2.1-3.1                    | 35                                        | 14                      | 43        |       | 5         |
| 3.1-4.1                    | 29                                        | 13                      | 55        |       | 2         |
| Mean                       | 31                                        | 13                      | 51        |       | 3         |

Surface level (+65.2 m) +214 ft  
 Water struck at (+62.2 m)  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Waste 1.9 m (6.0 ft)  
 Bedrock 1.3 m+ (4.5 ft+)

**LOG**

| Geological classification           | Lithology                                                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                     | Soil, peaty and sandy with occasional fine flint and quartz gravel                                                                                                                                                                                                                                                                                | 0.1            | 0.1        |
| Alluvium<br>(River Terrace Deposit) | 'Very clayey' pebbly sand<br>Gravel: dominantly fine well rounded spherical white to clear quartz with occasional coarse and rare cobble of brown Bunter quartzite or sandstone, some brownish black ironstone and ironpan, and flint<br>Sand: dominantly medium with some fine and coarse, well rounded quartz, silty and clayey in parts; brown | 1.8            | 1.9        |
| Lower Greensand                     | Sand: 'very clayey' dominantly medium, well graded well rounded spherical white quartz, with rare quartz gravel; brown to yellowish brown                                                                                                                                                                                                         | 1.3+           | 3.2        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) | Bulk samples percentages |      |        |   |
|------------------------------|-----------------------------|------------------|--------|-------------------------|--------------------------|------|--------|---|
| Fines                        | Sand                        |                  | Gravel |                         | Fines                    | Sand | Gravel |   |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ |                         |                          |      |        |   |
| 35                           | 10                          | 32               | 14     | 9                       | 0.1-1.9                  | 35   | 56     | 9 |
| 35                           | 56                          |                  | 9      |                         |                          |      |        |   |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.1-1.9                 | 6                                         | 58 (quartz)          | 0                   | 36        |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 0.1-1.9                 | 0                                         | 93                   | 0                   | 7         |

**Lower Greensand — Bedrock**

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) | Bulk samples percentages |      |        |   |
|------------------------------|-----------------------------|------------------|--------|-------------------------|--------------------------|------|--------|---|
| Fines                        | Sand                        |                  | Gravel |                         | Fines                    | Sand | Gravel |   |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ |                         |                          |      |        |   |
| 22                           | 9                           | 56               | 10     | 3                       | 1.9-3.2                  | 22   | 75     | 3 |
| 22                           | 75                          |                  | 3      |                         | -                        |      |        |   |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |        |                     |           |
|-------------------------|-------------------------------------------|--------|---------------------|-----------|
|                         | Flint                                     | Quartz | Limestone and Chalk | Ironstone |
| 1.9-3.2                 | 3                                         | 60     | 0                   | 37        |



SU 59 NE 20 5678 9640 South-west of Field Farm, Dorchester

Surface level (+52.4 m) +172 ft  
 Water struck at (+51.3 m)  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Waste 1.0 m (3.5 ft)  
 Bedrock 1.8 m+ (6.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, clayey and peaty with occasional fine quartz pebbles; brownish black                                                                                                                                                                                                                                                                  | 0.2            | 0.2        |
|                                           | Clay, very silty, with occasional fine to coarse well rounded quartz; greyish black                                                                                                                                                                                                                                                         | 0.2            | 0.4        |
| River Terrace Deposit?<br>(First Terrace) | 'Clayey' pebbly sand<br>Gravel: fine, no coarse, well rounded white quartz, well rounded greyish-black phosphatic nodules, black to brown ironstone and 'ironpan' with rounded to angular flint and chert and brownish white quartzite<br>Sand: mainly medium to coarse well rounded white quartz, silty and clayey throughout; mainly grey | 0.6            | 1.0        |
| Lower Greensand                           | Sand: 'very clayey' fine to medium quartz with flint and ironstone, well graded and very glauconitic throughout; dark green to yellowish green                                                                                                                                                                                              | 1.8+           | 2.8        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ |                         |                          |      |        |    |
| 17                           | 13                          | 25               | 27     | 18                      | 0.4-1.0                  | 17   | 65     | 18 |
| 17                           | 65                          |                  | 18     |                         |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |        |           |                     |           |                    |
|-------------------------|-------------------------------------------|--------|-----------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz | Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.4-1.0                 | 7                                         | 41     | 9         | 0                   | 17        | 26                 |

**Lower Greensand — Bedrock**

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) | Bulk samples percentages |      |        |   |
|------------------------------|-----------------------------|------------------|--------|-------------------------|--------------------------|------|--------|---|
| Fines                        | Sand                        |                  | Gravel |                         | Fines                    | Sand | Gravel |   |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ |                         |                          |      |        |   |
| 23                           | 31                          | 34               | 9      | 3                       | 1.0-2.8                  | 23   | 74     | 3 |
| 23                           | 74                          |                  | 3      |                         | -                        |      |        |   |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |        |                     |           |                    |
|-------------------------|-------------------------------------------|--------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.0-2.8                 | 17                                        | 39     | 0                   | 25        | 19                 |

**SU 59 NE 21 5852 9799 Near Camoys Court, Stadhampton**

Surface level (+52.4 m) +172 ft  
 Water struck at (+51.0 m)  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Waste 1.5 m (5.0 ft)  
 Bedrock 0.7 m+ (2.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, peaty and clayey with rare well rounded white quartz                                                                                                    | 0.3            | 0.3        |
|                           | Clay, mildly sandy with rare fine to medium flint, well rounded quartz and black chert; yellowish brown                                                       | 0.5            | 0.8        |
|                           | Clay, very sandy with occasional fine to medium pebbles of brown rounded to subangular flint, well rounded white quartz and a trace of sandstone; light brown | 0.7            | 1.5        |
| Kimmeridge Clay           | Silt, very fine soft and sandy; bluish grey                                                                                                                   | 0.4            | 1.9        |
|                           | Clay, firm, mildly sandy; bluish grey                                                                                                                         | 0.3+           | 2.2        |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 0.8-1.5                    | 68                                        | 27                      | 0                      | 0         | 5                     |

Surface level (+59.1 m) +194 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Overburden 0.2 m (0.5 ft)  
 Mineral 1.0 m (3.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, clayey and sandy with occasional quartz and flint pebbles                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | 'Very clayey' pebbly sand, particularly clayey in upper 0.4 m<br>Gravel: fine with a trace of coarse mainly well rounded to subrounded brown and white coated flint; with brownish black ferruginous sandstone iron pan and black phosphatic nodules; some white to brown well rounded oolitic limestone occasional chalk, well rounded white quartz, well rounded brown quartzite; trace of shell fragments<br>Sand: medium and coarse with some fine mostly quartz and flint; reddish brown | 1.0            | 1.2        |
| Gault                                      | Clay, firm with occasional fine white shell fragments; light grey becoming dark grey                                                                                                                                                                                                                                                                                                                                                                                                          | 0.5+           | 1.7        |

**GRADING**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |         |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 21                           | 8                           | 31               | 26     | 13      | 1                       | 0.2-1.2                  | 21   | 65     | 14 |
| 21                           | 65                          |                  | 14     |         |                         |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.2-1.2                 | 49                                        | 6                    | 17        | 6     | 4         | 18                 |
|                         | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
| 0.2-1.2                 | 90                                        | 0                    | 0         | 0     | 0         | 10                 |

SU 59 NE 23 5698 9739 South-east of Golden Balls, Clifton Hampden

Surface level (+57.6 m) +189 ft  
 Water struck at (+56.6 m)  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Waste 0.9 m (3.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

LOG

| Geological classification | Lithology                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, silty and peaty; reddish brown                                                                                                                          | 0.1            | 0.1        |
| Alluvium                  | Clay, soft and silty with rare fine well rounded white quartz; greyish brown                                                                                  | 0.8            | 0.9        |
| Lower Greensand           | Sand, predominantly fine grained, 'very clayey' with rare fine well rounded quartz, ironstone, grey phosphatic nodules, glauconitic throughout; greenish grey | 0.9+           | 1.8        |

Lower Greensand — Bedrock

GRADING

| Mean for deposit percentages |           |        |        | Depth below surface (m) | Bulk samples percentages |      |        |   |
|------------------------------|-----------|--------|--------|-------------------------|--------------------------|------|--------|---|
| Fines                        | Sand      |        | Gravel |                         | Fines                    | Sand | Gravel |   |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                   |                          |      |        |   |
| 29                           | 55        | 11     | 4      | 1                       | 0.9-1.8                  | 29   | 70     | 1 |
| 29                           | 70        |        |        | 1                       |                          |      |        |   |

COMPOSITION

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |        |                     |           |                    |
|-------------------------|-------------------------------------------|--------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.9-1.8                 | 0                                         | 39     | 0                   | 18        | 43                 |

Surface level (+49.1 m) +161 ft  
 Water struck at (46.2 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 0.4 m (1.5 ft)  
 Mineral 5.3 m (17.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                               | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, clayey with pebbles of flint and quartzite; brown                                                                                                                                                                                                                                                                                                                                                                 | 0.4            | 0.4        |
| River Terrace Deposits<br>(First Terrace) | Sandy gravel, 'clayey' with high sand content in upper 2.0 m<br>Gravel: fine to coarse, subangular to subrounded white and grey oolitic and shelly oolitic limestone, with some subrounded white chalk, brown to white flint, and ironstone, and traces of brown quartzite, whitish yellow quartz and green siltstone<br>Sand: medium to coarse with a trace of fine quartz and limestone with some flint and haematite | 5.3            | 5.7        |
| Gault                                     | Clay, stiff, silty; brownish-grey                                                                                                                                                                                                                                                                                                                                                                                       | 0.5+           | 6.2        |

**GRADING**

| Mean for deposit<br>percentages |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand                             |                    | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| - $\frac{1}{16}$                | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 9                               | 3                                | 31                 | 21     | 28                         | 8   | 0.4-1.4                     | 11   | 66     | 23 |
|                                 |                                  |                    |        |                            |     | 1.4-2.4                     | 17   | 61     | 22 |
| 9                               | 55                               |                    |        | 36                         |     | 2.4-3.4*                    | 7    | 48     | 45 |
|                                 |                                  |                    |        |                            |     | 3.4-4.4*                    | 4    | 53     | 43 |
|                                 |                                  |                    |        |                            |     | 4.4-5.7*                    | 6    | 49     | 45 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 0.4-1.4                    | 42                                        | 4                       | 40                     | 14        | 0                     |
| 1.4-2.4                    | 34                                        | 2                       | 51                     | 13        | 0                     |
| 2.4-3.4                    | 4                                         | 3                       | 68                     | 25        | 0                     |
| 3.4-4.4                    | 9                                         | 3                       | 72                     | 16        | 0                     |
| 4.4-5.7                    | 10                                        | 5                       | 58                     | 11        | 16                    |
| Mean                       | 20                                        | 3                       | 58                     | 16        | 3                     |

Surface level (+49.4 m) +162 ft  
 Water struck at (+46.4 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 1.0 m (3.5 ft)  
 Mineral 4.8 m (16.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.3            | 0.3        |
|                                           | Clay, sandy with trace of gravel; light brown                                                                                                                                                                                                                                                                                                                                                                                     | 0.7            | 1.0        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' gravel, with fines content increasing with depth<br>Gravel: fine to coarse with some cobbles dominantly subrounded,<br>platy to tabular brown to grey shelly limestone with some<br>subangular brownish black ironstone, flint and well rounded<br>quartz, trace of sandstone quartzite and shell fragments<br>Sand: medium and coarse with a trace of fine, limestone, quartz,<br>haematite, and flint; yellowish brown | 4.8            | 5.8        |
| Gault                                     | Clay, uniform texture, stiff, brownish black at surface becoming black                                                                                                                                                                                                                                                                                                                                                            | 0.5+           | 6.3        |

**GRADING**

| Mean for deposit<br>percentages |           |        |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------|--------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand      |        | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| -1/16                           | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 16                              | 2         | 22     | 18     | 31                         | 11  | 1.0-2.0                     | 9    | 44     | 47 |
|                                 |           |        |        |                            |     | 2.0-3.0                     | 9    | 48     | 43 |
| 16                              | 42        |        |        | 42                         |     | 3.0-4.0*                    | 14   | 38     | 48 |
|                                 |           |        |        |                            |     | 4.0-5.0*                    | 22   | 34     | 44 |
|                                 |           |        |        |                            |     | 5.0-5.8*                    | 26   | 48     | 26 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 1.0-2.0                    | 8                                         | 10                      | 79                     | 3         | 0                     |
| 2.0-3.0                    | 5                                         | 2                       | 82                     | 8         | 3                     |
| 3.0-4.0                    | 3                                         | 4                       | 80                     | 13        | 0                     |
| 4.0-5.0                    | 2                                         | 2                       | 84                     | 9         | 3                     |
| 5.0-5.8                    | 7                                         | 7                       | 80                     | 6         | 0                     |
| Mean                       | 5                                         | 5                       | 81                     | 8         | 1                     |

Surface level (+51.5 m) +169 ft  
 Water struck at (+50.4 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.4 m (1.5 ft)  
 Mineral 3.3 m (11.0 ft)  
 Bedrock 1.2 m+ (4.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, silty and clayey with occasional pebbles; dark brown becoming light brown                                                                                                                                                                                                                                                                                            | 0.4            | 0.4        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' sandy gravel, with gravel content increasing with depth<br>Gravel: fine with coarse dominantly subrounded platy and tabular brown to buff limestone with some well rounded reddish brown quartzite, and yellowish white quartz, subangular to subrounded flint, and reddish brown ironstone<br>Sand: medium with coarse and some fine limestone and quartz; brown | 3.3            | 3.7        |
| Gault                                     | Clay, silty becoming firm, with occasional limestone concretions and ammonite fragments; dark grey                                                                                                                                                                                                                                                                         | 1.2+           | 4.9        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|------------------------------------|------|--------|----|
| Fines                                  | Sand                             |                    | Gravel |                            |     | Fines                              | Sand | Gravel |    |
| - $\frac{1}{16}$                       | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                                    |      |        |    |
| 12                                     | 5                                | 32                 | 18     | 28                         | 5   | 0.4-1.5*                           | 17   | 68     | 15 |
|                                        |                                  |                    |        |                            |     | 1.5-2.5*                           | 7    | 65     | 28 |
| 12                                     | 55                               |                    |        | 33                         |     | 2.5-3.7*                           | 7    | 53     | 40 |

**COMPOSITION**

| Depth below<br>surface (m) | <i>Percentage by weight in +4-16 mm fraction</i> |                         |                        |           |
|----------------------------|--------------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                            | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 0.4-1.5                    | 7                                                | 6                       | 79                     | 8         |
| 1.5-2.5                    | 4                                                | 1                       | 86                     | 9         |
| 2.5-3.7                    | 2                                                | 2                       | 83                     | 13        |
| Mean                       | 4                                                | 3                       | 82                     | 11        |

Surface level (+47.0 m) +154 ft  
 Water struck at (+46.3 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.7 m (2.5 ft)  
 Mineral 2.7 m (9.0 ft)  
 Bedrock 0.3 m+ (1.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, clayey and silty; dark brown                                                                                                                                                                                                                                                                                                                                                                                                         | 0.2            | 0.2        |
|                                           | Clay, soft, silty; yellowish brown                                                                                                                                                                                                                                                                                                                                                                                                         | 0.5            | 0.7        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' sandy gravel, with a high fines content in upper 1 m<br>Gravel: fine with some coarse, dominantly subrounded to rounded buff to brown tabular limestone, some angular brownish black ironstone and subangular to subrounded flint, rare well rounded reddish brown quartzite and yellowish white quartz, trace of belemnite fragments<br>Sand: medium with coarse and trace of fine, dominantly limestone and quartz; light brown | 2.7            | 3.4        |
| Gault                                     | Clay, uniformly stiff with occasional limestone concretions; greyish blue                                                                                                                                                                                                                                                                                                                                                                  | 0.3+           | 3.7        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 13                           | 3                           | 30               | 21     | 29                      | 4     | 0.7-1.7*                 | 28   | 53     | 19 |
| 13                           | 54                          |                  |        | 33                      |       | 1.7-2.7*                 | 3    | 49     | 48 |
|                              |                             |                  |        |                         |       | 2.7-3.4*                 | 4    | 65     | 31 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.7-1.7                 | 18                                        | 4                    | 55        | 11    | 12        |
| 1.7-2.7                 | 1                                         | 1                    | 84        | 1     | 13        |
| 2.7-3.4                 | 2                                         | 4                    | 80        | 1     | 13        |
| Mean                    | 7                                         | 3                    | 73        | 4     | 13        |



Surface level (+47.5 m) +156 ft  
 Water struck at (+43.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 3.7 m (12.0 ft)  
 Mineral 4.1 m (13.5 ft)  
 Bedrock 0.6 m+ (2.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.2            | 0.2        |
|                                           | Silty clay, dark brown to grey brown                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.4            | 0.6        |
|                                           | Clay, soft with small white gastropod shells in parts; mottled greyish brown                                                                                                                                                                                                                                                                                                                                                                                                             | 0.8            | 1.4        |
|                                           | Sand, soft, very silty and partly clayey with scattered green marl pellets and black carbonaceous patches; pale greenish brown                                                                                                                                                                                                                                                                                                                                                           | 2.3            | 3.7        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' sandy gravel, sandy and silty in upper 1.0 m, with fines content decreasing with depth<br>Gravel: fine to coarse, mainly tabular platy, subrounded and rounded limestone with subangular flint, rounded reddish brown quartzite and rounded whitish brown quartz, occasional belemnites, and other worn shell fragments, trace of sandstone and green silty marl pellets<br>Sand: medium and coarse with some fine, quartz and limestone with minor amounts of ironstone grains | 4.1            | 7.8        |
| Upper Greensand                           | 'Clayey' silt, greenish grey                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.6+           | 8.4        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 10                           | 7                           | 25               | 20     | 32                      | 6     | 3.7-4.7*                 | 18   | 62     | 20 |
|                              |                             |                  |        |                         |       | 4.7-5.7*                 | 13   | 31     | 56 |
| 10                           | 52                          |                  |        | 38                      |       | 5.7-6.7*                 | 7    | 61     | 32 |
|                              |                             |                  |        |                         |       | 6.7-7.8*                 | 4    | 52     | 44 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 3.7-4.7                 | 18                                        | 0                    | 71        | 1     | 10        |
| 4.7-5.7                 | 11                                        | 6                    | 72        | 0     | 11        |
| 5.7-6.7                 | 7                                         | 12                   | 68        | 7     | 6         |
| 6.7-7.8                 | 4                                         | 11                   | 69        | 7     | 9         |
| Mean                    | 10                                        | 7                    | 70        | 4     | 9         |

Surface level (+45.4 m) +149 ft  
 Water struck at (+43.2 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 2.2 m (7.0 ft)  
 Mineral 1.6 m (5.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

## LOG

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                      | Thickness<br>m | Depth<br>m |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                               | 0.2            | 0.2        |
|                                           | Clay, silty, with pebbles increasing with depth; dark brown                                                                                                                                                                                                                                                                                                                    | 0.9            | 1.1        |
|                                           | Clay, silty and soft with occasional pebbles; mottled brown to reddish brown and light grey                                                                                                                                                                                                                                                                                    | 1.1            | 2.2        |
| River Terrace Deposits<br>(First Terrace) | Sandy gravel<br>Gravel: fine to coarse and occasional cobble dominantly subrounded, tabular, platy brown and buff limestone with some subangular to subrounded flint, well rounded whitish yellow quartz and brown quartzite, and brown ironstone trace of iron cemented sandstone<br>Sand: medium and coarse with a trace of fine, mainly limestone with quartz and ironstone | 1.6            | 3.8        |
| Gault                                     | Clay, silty and stiff, greenish grey becoming grey blue                                                                                                                                                                                                                                                                                                                        | 0.5+           | 4.3        |

## GRADING

| Mean for deposit<br>percentages |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------------------------|------------------|--------|----------------------------|-------|-----------------------------|------|--------|----|
| Fines                           | Sand                        |                  | Gravel |                            |       | Fines                       | Sand | Gravel |    |
| $-\frac{1}{16}$                 | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                             |      |        |    |
| 7                               | 3                           | 22               | 28     | 34                         | 6     | 2.2-3.2*                    | 7    | 43     | 50 |
| 7                               | 53                          |                  | 40     |                            |       | 3.2-3.8*                    | 5    | 52     | 43 |

## COMPOSITION

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 2.2-3.2                    | 5                                         | 8                       | 77                     | 10        |
| 3.2-3.8                    | 7                                         | 3                       | 85                     | 5         |
| Mean                       | 6                                         | 6                       | 81                     | 7         |

Surface level (+50.6 m) +166 ft  
 Water struck at (+47.1 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 8.1 m (26.5 ft)  
 Mineral 3.8 m (12.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification              | Lithology                                                                                                                                                                                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Head                                   | Soil, with occasional fine well rounded quartz and subrounded flint pebbles                                                                                                                                                                                                                                                                                                        | 0.5            | 0.5        |
|                                        | Clay, silty and sandy with pebbles of subangular flint, subangular to subrounded greyish green siltstone and subrounded chalk pellets, slightly glauconitic, light brown                                                                                                                                                                                                           | 0.6            | 1.1        |
|                                        | Siltstone (Marl) and sand<br>Sandstone: fine and medium with some coarse, tabular, uniformly fine gravel glauconitic; greenish grey: some tabular light grey chalk (8 percent)<br>Sand: medium with fine and coarse, mainly subrounded quartz with variable amounts of glauconite (very glauconitic between 3.0 and 3.4 m) and silt (very silty between 4.0 and 7.5 m) light brown | 7.0            | 8.1        |
| River Terrace Deposits (First Terrace) | Sandy gravel<br>Gravel: fine, with coarse dominantly subrounded to rounded brown oolitic limestone with subangular to subrounded flint, some brown to brownish black ironstone, occasional rounded reddish brown quartzite and a trace of greyish green calcareous siltstone (marl)<br>Sand: coarse and medium with fine, quartz and limestone with glauconite; brown              | 3.8            | 11.9       |
| Upper Greensand                        | Silt, clayey; dark bluish-grey                                                                                                                                                                                                                                                                                                                                                     | 0.5+           | 12.4       |

**GRADING**

| Mean for deposit percentages |                             |                  |        |         |       | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|-----------------------------|------------------|--------|---------|-------|-------------------------|--------------------------|------|--------|
| Fines                        | Sand                        |                  |        | Gravel  |       |                         | Fines                    | Sand | Gravel |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$ |                         |                          |      |        |
| 4                            | 4                           | 28               | 31     | 26      | 7     | 8.1-9.1*                | 5                        | 60   | 35     |
|                              |                             |                  |        |         |       | 9.1-10.1*               | 1                        | 63   | 36     |
| 4                            | 63                          |                  |        | 33      |       | 10.1-11.1*              | 5                        | 63   | 32     |
|                              |                             |                  |        |         |       | 11.1-11.9*              | 7                        | 66   | 27     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 8.1-9.1                 | 10                                        | 1                    | 84                  | 5         |
| 9.1-10.1                | 10                                        | 1                    | 82                  | 7         |
| 10.1-11.1               | 17                                        | 1                    | 72                  | 10        |
| 11.1-11.9               | 24                                        | 1                    | 63                  | 12        |
| Mean                    | 15                                        | 1                    | 75                  | 9         |

Surface level (+47.5 m) +156 ft  
 Water struck at (+44.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 1.7 m (5.5 ft)  
 Mineral 1.9 m (6.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification              | Lithology                                                                                                                                                                                                                                                                                                                                               | Thickness<br>m | Depth<br>m |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                        | Soil, dark brown                                                                                                                                                                                                                                                                                                                                        | 0.2            | 0.2        |
| Alluvium                               | Clay, silty and stiff becoming gravelly in lower 0.2 m; light brown to reddish brown and occasionally streaked                                                                                                                                                                                                                                          | 1.5            | 1.7        |
| River Terrace Deposits (First Terrace) | 'Clayey, sandy gravel with occasional light greyish green silty lenses<br>Gravel: fine with coarse rounded to subrounded limestone with brownish black ironstone and some subangular to subrounded flint and well rounded brown quartzite and whitish brown quartz<br>Sand: medium with coarse and some fine mainly quartz with limestone and ironstone | 1.9            | 3.6        |
| Gault                                  | Clay, bluish grey                                                                                                                                                                                                                                                                                                                                       | 0.4+           | 4.0        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 11                           | 7                           | 39               | 16     | 22                      | 5     | 1.7-2.7                  | 12   | 53     | 35 |
| 11                           | 62                          |                  |        | 27                      |       | 2.7-3.6*                 | 9    | 73     | 18 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 1.7-2.7                 | 14                                        | 14                   | 45                  | 27        |
| 2.7-3.6                 | 6                                         | 6                    | 80                  | 8         |
| Mean                    | 10                                        | 10                   | 63                  | 17        |

Surface level (+47.2 m) +155 ft  
 Water struck at (+44.1 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 1.4 m (4.5 ft)  
 Mineral 5.2 m (17.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

LOG

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | Clay, sandy in parts with occasional pebbles of limestone quartzite and flint;<br>orange brown                                                                                                                                                                                                                                                                                                                                     | 1.2            | 1.4        |
|                                           | Gravel, with sand component greater than 50 percent in upper 2.0 m<br>Gravel: fine, to coarse with occasional cobbles dominantly subrounded tabular buff to brown limestone with subrounded to subangular flint and well rounded reddish brown quartzite and quartz, and brownish black ironstone, rare worn <i>Gryphaea</i> shell fragments<br>Sand: medium with coarse and trace of fine, limestone, quartz and ironstone; brown | 5.2            | 6.6        |
| Gault                                     | Clay, stiff, silty; greyish blue                                                                                                                                                                                                                                                                                                                                                                                                   | 0.2+           | 6.8        |

GRADING

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 6                            | 2                           | 27               | 16     | 35                      | 14    | 1.4-2.4                  | 15   | 56     | 29 |
| 6                            | 45                          |                  |        | 49                      |       | 2.4-3.4*                 | 3    | 52     | 45 |
|                              |                             |                  |        |                         |       | 3.4-4.4*                 | 1    | 47     | 52 |
|                              |                             |                  |        |                         |       | 4.4-5.4*                 | 2    | 35     | 63 |
|                              |                             |                  |        |                         |       | 5.4-6.6*                 | 7    | 39     | 54 |

COMPOSITION

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 1.4-2.4                 | 8                                         | 8                    | 77                  | 7         |
| 2.4-3.4                 | 7                                         | 8                    | 75                  | 10        |
| 3.4-4.4                 | 6                                         | 7                    | 80                  | 7         |
| 4.4-5.4                 | 5                                         | 5                    | 80                  | 10        |
| 5.4-6.6                 | 6                                         | 7                    | 75                  | 12        |
| Mean                    | 6                                         | 7                    | 77                  | 10        |

Surface level (+47.5 m) +156 ft  
 Water struck at (+45.2 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 2.3 m (7.5 ft)  
 Mineral 5.4 m (17.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification              | Lithology                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                               | Soil, dark brown                                                                                                                                                                                                                                                                                                  | 0.2            | 0.2        |
|                                        | Clay, very silty, soft with occasional white fragile gastropods and wood fragments, some silty marl pellets; bluish grey to light reddish brown                                                                                                                                                                   | 2.1            | 2.3        |
| River Terrace Deposits (First Terrace) | Sandy gravel<br>Gravel: fine with coarse dominantly rounded to subrounded limestone with subangular flint, some brownish black ironstone, occasional well rounded reddish brown quartzite and white quartz, trace of friable mudstone<br>Sand: medium and coarse with some fine quartz, limestone and flint; grey | 5.4            | 7.7        |
| Upper Greensand                        | Silt, clayey; greyish blue                                                                                                                                                                                                                                                                                        | 0.5+           | 8.2        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 6                            | 5                                | 23                 | 27     | 30                      | 9   | 2.3-3.3*                 | 10   | 58     | 32 |
|                              |                                  |                    |        |                         |     | 3.3-4.3*                 | 11   | 42     | 47 |
| 6                            | 55                               |                    |        | 39                      |     | 4.3-5.3*                 | 4    | 74     | 22 |
|                              |                                  |                    |        |                         |     | 5.3-6.3*                 | 2    | 55     | 43 |
|                              |                                  |                    |        |                         |     | 6.3-7.7*                 | 4    | 45     | 51 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 2.3-3.3                 | 16                                        | 1                    | 77                  | 6         |
| 3.3-4.3                 | 18                                        | 2                    | 73                  | 7         |
| 4.3-5.3                 | 19                                        | 3                    | 69                  | 9         |
| 5.3-6.3                 | 17                                        | 2                    | 69                  | 12        |
| 6.3-7.7                 | 16                                        | 2                    | 70                  | 12        |
| Mean                    | 17                                        | 2                    | 72                  | 9         |

Surface level (+45.1 m) +148 ft  
 Water struck at (+44.2 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.9 m (3.0 ft)  
 Mineral 5.2 m (17.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.1            | 0.1        |
| Alluvium                                  | Clay, silty with white fragile shells; greyish blue                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8            | 0.9        |
| River Terrace Deposits<br>(First Terrace) | Gravel, with sandy, shelly, bluish grey silt lens between 2.1 m and 2.7 m and a pebbly clay horizon between 5.6 m and 5.7 m<br>Gravel: fine with coarse dominantly subrounded to rounded tabular limestone with rounded brown ironstone, well rounded reddish brown quartzite, well rounded yellowish white quartz and subangular to subrounded flint, occasional worn <i>Gryphaea</i> shell fragments<br>Sand: medium and coarse with trace of fine limestone and quartz; brown | 5.2            | 6.1        |
| Gault                                     | Clay, soft and silty becoming firm; greyish blue                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.4+           | 6.5        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |
| 7                            | 1                           | 18               | 27     | 42                      | 5     | 5                        | 73   | 22     |
| 7                            | 46                          |                  |        | 47                      |       | 3                        | 40   | 57     |
|                              |                             |                  |        |                         |       | 7                        | 39   | 54     |
|                              |                             |                  |        |                         |       | 10                       | 38   | 52     |
|                              |                             |                  |        |                         |       | 2                        | 27   | 71     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.9-2.1                 | 11                                        | 7                    | 72                  | 10        |
| 2.7-3.7                 | 7                                         | 4                    | 80                  | 9         |
| 3.7-4.7                 | 6                                         | 3                    | 78                  | 13        |
| 4.7-5.6                 | 6                                         | 3                    | 82                  | 9         |
| 5.7-6.1                 | 5                                         | 3                    | 74                  | 18        |
| Mean                    | 7                                         | 4                    | 77                  | 12        |

Surface level (+56.1 m) +184 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1971

Overburden 1.6 m (5.0 ft)  
 Mineral 1.4 m (4.5 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, dark brown                                                                                                                                                                                                                                                                                                                                         | 0.3            | 0.3        |
| River Terrace Deposits<br>(Second Terrace) | Clay, with occasional pebbles of quartzite, flint, limestone, and chalk, gravel content increases towards the base, very sandy in upper 1.2 m; light brown<br>‘Clayey’ pebbly sand                                                                                                                                                                       | 1.3            | 1.6        |
|                                            | Gravel: fine with a trace of coarse, rare cobbles rounded to subrounded limestone and white chalk pellets, some subangular flint, subangular brown ironstone, with well rounded white quartz and reddish brown quartzite<br>Sand: dominantly medium with coarse and some fine quartz, limestone and flint, some black glauconite grains; yellowish brown | 1.4            | 3.0        |
| Upper Greensand                            | Silt and marl, soft and light grey, becoming hard and light grey with localised reddish brown staining                                                                                                                                                                                                                                                   | 0.9+           | 3.9        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 14                           | 8                           | 46               | 17     | 14                      | 1     | 1.6-1.8                  | 19   | 61     | 20 |
|                              |                             |                  |        |                         |       | 1.8-2.6                  | 13   | 75     | 12 |
| 14                           | 71                          |                  |        | 15                      |       | 2.6-3.0                  | 14   | 69     | 17 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 1.6-1.8                 | 19                                        | 7                    | 58        | 1     | 15        |
| 1.8-2.6                 | 21                                        | 6                    | 57        | 9     | 7         |
| 2.6-3.0                 | 11                                        | 2                    | 61        | 10    | 16        |
| Mean                    | 17                                        | 5                    | 59        | 7     | 12        |



Surface level (+46.9 m) +154 ft  
 Water not struck  
 Gravel pit exposure and hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.7 m (2.5 ft)  
 Mineral 2.5 m (8.0 ft)  
 Bedrock 1.0 m+ (3.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Thickness<br>m | Depth<br>m |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil on sandy clay, with occasional fine to medium limestone; light brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.7            | 0.7        |
| River Terrace Deposits<br>(First Terrace) | Sandy gravel; occurring as a current bedded deposit displaying alternating horizons of predominantly gravel or sand interspersed with occasional thin clay seams 0.5 cm thick<br><br>Gravel: dominantly fine with occasional coarse and cobbles (cobbles particularly of well rounded quartz and quartzite, are found at the base of the deposit); predominantly buff to light brown and grey, oval, tabular to platy oolitic limestone with well rounded reddish brown quartzite, well rounded white and cream quartz, angular to subrounded brown and grey flint, subrounded brownish black ironstone, occasional shell fragments and calcite, rare igneous pebbles and siltstone<br><br>Sand: medium and coarse with fine essentially limestone, quartz and ironstone, light brown | 2.5            | 3.2        |
| Gault                                     | Clay, capping of a weathered silty brown clay becoming firm, stiff and greyish black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.0+           | 4.2        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 6                            | 4                           | 21               | 23     | 39                      | 7     | 0.7-1.7                  | 12   | 51     | 37 |
| 6                            | 48                          |                  |        | 46                      |       | 1.7-2.7                  | 2    | 42     | 56 |
|                              |                             |                  |        |                         |       | 2.7-3.2                  | 2    | 53     | 45 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.7-1.7                 | 1                                         | 0                    | 92        | 1     | 6         |                    |
| 1.7-2.7                 | 2                                         | 3                    | 87        | tr    | 8         |                    |
| 2.7-3.2                 | 1                                         | 11                   | 80        | tr    | 8         |                    |
| Mean                    | 2                                         | 5                    | 86        | tr    | 7         |                    |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
| 0.7-1.7                 | no coarse fraction                        |                      |           |       |           |                    |
| 1.7-2.7                 | 5                                         | 54                   | 37        | 1     | 1         | 2                  |
| 2.7-3.2                 | no coarse fraction                        |                      |           |       |           |                    |
| Mean                    | 5                                         | 54                   | 37        | 1     | 1         | 2                  |

Surface level (+91.4 m) +300 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 2.5 m+ (6.5 ft+)

**LOG**

| Geological classification         | Lithology                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                   | Soil, sandy and clayey with occasional fine to coarse pebbles of well rounded quartz, quartzite and angular white or grey flint, greyish brown to black                                                                                                                                     | 0.2            | 0.2        |
| Sand and Gravel of Unknown Origin | 'Clayey' gravel<br>Gravel: fine to coarse with occasional cobbles, well rounded white and cream white quartz, angular to subangular white, grey and white coated flint with some well-rounded brown quartzite and brownish black ironstone<br>Sand: medium and fine with coarse, dark brown | 2.0+           | 2.2        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 15                           | 13                          | 10               | 6      | 29                      | 27    | 0.2-2.2                  | 15   | 29     | 56 |
| 15                           | 29                          |                  | 56     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |        |           |                     |           |
|-------------------------|-------------------------------------------|--------|-----------|---------------------|-----------|
|                         | Flint                                     | Quartz | Quartzite | Limestone and Chalk | Ironstone |
| 0.2-2.2                 | 52                                        | 33     | 10        | 0                   | 5         |
| 0.2-2.2                 | 50                                        | 50     |           | 0                   | 0         |

Surface level (+50.0 m) +164 ft  
 Water struck at (+48.0 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.9 m (3.0 ft)  
 Mineral 2.8 m (9.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                              | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, brown                                                                                                                                                                                                                                                                                                                            | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | Clay, with subangular to subrounded flint pebbles, sandy in parts; reddish brown                                                                                                                                                                                                                                                       | 0.7            | 0.9        |
|                                           | Sandy gravel                                                                                                                                                                                                                                                                                                                           | 2.8            | 3.7        |
|                                           | Gravel: fine to coarse with occasional cobbles mainly subrounded flint with brownish black ironstone, subrounded buff oolitic limestone, minor amounts of well rounded reddish brown quartzite and yellowish white quartz<br>Sand: medium to coarse with some fine, dominantly quartz with some ironstone and limestone; greyish brown |                |            |
| Gault                                     | Clay, stiff, slightly silty; dark greyish blue                                                                                                                                                                                                                                                                                         | 0.9+           | 4.6        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 6                            | 5                           | 24               | 18     | 31                      | 16    | 0.9-1.9                  | 10   | 47     | 43 |
|                              |                             |                  |        |                         |       | 1.9-2.9*                 | 5    | 51     | 44 |
| 6                            | 47                          |                  |        | 47                      |       | 2.9-3.7*                 | 3    | 42     | 55 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.9-1.9                 | no sample                                 |                      |           |       |           |                    |
| 1.9-2.9                 | 57                                        | 4                    | 10        | 7     | 18        | 4                  |
| 2.9-3.7                 | 48                                        | 6                    | 15        | 4     | 24        | 3                  |
| Mean                    | 51                                        | 5                    | 13        | 5     | 22        | 4                  |

Surface level (+49.7 m) +163 ft  
 Water struck at (+46.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 2.4 m (8.0 ft)  
 Mineral 3.0 m (10.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, dark brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.1            | 0.1        |
| River Terrace Deposits<br>(First Terrace) | Clay, slightly sandy with fragile gastropod shells, carbonaceous in parts, streaked light grey, spotted reddish brown and mottled greenish blue in lower 1.0 m; brown<br>Gravel, 'very clayey' in upper 0.5 m<br>Gravel: fine to coarse with occasional cobbles dominantly subangular to subrounded flint with subrounded brownish black ironstone, subrounded to rounded brown and buff limestone and chalk, some well rounded red quartzite, and traces of well rounded quartz and belemnite fragments<br>Sand: coarse with medium and a trace of fine quartz, limestone, and ironstone; greyish brown | 2.3<br>3.0     | 2.4<br>5.4 |
| Gault                                     | Clay, greyish blue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.5+           | 5.9        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 8                            | 2                           | 14               | 23     | 33                      | 20    | 2.4-3.9*                 | 16   | 20     | 64 |
| 8                            | 39                          |                  |        | 53                      |       | 3.9-4.9*                 | 3    | 50     | 47 |
| 8                            | 39                          |                  |        | 53                      |       | 4.9-5.4*                 | 5    | 59     | 36 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 2.4-3.9                 | 66                                        | 5                    | 3         | 6     | 17        | 3                  |
| 3.9-4.9                 | 66                                        | 5                    | 6         | 4     | 16        | 3                  |
| 4.9-5.4                 | 52                                        | 4                    | 5         | 10    | 25        | 4                  |
| Mean                    | 62                                        | 5                    | 5         | 6     | 19        | 3                  |

Surface level (+64.6 m) +212 ft  
 Water struck at (+61.6 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 1.2 m (4.0 ft)  
 Mineral 3.7 m (12.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                      | Thickness<br>m | Depth<br>m |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, sandy; dark brown                                                                                                                                                                                                                                                                                        | 0.3            | 0.3        |
|                                            | Clay, sandy, with occasional large flints, localised carbonaceous streaks;<br>orange brown                                                                                                                                                                                                                     | 0.8            | 1.1        |
|                                            | Clay, with sand and common flint gravel; orange brown                                                                                                                                                                                                                                                          | 0.1            | 1.2        |
|                                            | 'Very clayey' sandy gravel, with the highest fines content between 1.2 m and<br>3.2 m                                                                                                                                                                                                                          | 3.7            | 4.9        |
|                                            | Gravel: fine with coarse dominantly angular to subrounded flint with<br>buff subrounded to rounded limestone and chalk, with traces of<br>well rounded reddish brown quartzite and light green marly<br>sandstone<br>Sand: dominantly medium with some coarse and fine quartz with<br>ironstone; greyish brown |                |            |
| Gault                                      | Clay, dark bluish grey                                                                                                                                                                                                                                                                                         | 0.5+           | 5.4        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|-----------------------------|------------------|--------|----------------------------|-------|------------------------------------|------|--------|----|
| Fines                                  | Sand                        |                  | Gravel |                            |       | Fines                              | Sand | Gravel |    |
| $-\frac{1}{16}$                        | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                                    |      |        |    |
| 20                                     | 6                           | 38               | 9      | 18                         | 9     | 1.2-2.2                            | 24   | 45     | 31 |
| 20                                     | 53                          |                  |        | 27                         |       | 2.2-3.2*                           | 27   | 46     | 27 |
|                                        |                             |                  |        |                            |       | 3.2-4.2*                           | 13   | 57     | 30 |
|                                        |                             |                  |        |                            |       | 4.2-4.9*                           | 12   | 69     | 19 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 1.2-2.2                    | 71                                        | 0                       | 5         | 23    | 1         |
| 2.2-3.2                    | 74                                        | 0                       | 2         | 24    | 0         |
| 3.2-4.2                    | 67                                        | 1                       | 6         | 24    | 2         |
| 4.2-4.9                    | 61                                        | 2                       | 9         | 24    | 4         |
| Mean                       | 69                                        | 1                       | 5         | 24    | 1         |

**SU 69 NW 4 62929788 Chalgrove Airfield, West Chalgrove**

**Block E**

Surface level (+68.6 m) +225 ft  
 Water struck at (+66.5 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 1.3 m (4.5 ft)  
 Mineral 1.3 m (4.5 ft)  
 Bedrock 1.1 m+ (3.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, brown                                                                                                                                                                                                                                                                                                                                                                                   | 0.1            | 0.1        |
| River Terrace Deposits<br>(Second Terrace) | Clay, sandy, particularly in upper 0.6 m, with common fine to coarse subangular to rounded flint pebbles; light brown becoming orange brown<br>‘Clayey’ pebbly sand<br>Gravel: fine to coarse dominantly subangular to rounded flint with traces of quartz<br>Sand: mainly medium with fine and a trace of coarse quartz and flint, slightly glauconitic; orange brown becoming greyish brown | 1.2<br>1.3     | 1.3<br>2.6 |
| Gault                                      | Silt and clay; dark greyish blue                                                                                                                                                                                                                                                                                                                                                              | 1.1+           | 3.7        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 10                           | 28                          | 41               | 3      | 8                       | 10    | 1.3-2.6*                 | 10   | 72     | 18 |
| 10                           | 72                          |                  | 18     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.3-2.6                 | 98                                        | 0                    | 0                   | 0         | 2                  |

**SU 69 NW 5 61949572 Ewe Farm, Newington**

Surface level (+80.8 m) +265 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Waste 2.4 m (8.0 ft)  
 Bedrock 2.9 m+ (9.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                               | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, brown                                                                                                                                             | 0.2            | 0.2        |
|                           | Clay, sandy in upper 0.6 m, becoming mottled and more silty with depth, occasional subangular to subrounded flint pebbles; brown becoming greenish grey | 2.2            | 2.4        |
| Upper Greensand           | Marl, clayey in upper 2.0 m becoming silty with depth, blocky fracture; light greenish grey                                                             | 2.9+           | 5.3        |

Surface level (+71.3 m) +234 ft  
 Water struck at (+68.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 1.0 m (3.5 ft)  
 Mineral 5.6 m (18.5 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, slightly sandy with occasional subangular to subrounded flint                                                                                                                                                                                                                                                                                                      | 0.1            | 0.1        |
|                                            | Clay, very sandy with flint pebbles and ironstone concentrations; orange brown                                                                                                                                                                                                                                                                                           | 0.9            | 1.0        |
|                                            | 'Clayey' sandy gravel<br>Gravel: fine to coarse with occasional cobbles dominantly subangular, to subrounded flint with subrounded to rounded chalk and some limestone, trace of brownish black ironstone<br>Sand: dominantly medium with some coarse and fine, quartz and ironstone with some chalk and traces of glauconitic grains; orange brown becoming light brown | 5.6            | 6.6        |
| Gault                                      | Clay, brownish grey                                                                                                                                                                                                                                                                                                                                                      | 0.4+           | 7.0        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 12                           | 6                                | 39                 | 5      | 16                      | 22  | 1.0-2.1                  | 13   | 82     | 5  |
| 12                           | 50                               |                    | 5      | 38                      |     | 2.1-3.1*                 | 11   | 73     | 16 |
|                              |                                  |                    |        |                         |     | 3.1-4.1*                 | 21   | 52     | 27 |
|                              |                                  |                    |        |                         |     | 4.1-5.1*                 | 2    | 15     | 83 |
|                              |                                  |                    |        |                         |     | 5.1-6.1*                 | 18   | 43     | 39 |
|                              |                                  |                    |        |                         |     | 6.1-6.6*                 | 2    | 15     | 83 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 1.0-2.1                 | 100                                       | 0                    | 0         | 0     | 0         | 0                  |
| 2.1-3.1                 | 90                                        | 0                    | 0         | 10    | 0         | 0                  |
| 3.1-4.1                 | 51                                        | 0                    | 0         | 49    | 0         | 0                  |
| 4.1-5.1                 | 58                                        | 0                    | 4         | 35    | 3         | 0                  |
| 5.1-6.1                 | 65                                        | 0                    | 6         | 26    | 3         | 0                  |
| 6.1-6.6                 | 68                                        | 0                    | 2         | 27    | 1         | 2                  |
| Mean                    | 65                                        | 0                    | 2         | 30    | 2         | 1                  |

**SU 69 NW 7 6433 9730 Chalgrove Field, Chalgrove**

**Block E**

Surface level (+72.5 m) +238 ft  
 Water struck at (+70.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 0.9 m (3.0 ft)  
 Mineral 4.2 m (14.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, dark brown                                                                                                                                                                                                                                                                                                              | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, very sandy with some fine to coarse subangular to subrounded flint pebbles, silty, becoming streaky in lower part; orange brown                                                                                                                                                                                         | 0.7            | 0.9        |
|                                            | 'Clayey' sandy gravel, with gravel content increasing towards base                                                                                                                                                                                                                                                            | 4.2            | 5.1        |
|                                            | Gravel: fine to coarse with some cobble size dominantly subangular to subrounded flint with chalk pellets, occasional subrounded buff to brown limestone, trace of quartz and light grey glauconitic marl<br>Sand: dominantly medium with some fine and coarse quartz with minor amounts of chalk and glauconite; light brown |                |            |
| Gault                                      | Clay, greyish brown becoming bluish grey                                                                                                                                                                                                                                                                                      | 0.9+           | 6.0        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 10                           | 9                                | 35                 | 5      | 16                      | 25  | 0.9-1.9*                 | 15   | 79     | 6  |
|                              |                                  |                    |        |                         |     | 1.9-2.9*                 | 12   | 55     | 33 |
| 10                           | 49                               |                    |        | 41                      |     | 2.9-3.9*                 | 10   | 31     | 59 |
|                              |                                  |                    |        |                         |     | 3.9-5.1*                 | 4    | 28     | 68 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.9-1.9                 | 87                                        | 0                    | 0         | 13    | 0         |
| 1.9-2.9                 | 49                                        | 1                    | 16        | 33    | 1         |
| 2.9-3.9                 | 48                                        | 1                    | 4         | 45    | 2         |
| 3.9-5.1                 | 41                                        | 1                    | 2         | 55    | 1         |
| Mean                    | 56                                        | 1                    | 5         | 37    | 1         |

**SU 69 NW 8 6463 9512 Whitehouse Farm, Brightwell Baldwin**

**Block F**

Surface level (+94.2 m) +309 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Waste 2.0 m (6.5 ft)  
 Bedrock 1.5 m+ (5.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                            | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, dark brown                                                                                                                     | 0.1            | 0.1        |
| River Terrace Deposits<br>(Fourth Terrace) | Clay, very sandy with occasional flint pebbles; reddish brown                                                                        | 0.5            | 0.6        |
|                                            | Clay, very sandy with fine to coarse subangular to subrounded and angular flint, gravel content increases towards base; orange brown | 1.4            | 2.0        |
| Upper Greensand                            | Silt and marl, clayey in upper 0.5 m, fairly glauconitic and sandy in parts; olive brown to dark green                               | 1.5+           | 3.5        |



Surface level (+58.2 m) +191 ft  
 Water struck at (+56.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1971

Overburden 0.7 m (2.5 ft)  
 Mineral 2.5 m (8.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.3            | 0.3        |
| Alluvium                                  | Clay, very sandy, with silt and occasional flint pebbles; light brown                                                                                                                                                                                                                                                                                                                                                                           | 0.4            | 0.7        |
| River Terrace Deposits<br>(First Terrace) | Gravel<br>Gravel: coarse with fine and occasional cobbles, mainly angular to subangular with some subrounded (25 percent), grey, brown, and white coated flint with rounded white chalk pellets, black phosphatic nodules (derived from the Gault?), ferruginous sandstone (iron pan) traces of well rounded white quartz, siltstone, and shell fragments<br>Sand: medium with coarse and a trace of fine mainly quartz, flint and chalk; brown | 2.5            | 3.2        |
| Gault                                     | Clay, dark grey                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.5+           | 3.7        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 6                            | 3                                | 15                 | 9      | 26                      | 41  | 0.7-1.7*                 | 12   | 30     | 58 |
| 6                            | 27                               |                    |        | 67                      |     | 1.7-2.7*                 | 1    | 13     | 86 |
|                              |                                  |                    |        |                         |     | 2.7-3.2*                 | 5    | 40     | 55 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.7-3.2                 | 71                                        | 0                    | 15                  | 0         | 14                 |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.7-3.2                 | 90                                        | 0                    | 0                   | 0         | 10                 |

Surface level (+64.3 m) +211 ft  
 Water struck at (+63.4 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1971

Overburden 0.6 m (2.0 ft)  
 Mineral 1.4 m (4.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.3            | 0.3        |
| Alluvium                                  | Clay, very silty and sandy with occasional flint pebbles; brownish grey                                                                                                                                                                                                                                                                                                                                                    | 0.3            | 0.6        |
| River Terrace Deposits<br>(First Terrace) | 'Very clayey' gravel<br>Gravel: fine to coarse with some cobbles mainly subangular to subrounded and occasionally well rounded (1-4 percent). Grey, brown and white coated flint with subrounded white chalk pebbles confined to the 'fine size' gravel range, traces of well rounded white quartz, ironstone and siltstone<br>Sand: medium with fine and some coarse mainly quartz and flint; light greyish-brown to buff | 1.4            | 2.0        |
| Gault                                     | Clay, dark grey                                                                                                                                                                                                                                                                                                                                                                                                            | 0.5+           | 2.5        |

**GRADING**

| Mean for deposit<br>percentages |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand                             |                    | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| - $\frac{1}{16}$                | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 21                              | 11                               | 16                 | 7      | 19                         | 26  | 0.6-2.0*                    | 21   | 34     | 45 |
| 21                              | 34                               |                    | 45     |                            |     |                             |      |        |    |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 0.6-2.0                    | 55                                        | 0                       | 44                     | 0         | 1                     |
|                            | Percentage by weight in +16 mm fraction   |                         |                        |           |                       |
| 0.6-2.0                    | 100                                       | 0                       | 0                      | 0         | 0                     |

SU 69 NW 11 6487 9590 Cadwell Farm, Chalgrove

Surface level (+73.2 m) +240 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 December 1974

Waste 1.0 m (3.5 ft)  
 Bedrock 0.3 m+ (1.0 ft+)

**LOG**

| Geological classification | Lithology                                                                                 | Thickness<br>m | Depth<br>m |
|---------------------------|-------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, black                                                                               | 0.3            | 0.3        |
| Alluvium                  | Clay, with occasional gravel and fine sand; brown                                         | 0.7            | 1.0        |
| Upper Greensand           | Sand, fine to medium with occasional chalk, greensand and flint fragments; greenish white | 0.3+           | 1.3        |

Surface level (+60.7 m) +199 ft  
 Water struck at (+56.6 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 4.0 m+ (13.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, sandy, light brown                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | 'Very clayey' pebbly sand<br>Gravel: fine to coarse, angular to subangular brown or white flint, with brownish black ironstone and 'ironpan', well rounded smooth black phosphatic nodules. Portland derived calcareous sandstone and black chert, well rounded white quartz, well rounded brown quartzite and shell fragments<br>Sand: mainly medium with coarse and fine, quartz, ironstone and flint with some limestone and chalk; brown to light brown | 4.0            | 4.2        |

**GRADING**

| Mean for deposit percentages |           |        |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|-----------|--------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand      |        | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 21                           | 15        | 30     | 17     | 15                      | 2   | 0.2-1.4                  | 25   | 55     | 20 |
|                              |           |        |        |                         |     | 1.4-2.4                  | 18   | 70     | 12 |
| 21                           | 62        |        |        | 17                      |     | 2.4-3.4                  | 19   | 62     | 19 |
|                              |           |        |        |                         |     | 3.4-4.2                  | 23   | 64     | 13 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.2-1.4                 | 41                                        | 8                    | 0         | 0     | 37        | 14                 |
| 1.4-2.4                 | 41                                        | 6                    | 5         | 5     | 43        | 0                  |
| 2.4-3.4                 | 45                                        | 11                   | 0         | 13    | 31        | 0                  |
| 3.4-4.2                 | 34                                        | 1                    | 0         | 6     | 33        | 26                 |
| Mean                    | 41                                        | 7                    | 1         | 6     | 36        | 9                  |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
| 0.2-1.4                 | 82                                        | 11                   | 0         | 0     | 0         | 7                  |
| 1.4-2.4                 | 45                                        | 3                    | 0         | 0     | 0         | 52                 |
| 2.4-3.4                 | 71                                        | 23                   | 6         | 0     | 0         | 0                  |
| 3.4-4.2                 | 50                                        | 32                   | 0         | 0     | 0         | 18                 |
| Mean                    | 64                                        | 16                   | 1         | 0     | 0         | 19                 |

Surface level (+56.7 m) +186 ft  
 Water struck at (+55.0 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 1.3 m (4.5 ft)  
 Mineral 1.9 m (6.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, silty and clayey; brownish black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.3            | 0.3        |
|                                           | Clay, soft and very pliable, with occasional fine and medium angular flint, mottled brown and yellowish brown; greyish brown                                                                                                                                                                                                                                                                                                                                                                                                     | 0.7            | 1.0        |
|                                           | Clay, very sandy, silty, occasional subangular fine to medium flint, mottled greyish brown; yellowish brown                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.3            | 1.3        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' sandy gravel<br>Gravel: fine with some coarse and cobbles (mainly flint), subangular to angular brown, grey and white coated flint, well rounded brownish black ironstone, well rounded white quartz, well rounded reddish brown quartzite, cemented calcareous sandy 'ribs' derived from the Portland, smooth rounded black phosphatic black chert derived from the Gault and Portland, occasional friable brown siltstone<br>Sand: medium with fine and occasional coarse, silty in part, mainly flint; greyish brown | 1.9            | 3.2        |
| Kimmeridge Clay                           | Clay, firm, greyish black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.2+           | 3.4        |

**GRADING**

| Mean for deposit<br>percentages |           |        |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------|--------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand      |        | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| -1/16                           | +1/16-1/4 | +1/4-1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 13                              | 18        | 31     | 8      | 18                         | 12  | 1.3-1.8                     | 12   | 57     | 31 |
| 13                              | 57        |        |        | 30                         |     | 1.8-3.2                     | 13   | 57     | 30 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 1.3-1.8                    | 39                                        | 10                      | 18                     | 19        | 14                    |
| 1.8-3.2                    | 39                                        | 6                       | 3                      | 24        | 28                    |
| Mean                       | 39                                        | 7                       | 10                     | 23        | 21                    |
|                            | Percentage by weight in +16 mm fraction   |                         |                        |           |                       |
| 1.3-1.8                    | 91                                        | 3                       | 0                      | 6         | 0                     |
| 1.8-3.2                    | 90                                        | 5                       | 0                      | 2         | 3                     |
| Mean                       | 90                                        | 5                       | 0                      | 3         | 2                     |

Surface level (+65.8 m) +216 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.1 m (0.5 ft)  
 Mineral 1.0 m (3.5 ft)  
 Bedrock 0.7 m+ (2.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, clayey and sandy with occasional quartz, quartzite, flint and ironstone pebbles                                                                                                                                                                                                                                                                                                           | 0.1            | 0.1        |
| River Terrace Deposits<br>(Second Terrace) | 'Very clayey' sandy gravel<br>Gravel: fine to coarse with some cobbles, mainly angular to subrounded brown, grey or occasionally white coated flint, and brownish black ironstone and 'ironpan' with some well rounded black or reddish brown quartzite, trace of chalk and sandstone<br>Sand: medium and fine with occasional coarse, mainly quartz with flint and some chalk; yellowish white | 1.0            | 1.1        |
| Portland Beds                              | Sand, very clayey with some gravel. Gravel component consists of whitish yellow calcareous sandstone 'lumps' containing numerous greenish black glauconite grains; some shell fragments, brown angular flint, well rounded white quartz and ironstone. Sand component composes quartz limestone and glauconite; it is distinctly yellow becoming greenish yellow and olive                      | 0.7+           | 1.8        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 23                           | 21                          | 20               | 8      | 11                      | 17    | 0.1-1.1                  | 23   | 49     | 28 |
| 23                           | 49                          |                  | 28     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.1-1.1                 | 47                                        | 13                   | 2                   | 37        | 1                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.1-1.1                 | 74                                        | 20                   | 0                   | 6         | 0                  |

**Portland Beds**

**GRADING**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |         |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 39                           | 12                          | 15               | 14     | 16      | 4                       | 1.1-1.8                  | 39   | 41     | 20 |
| 39                           | 41                          |                  | 20     |         |                         |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 1.1-1.8                 | 6                                         | 4                    | 82                  | 8         |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 1.1-1.8                 | 45                                        | 2                    | 53                  | 0         |

**SU 69 NW 15 6282 9950 Rofford Lane, Chalgrove**

Surface level (+58.2 m) +191 ft  
 Water struck at (+56.3 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Waste 2.3 m (7.5 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                     | Lithology                                                                                                                                                                                                                                                                                                                                               | Thickness<br>m | Depth<br>m |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                      | Soil, clayey; black                                                                                                                                                                                                                                                                                                                                     | 0.3            | 0.3        |
|                                               | Clay, mottled grey, brown to greyish brown                                                                                                                                                                                                                                                                                                              | 0.6            | 0.9        |
|                                               | Clay, very silty; grey to greyish black                                                                                                                                                                                                                                                                                                                 | 0.9            | 1.8        |
| River Terrace Deposits (?)<br>(First Terrace) | 'Clayey' sandy gravel<br>Gravel: fine to coarse dominantly angular to subangular brown and grey flint with assorted pebbles derived from the Portland (mainly calcareous sandstones and black phosphatic nodules), some well rounded white quartz and brownish black ironstone<br>Sand: medium with fine and some coarse, mainly flint and quartz; grey | 0.5            | 2.3        |
| Kimmeridge Clay                               | Clay; grey to greyish black                                                                                                                                                                                                                                                                                                                             | 0.9+           | 3.2        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 16                           | 20                          | 30               | 8      | 14                      | 12    | 1.8-2.3                  | 16   | 58     | 26 |
| 16                           | 58                          |                  | 26     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.8-2.3                 | 84                                        | 3                    | 0                   | 3         | 10                 |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 1.8-2.3                 | 95                                        | 5                    | 0                   | 0         | 0                  |

**SU 69 NW 16 6332 9935 Whitford Copse, Chalgrove**

Surface level (+59.1 m) +194 ft  
 Water struck at (+57.6 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Waste 2.2 m (7.0 ft)  
 Bedrock 1.7 m+ (5.5 ft+)

**LOG**

| Geological classification | Lithology                                         | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, 'clayey'; black                             | 0.2            | 0.2        |
|                           | Clay, soft, pliable, mottled brown to grey; brown | 1.3            | 1.5        |
|                           | Clay, soft, pliable, bluish grey                  | 0.7            | 2.2        |
| Kimmeridge Clay           | Clay, firm, grey becoming bluish black            | 1.7+           | 3.9        |

SU 69 NW 17 6363 9930 Whitford Copse, Chalgrove

Surface level (+67.9 m) +195 ft  
 Water struck at (+66.1 m)  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Waste 2.5 m (8.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                     | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                      | Soil, 'clayey'; black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.3            | 0.3        |
|                                               | Clay, mildly sandy with rare flint pebbles, mottled brown; grey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.5            | 0.8        |
|                                               | Clay, sandy, pliable, mottled dark brown; brownish black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.5            | 1.3        |
|                                               | Clay, with occasional cobbles of angular flint and well rounded quartz, mottled dark brown; brownish grey                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.4            | 1.7        |
| River Terrace Deposits (?)<br>(First Terrace) | Clay, sandy, with occasional fine to coarse (and rare cobbles) angular flint and well rounded quartz pebbles, mottled brown to reddish brown; bluish grey                                                                                                                                                                                                                                                                                                                                                                                                       | 0.1            | 1.8        |
|                                               | Clayey, sandy gravel<br>Gravel: fine with coarse and some (flint) cobbles, predominantly angular to subangular brown, white or grey flint, with variable amounts of subrounded brownish black ironstone, well rounded black phosphatic nodules derived from the Gault, rounded to subrounded yellowish white calcareous sandstone derived from the Portland, well rounded black and brown quartzite, well rounded white quartz and whitish brown limestone<br>Sand: medium with coarse and fine mainly flint, quartz and limestone, silty in part; greyish blue | 0.7            | 2.5        |
| Kimmeridge Clay                               | Clay, brownish grey becoming black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.2+           | 2.7        |



Surface level (+80.2 m) +263 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.1 m (0.5 ft)  
 Mineral 2.2 m (7.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Thickness<br>m | Depth<br>m |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Made ground, clayey sand with fine to cobble size pebbles                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1            | 0.1        |
| River Terrace Deposits<br>(Third Terrace) | 'Very clayey' pebbly sand<br>Gravel: fine to coarse, with some cobbles between 0.1 to 0.7 m<br>predominantly angular to subangular brown, grey or white coated<br>flint with occasional well rounded reddish brown quartzite, brown<br>ironstone and well rounded white chalk with a trace of siltstone<br>Sand: fine and medium with some coarse, quartz and flint, clayey<br>throughout and faintly mottled greyish-white in parts; brown<br>becoming light brown | 2.2            | 2.3        |
| Upper Greensand                           | Sand, clayey and hard, speckled and streaked in white; light greenish grey                                                                                                                                                                                                                                                                                                                                                                                          | 0.4+           | 2.7        |

**GRADING**

| Mean for deposit percentages |           |        |      |        |     | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|-----------|--------|------|--------|-----|-------------------------|--------------------------|------|--------|
| Fines                        | Sand      |        |      | Gravel |     |                         | Fines                    | Sand | Gravel |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4 | +4-16  | +16 |                         |                          |      |        |
| 22                           | 30        | 27     | 9    | 4      | 8   | 0.1-0.7                 | 31                       | 52   | 17     |
|                              |           |        |      |        |     | 0.7-1.6                 | 13                       | 80   | 7      |
| 22                           | 66        |        |      | 12     |     | 1.6-2.3                 | 25                       | 60   | 15     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.1-0.7                 | 89                                        | 3                    | 0                   | 5         | 3                  |
| 0.7-1.6                 | 93                                        | 2                    | 0                   | 3         | 2                  |
| 1.6-2.3                 | 79                                        | 0                    | 16                  | 5         | 0                  |
| Mean                    | 87                                        | 2                    | 5                   | 4         | 2                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.1-0.7                 | 97                                        | 3                    |                     |           |                    |
| 0.7-1.6                 | 100                                       | 0                    |                     |           |                    |
| 1.6-2.3                 | 100                                       | 0                    |                     |           |                    |
| Mean                    | 99                                        | 1                    |                     |           |                    |

Surface level (+71.9 m) +236 ft  
 Water struck at (+70.6 m)  
 Shell and auger (modified), 8 inch (203 mm) diam.  
 October 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 2.7 m (9.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, with pebbles of flint, quartz and quartzite; dark brown                                                                                                                                                                                                                                                                                                                                                                   | 0.3            | 0.3        |
|                                            | 'Clayey' gravel, becoming very 'clayey' with numerous cobbles in lower 0.3 m<br>Gravel: fine to coarse, with occasional flint cobbles predominantly angular brown, black or white coated flint with some well rounded white chalk and traces of subrounded white quartz, well rounded reddish brown quartzite, ironstone and rare sandstone<br>Sand: medium with fine and some coarse, mainly quartz and flint; yellowish brown | 2.7            | 3.0        |
| Gault                                      | Clay, stiff, greyish black                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5+           | 3.5        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 13                           | 10                               | 15                 | 7      | 21                      | 34  | 0.3-1.3                  | 15   | 38     | 47 |
| 13                           | 32                               |                    |        | 55                      |     | 1.3-2.7*                 | 5    | 29     | 66 |
|                              |                                  |                    |        |                         |     | 2.7-3.0*                 | 43   | 24     | 33 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.3-1.3                 | 80                                        | 1                    | 0         | 17    | 2         |
| 1.3-2.7                 | 70                                        | 1                    | 0         | 25    | 4         |
| 2.7-3.0                 | 65                                        | 1                    | 0         | 31    | 3         |
| Mean                    | 73                                        | 1                    | 0         | 23    | 3         |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |
| 0.3-1.3                 | 99                                        | 0                    | 0         | 1     | 0         |
| 1.3-2.7                 | 99                                        | 1                    | 0         | 0     | 0         |
| 2.7-3.0                 | 100                                       | 0                    | 0         | 0     | 0         |
| Mean                    | 99                                        | 1                    | 0         | 0     | 0         |

Surface level (+59.1 m) +194 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 January 1976

Waste 1.1 m (3.5 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification                     | Lithology                                                                                                                                                                                                                                                                                                            | Thickness<br>m | Depth<br>m |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                      | Soil, clayey; black                                                                                                                                                                                                                                                                                                  | 0.2            | 0.2        |
|                                               | Clay; yellowish brown                                                                                                                                                                                                                                                                                                | 0.2            | 0.4        |
| River Terrace Deposits (?)<br>(First Terrace) | 'Clayey' sandy gravel<br>Gravel: fine with coarse predominantly angular to subangular brown and occasionally white coated flint with some well rounded grey phosphatic nodules and brown ironstone, trace of well rounded quartz<br>Sand: medium and coarse with some fine, mainly flint and quartz; yellowish brown | 0.7            | 1.1        |
| Gault                                         | Clay, stiff; light grey                                                                                                                                                                                                                                                                                              | 0.4+           | 1.5        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 19                           | 12                          | 20               | 22     | 24                      | 3     | 0.4-1.1                  | 19   | 54     | 27 |
| 19                           | 54                          |                  | 27     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.4-1.1                 | 79                                        | 1                    | 0                   | 6         | 14                 |

Surface level (+56.7 m) +186 ft  
 Water struck at (+55.3 m)  
 Hand auger, 6 inch (152 mm) diam.  
 January 1976

Overburden 0.5 m (1.5 ft)  
 Mineral 1.0 m (3.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                              | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, 'clayey' and 'peaty' with occasional coarse flint pebbles; black                                                                                                                                                                                                                                                 | 0.1            | 0.1        |
|                                           | Clay, with occasional flint pebble; black                                                                                                                                                                                                                                                                              | 0.4            | 0.5        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' gravel<br>Gravel: fine to coarse, predominantly brown, white coated and grey angular to subrounded flint with occasional well rounded phosphate nodule, ironstone and 'ironpan' and a trace of well rounded white quartz<br>Sand: coarse, with medium and some fine, mainly quartz and flint; yellowish brown | 1.0            | 1.5        |
| Gault                                     | Clay, stiff, bluish grey                                                                                                                                                                                                                                                                                               | 0.5+           | 2.0        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 16                           | 6                                | 12                 | 19     | 33                      | 14  | 0.5-1.5                  | 16   | 37     | 47 |
| 16                           | 37                               |                    | 47     |                         |     |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.5-1.5                 | 84                                        | 1                    | 0                   | 6         | 9                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.5-1.5                 | 92                                        | 0                    | 0                   | 8         | 0                  |

Surface level (+61.3 m) +201 ft  
 Water struck at (+59.7 m)  
 Hand auger, 6 inch (152 mm) diam. and gravel pit exposure  
 March 1976

Overburden 0.4 m (1.5 ft)  
 Mineral 1.5 m (5.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                              | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, clayey and sandy; brown                                                                                                                                                                                                                                                                                                                          | 0.1            | 0.1        |
|                                            | Clay, sandy with fine to cobbles size pebbles mainly flint; brown                                                                                                                                                                                                                                                                                      | 0.3            | 0.4        |
|                                            | 'Clayey' gravel<br>Gravel: fine to coarse with cobbles predominantly white coated, grey, black angular to subrounded flint with occasional brownish black ironstone and rounded to subrounded white quartz, rare brown quartzite and sandstone<br>Sand: medium with coarse and some fine quartz and flint with some iron oxide staining; reddish brown | 1.5            | 1.9        |
| Gault                                      | Clay; stiff with white calcareous (?) infilling along joint planes; pale grey to grey                                                                                                                                                                                                                                                                  | 0.2+           | 2.1        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 10                           | 9                           | 17               | 12     | 23                      | 29    | 0.4-1.9                  | 10   | 38     | 52 |
| 10                           | 38                          |                  | 52     |                         |       |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 0.4-1.9                 | 85                                        | 4                    | 0                   | 10        | 1                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 0.4-1.9                 | 109                                       | tr                   | 0                   | 0         | 0                  |

**SU 69 NE 2 66969661 North of Pryton Heath, Pryton**

Surface level (+79.2 m) +260 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 December 1974

Waste 2.1 m (7.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                   | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------|----------------|------------|
| Alluvium                  | Soil                                        | 0.3            | 0.3        |
|                           | Clay, with a trace of gravel; greyish brown | 0.6            | 0.9        |
|                           | Clay, with some fine gravel; greyish white  | 1.2            | 2.1        |
| Gault                     | Clay, bluish grey                           | 0.4+           | 2.5        |

**SU 69 NE 3 67329672 South of Clarehill Farm, Pryton**

Surface level (+79.5 m) +261 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 December 1974

Waste 2.2 m (7.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                          | Thickness<br>m | Depth<br>m |
|---------------------------|----------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, with occasional chalk fragments; black                                                       | 0.3            | 0.3        |
|                           | Clay, with occasional fine fragments of limestone and some chalk; greyish brown                    | 0.7            | 1.0        |
|                           | Clay, locally streaked ochre yellow; greyish white                                                 | 0.9            | 1.9        |
|                           | Clay, with some well rounded chalk fragments, and angular flint                                    | 0.3            | 2.2        |
| Gault                     | Clay, with occasional fine angular flint pebbles and chalk fragments in upper horizon; bluish grey | 0.4+           | 2.6        |

**SU 69 NE 4 65169569 North of Brightwell Park, Brightwell Baldwin**

Surface level (+73.8 m) +242 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 December 1974

Waste 1.2 m (4.0 ft)  
 Bedrock 0.6 m+ (2.0 ft+)

**LOG**

| Geological classification | Lithology                                                                                                              | Thickness<br>m | Depth<br>m |
|---------------------------|------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                  | Soil                                                                                                                   | 0.3            | 0.3        |
|                           | Clay, with orange brown mottling; brown                                                                                | 0.2            | 0.5        |
|                           | Clay, with fine angular flint, and some rounded chalk and greensand, locally mottled grey; black becoming orange brown | 0.7            | 1.2        |
| Gault                     | Clay, bluish grey                                                                                                      | 0.6+           | 1.8        |

Surface level (+119.8 m) +393 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 July 1975

Overburden 0.1 m (0.5 ft)  
 Mineral 1.7 m (5.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification          | Lithology                                                                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                    | Soil, sandy with occasional angular brown flint                                                                                                                                                                                                                                                                                                                                                            | 0.1            | 0.1        |
| Wallingford Fan Gravels            | 'Very clayey' sandy gravel<br>Gravel: fine to coarse with occasional cobbles, predominantly angular to subangular grey or white coated flint with some ironstone occurring on the fine size range but only occasionally in the coarse fractions, occasional well rounded white quartz and brownish black quartzite, rare brown siltstone<br>Sand: medium and fine with some coarse mainly flint and quartz | 1.7            | 1.8        |
| Lower Chalk<br>(Glaucconitic Marl) | Sand, clayey with brown iron oxide staining; greyish green                                                                                                                                                                                                                                                                                                                                                 | 0.5+           | 2.3        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 26                           | 15                          | 17               | 9      | 17                      | 16    | 0.1-0.5                  | 27   | 50     | 23 |
| 26                           | 41                          |                  |        | 33                      |       | 0.5-1.8                  | 26   | 38     | 36 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.1-0.5                 | 61                                        | 6                    | 0                   | 33        |
| 0.5-1.8                 | 51                                        | 4                    | 0                   | 45        |
| Mean                    | 56                                        | 5                    | 0                   | 39        |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 0.1-0.5                 | 96                                        | 0                    | 0                   | 4         |
| 0.5-1.8                 | 95                                        | 0                    | 0                   | 5         |
| Mean                    | 95                                        | 0                    | 0                   | 5         |

Surface level (+105.5 m) +346 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 August 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 3.7 m (12.0 ft)  
 Waste 0.8 m (2.5 ft)  
 Bedrock 0.7 m+ (2.5 ft+)

**LOG**

| Geological classification          | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Thickness<br>m | Depth<br>m |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                    | Soil, sandy; brown to grey                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.3            | 0.3        |
| Wallingford Fan Gravels            | 'Very clayey' pebbly sand<br>Gravel: fine with coarse, essentially all angular to subangular brown, grey or white coated flint (of which well rounded brown and grey flint constitutes 4-7 percent); with occasional brownish black ironstone, traces of well rounded white to brown quartz and quartzite, sandstone and chalk<br>Sand: predominantly fine with some medium and a trace of coarse, well graded flint, quartz and chalk; greyish brown becoming brownish grey | 3.7            | 4.0        |
|                                    | Clay, very sandy with occasional medium flint and a trace of quartzite, gets chalky with depth; greyish white                                                                                                                                                                                                                                                                                                                                                                | 0.8            | 4.8        |
| Lower Chalk<br>(Glaucconitic Marl) | Chalky clay with occasional/rare fine white angular flint greyish white becoming white                                                                                                                                                                                                                                                                                                                                                                                       | 0.7+           | 5.5        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|-----------------------------|------------------|--------|----------------------------|-------|------------------------------------|------|--------|----|
| Fines                                  | Sand                        |                  | Gravel |                            |       | Fines                              | Sand | Gravel |    |
| $-\frac{1}{16}$                        | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                                    |      |        |    |
| 25                                     | 41                          | 27               | 1      | 2                          | 4     | 0.3-0.8                            | 26   | 67     | 7  |
| 25                                     | 69                          |                  |        | 6                          |       | 0.8-1.8                            | 37   | 63     | 0  |
|                                        |                             |                  |        |                            |       | 1.8-2.8                            | 16   | 72     | 12 |
|                                        |                             |                  |        |                            |       | 2.8-4.0                            | 22   | 72     | 6  |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |                        |           |                       |
|----------------------------|-------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 0.3-0.8                    | 82                                        | 4                       | 0                      | 14        | 0                     |
| 0.8-1.8                    | 92                                        | 4                       | 0                      | 4         | 0                     |
| 1.8-2.8                    | 95                                        | 1                       | 0                      | 2         | 2                     |
| 2.8-4.0                    | 89                                        | 3                       | 0                      | 6         | 2                     |
| Mean                       | 90                                        | 3                       | 0                      | 5         | 2                     |
|                            | Percentage by weight in +16 mm fraction   |                         |                        |           |                       |
| 0.3-0.8                    | 100                                       |                         |                        |           |                       |
| 0.8-1.8                    | no coarse                                 |                         |                        |           |                       |
| 1.8-0.8                    | 100                                       |                         |                        |           |                       |
| 2.8-4.0                    | 100                                       |                         |                        |           |                       |
| Mean                       | 100                                       |                         |                        |           |                       |



Surface level (+49.1 m) +161 ft  
 Water struck at (+46.6 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 0.9 m (3.0 ft)  
 Mineral 4.0 m (13.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, clayey and silty with scattered subangular flint and rounded brown quartzite pebbles; dark brown                                                                                                                                                                                                                                                             | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, very sandy, some silt, with scattered flint and weathered green siltstone pebbles; orange brown                                                                                                                                                                                                                                                              | 0.7            | 0.9        |
|                                            | 'Clayey' gravel, silty in upper 2.0 m<br>Gravel: fine with coarse dominantly subrounded brown oolitic limestone and subrounded hard white chalk pellets, some subangular flint, and brown ironstone, occasional rounded brown quartzite and yellowish white quartz<br>Sand: medium to coarse with a trace of fine, mainly quartz and limestone with some haematite | 4.0            | 4.9        |
| Gault                                      | Clay, silty; greyish blue                                                                                                                                                                                                                                                                                                                                          | 0.5+           | 5.4        |

**GRADING**

| Mean for deposit percentages |                                  |                    |      |        |     | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|----------------------------------|--------------------|------|--------|-----|-------------------------|--------------------------|------|--------|
| Fines                        |                                  | Sand               |      | Gravel |     |                         | Fines                    | Sand | Gravel |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4 | +4-16  | +16 |                         |                          |      |        |
| 11                           | 2                                | 22                 | 19   | 34     | 12  | 0.9-1.9                 | 19                       | 57   | 24     |
|                              |                                  |                    |      |        |     | 1.9-2.9*                | 14                       | 41   | 45     |
| 11                           | 43                               |                    |      | 46     |     | 2.9-3.9*                | 3                        | 40   | 57     |
|                              |                                  |                    |      |        |     | 3.9-4.9*                | 7                        | 37   | 56     |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.9-1.9                 | 19                                        | 3                    | 71        | 1     | 6         |
| 1.9-2.9                 | 16                                        | 7                    | 65        | 2     | 10        |
| 2.9-3.9                 | 12                                        | 6                    | 65        | 2     | 15        |
| 3.9-4.9                 | 10                                        | 8                    | 67        | 3     | 12        |
| Mean                    | 14                                        | 6                    | 67        | 2     | 11        |

Surface level (+55.2 m) +181 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 0.2 m (0.5 ft)  
 Mineral 5.2 m (17.0 ft)  
 Bedrock 0.6 m+ (2.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, dark brown                                                                                                                                                                                                                                                                                                                | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | 'Clayey' gravel, very clayey in upper 0.7 m<br>Gravel: fine to coarse with some cobbles, subrounded to subangular flint and subrounded limestone, some well rounded white quartz and reddish brown quartzite, chalk and shell fragments<br>Sand: medium with coarse and trace of fine, mainly quartz and flint; yellowish brown | 5.2            | 5.4        |
| Upper Greensand                            | Clay and siltstone; greyish brown                                                                                                                                                                                                                                                                                               | 0.6+           | 6.0        |

**GRADING**

| Mean for deposit<br>percentages |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------------------------|------------------|--------|----------------------------|-------|-----------------------------|------|--------|----|
| Fines                           | Sand                        |                  | Gravel |                            |       | Fines                       | Sand | Gravel |    |
| $-\frac{1}{16}$                 | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                             |      |        |    |
| 18                              | 2                           | 22               | 11     | 26                         | 21    | 0.2-0.9                     | 34   | 23     | 43 |
| 18                              | 35                          |                  |        | 47                         |       | 0.9-1.9                     | 19   | 26     | 55 |
|                                 |                             |                  |        |                            |       | 1.9-2.9                     | 15   | 39     | 46 |
|                                 |                             |                  |        |                            |       | 2.9-3.9                     | 13   | 38     | 49 |
|                                 |                             |                  |        |                            |       | 3.9-4.9                     | 14   | 42     | 44 |
|                                 |                             |                  |        |                            |       | 4.9-5.4                     | 14   | 44     | 42 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 0.2-0.9                    | 78                                        | 7                       | 1         | 2     | 12        |
| 0.9-1.9                    | 46                                        | 4                       | 28        | 7     | 15        |
| 1.9-2.9                    | 30                                        | 3                       | 44        | 4     | 19        |
| 2.9-3.9                    | 42                                        | 7                       | 4         | 45    | 2         |
| 3.9-4.9                    | 15                                        | 9                       | 64        | 3     | 9         |
| 4.9-5.4                    | 21                                        | 4                       | 62        | 2     | 11        |
| Mean                       | 38                                        | 6                       | 34        | 11    | 11        |

Surface level (+55.8 m) +183 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Overburden 0.2 m (0.5 ft)  
 Mineral 4.0 m (13.0 ft)  
 Bedrock 1.7 m+ (5.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                         | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil                                                                                                                                                                                                                                                                                                                                                                                                              | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | 'Very clayey' sandy gravel with a high fines content in upper 0.9 m<br>Gravel: fine some coarse mainly subangular grey to buff oolitic limestone with subangular to subrounded flint and brown ironstone, some well rounded whitish yellow quartz and reddish brown quartzite, traces of sandstones, clay pellets and chalk<br>Sand: medium with coarse and a trace of fine, mainly quartz and flint; light brown | 4.0            | 4.2        |
| Upper Greensand                            | Clay, silty and sandy; greyish green<br>Siltstone, light greyish green                                                                                                                                                                                                                                                                                                                                            | 1.6<br>0.1+    | 5.8<br>5.9 |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 21                           | 3                           | 33               | 18     | 19                      | 6     | 0.2-1.1                  | 31   | 49     | 20 |
|                              |                             |                  |        |                         |       | 1.1-2.1                  | 19   | 55     | 26 |
| 21                           | 54                          |                  |        | 25                      |       | 2.1-3.1                  | 17   | 63     | 20 |
|                              |                             |                  |        |                         |       | 3.1-4.2                  | 18   | 48     | 34 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.2-1.1                 | 42                                        | 20                   | 4         | 0     | 34        |
| 1.1-2.1                 | 14                                        | 7                    | 62        | 2     | 15        |
| 2.1-3.1                 | 18                                        | 6                    | 61        | 2     | 13        |
| 3.1-4.2                 | 18                                        | 6                    | 56        | 6     | 14        |
| Mean                    | 22                                        | 9                    | 48        | 3     | 18        |

**SU 69 SW 11 61199385 West of Lower Berrick Farm, Berrick Salome**

Surface level (+51.5 m) +169 ft  
 Water struck at (+47.5 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1972

Waste 4.2 m (14.0 ft)  
 Bedrock 1.8 m+ (6.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                      | Thickness<br>m | Depth<br>m |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Second Terrace) | Soil, dark brown                                                                                               | 0.3            | 0.3        |
|                                            | Clay, very silty with occasional subangular flint; dark brown                                                  | 0.3            | 0.6        |
|                                            | Clay, sandy, with common subangular flint pebbles; light brown                                                 | 0.5            | 1.1        |
|                                            | Clay, with numerous pebbles of weathered green siltstone, subangular flint and occasional rounded white quartz | 0.6            | 1.7        |
|                                            | Sand, very clayey in upper 0.6 m, some quartz and limestone pebbles; orange brown                              | 1.0            | 2.7        |
|                                            | Clay, silty becoming very silty with depth, locally sandy; reddish brown to greyish brown                      | 1.5            | 4.2        |
| Gault                                      | Silt and clay, with traces of subangular to subrounded flint locally sandy; dark bluish grey                   | 1.8+           | 6.0        |

Surface level (+45.4 m) +149 ft  
 Water struck at (+43.2 m)  
 Shell and auger (modified) 6 inch (152 mm) diam.  
 September 1972

Overburden 2.2 m (7.0 ft)  
 Mineral 3.6 m (12.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, brown                                                                                                                                                                                                                                                                                                      | 0.1            | 0.1        |
|                                           | Clay, very silty, soft, mottled reddish brown; light grey                                                                                                                                                                                                                                                        | 0.3            | 0.4        |
|                                           | Clay, soft, sandy in parts, bluish grey to brown                                                                                                                                                                                                                                                                 | 1.8            | 2.2        |
| River Terrace Deposits<br>(First Terrace) | Gravel                                                                                                                                                                                                                                                                                                           | 3.6            | 5.8        |
|                                           | Gravel: fine with coarse dominantly subrounded platy to tabular oolitic and shelly oolitic limestone with some subrounded dark brown haematite, occasional rounded brown quartzite and yellowish white quartz<br>Sand: medium to coarse with a trace of fine limestone, flint, quartz and haematite; light brown |                |            |
| Gault                                     | Clay, very silty in upper 0.3 m; greyish blue                                                                                                                                                                                                                                                                    | 0.5+           | 6.3        |

**GRADING**

| Mean for deposit<br>percentages |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-----------------------------|------------------|--------|----------------------------|-------|-----------------------------|------|--------|----|
| Fines                           | Sand                        |                  | Gravel |                            |       | Fines                       | Sand | Gravel |    |
| $-\frac{1}{16}$                 | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                             |      |        |    |
| 6                               | 2                           | 19               | 20     | 39                         | 14    | 2.2-3.2*                    | 8    | 50     | 42 |
| 6                               | 41                          |                  |        | 53                         |       | 3.2-4.2*                    | 4    | 32     | 64 |
|                                 |                             |                  |        |                            |       | 4.2-5.2*                    | 6    | 33     | 61 |
|                                 |                             |                  |        |                            |       | 5.2-5.8*                    | 8    | 38     | 54 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 2.2-3.2                    | 10                                        | 4                       | 72        | 3     | 11        |
| 3.2-4.2                    | 11                                        | 6                       | 68        | 1     | 14        |
| 4.2-5.2                    | 12                                        | 5                       | 71        | 1     | 11        |
| 5.2-5.8                    | 7                                         | 4                       | 73        | 1     | 15        |
| Mean                       | 10                                        | 5                       | 71        | 2     | 12        |

**SU 69SW 13    6167 9309    Rokermarsh, Berrick Salome**

Surface level (+51.5 m) +169 ft  
 Water struck at (+49.8 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Waste 2.2 m (7.0 ft)  
 Bedrock 0.8 m+ (2.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                               | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, dark brown                                                                                                                        | 0.1            | 0.1        |
|                           | Clay, very silty with occasional black carbonaceous patches, some subangular flint and small fragile white gastropod shells; dark brown | 0.6            | 0.7        |
|                           | Silt, very clayey with some sand and occasional subangular flint, local reddish brown patches; orange brown                             | 0.6            | 1.3        |
|                           | Clay, very silty with occasional subangular flint; light greenish grey                                                                  | 0.5            | 1.8        |
|                           | Silt and gravel, slightly sandy, with subangular flint                                                                                  | 0.4            | 2.2        |
| Gault                     | Silt and clay, bluish grey                                                                                                              | 0.8+           | 3.0        |

Surface level (+52.4 m) +172 ft  
 Water struck at (+51.3 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 0.6 m (2.0 ft)  
 Mineral 5.0 m (16.5 ft)  
 Bedrock 2.9 m+ (9.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                | Thickness<br>m | Depth<br>m |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil with some flint pebbles; dark brown                                                                                                                                                                                                                                                                                                                                                                                                 | 0.2            | 0.2        |
| River Terrace Deposits<br>(Second Terrace) | Clay, silty with flint, pebble content increasing towards base; brown becoming orange brown                                                                                                                                                                                                                                                                                                                                              | 0.4            | 0.6        |
|                                            | Gravel, with a clayey silty parting between 4.3 m and 4.9 m<br>Gravel: fine to coarse with some cobbles, dominantly subangular to subrounded flint with subrounded buff tabular limestone and occasionally subrounded shelly limestone, and chalk, some brownish black ironstone and greenish grey marl, rare quartz<br>Sand: medium with coarse and trace of fine, mainly quartz, flint and ironstone; orange brown becoming light grey | 5.0            | 5.6        |
| Gault                                      | Silt and sand, soft, fine grained sand with a trace of glauconite; dark grey                                                                                                                                                                                                                                                                                                                                                             | 2.7            | 8.3        |
|                                            | Clayey silt, firm; dark grey                                                                                                                                                                                                                                                                                                                                                                                                             | 0.2+           | 8.5        |

**GRADING**

| Mean for deposit<br>percentages |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand                             |                    | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| - $\frac{1}{16}$                | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 8                               | 2                                | 20                 | 10     | 25                         | 35  | 0.6-1.6*                    | 12   | 33     | 55 |
|                                 |                                  |                    |        |                            |     | 1.6-2.6*                    | 2    | 15     | 83 |
| 8                               | 32                               |                    |        | 60                         |     | 2.6-3.6*                    | 3    | 37     | 60 |
|                                 |                                  |                    |        |                            |     | 3.6-4.3*                    | 8    | 49     | 43 |
|                                 |                                  |                    |        |                            |     | 4.9-5.6*                    | 6    | 42     | 52 |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |                       |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|-----------------------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone | Minor<br>Constituents |
| 0.6-1.6                    | 71                                        | 2                       | 6         | 18    | 3         | 0                     |
| 1.6-2.6                    | 59                                        | 0                       | 3         | 15    | 1         | 22                    |
| 2.6-3.6                    | 58                                        | 1                       | 2         | 11    | 4         | 24                    |
| 3.6-4.3                    | 48                                        | 1                       | 5         | 9     | 1         | 36                    |
| 4.9-5.6                    | 64                                        | 2                       | 20        | 5     | 2         | 7                     |
| Mean                       | 60                                        | 1                       | 7         | 12    | 2         | 18                    |

Surface level (+52.1 m) +171 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 0.5 m (1.5 ft)  
 Mineral 1.3 m (4.5 ft)  
 Bedrock 1.0 m+ (3.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                   | Thickness<br>m | Depth<br>m |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(First Terrace) | Soil sandy and silty with occasional flint pebbles; dark brown                                                                                                                                                                                                                                                              | 0.5            | 0.5        |
|                                           | 'Clayey' gravel<br>Gravel: fine to coarse with fine and occasional cobble dominantly subangular to subrounded flint with subrounded tabular buff limestone, some brown ironstone and chalk with a trace of marl<br>Sand: mainly medium with some coarse and fine quartz, flint, limestone and ironstone; dark brown to buff | 1.3            | 1.8        |
| Upper Greensand                           | Sand, very fine to medium quartz with glauconite, silty in parts; brown to light green                                                                                                                                                                                                                                      | 1.0+           | 2.8        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|------------------------------------|------|--------|----|
| Fines                                  | Sand                             |                    | Gravel |                            |     | Fines                              | Sand | Gravel |    |
| - $\frac{1}{16}$                       | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                                    |      |        |    |
| 16                                     | 5                                | 24                 | 7      | 20                         | 28  | 0.5-0.9                            | 20   | 22     | 58 |
| 16                                     | 36                               |                    |        | 48                         |     | 0.9-1.8                            | 14   | 44     | 42 |

**COMPOSITION**

| Depth below<br>surface (m) | <i>Percentage by weight in +4-16 mm fraction</i> |                         |           |       |           |
|----------------------------|--------------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                            | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 0.5-0.9                    | 62                                               | 0                       | 28        | 4     | 6         |
| 0.9-1.8                    | 59                                               | 0                       | 36        | 0     | 5         |
| Mean                       | 60                                               | 0                       | 33        | 2     | 5         |



Surface level (+64.6 m) +212 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 0.4 m (1.5 ft)  
 Mineral 3.0 m (10.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                 | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil with occasional flint pebbles; dark brown                                                                                                                                                                                                                                                            | 0.4            | 0.4        |
| River Terrace Deposits<br>(Second Terrace) | 'Clayey' gravel<br>Gravel: fine to coarse with rare cobble dominantly subangular to subrounded flint with minor amounts of subrounded platy to tabular limestone, brownish black ironstone and a trace of glauconite<br>Sand: medium with coarse and some fine mainly quartz reddish-brown becoming brown | 3.0            | 3.4        |
| Upper Greensand                            | Marl, very silty with fine glauconite grains; pale green                                                                                                                                                                                                                                                  | 0.5+           | 3.9        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 16                           | 4                           | 17               | 9      | 26                      | 28    | 0.4-1.6                  | 14   | 19     | 67 |
|                              |                             |                  |        |                         |       | 1.6-2.6                  | 14   | 29     | 57 |
| 16                           | 30                          |                  |        | 54                      |       | 2.6-3.4                  | 22   | 47     | 31 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone |
| 0.4-1.6                 | 98                                        | 0                    | 0         | 2     | 0         |
| 1.6-2.6                 | 91                                        | 0                    | 0         | 8     | 1         |
| 2.6-3.4                 | 85                                        | 0                    | 0         | 14    | 1         |
| Mean                    | 92                                        | 0                    | 0         | 7     | 1         |

SU 69 SW 17 6359 9275 North of Prospect Farm, Ewelme

Surface level (+73.2 m) +240 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Waste 3.6 m (12.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                            | Soil, dark brown                                                                                                                                                              | 0.1            | 0.1        |
| River Terrace Deposits<br>(Second Terrace) | Clay, very sandy, with silt and rare flint pebbles, light brown                                                                                                               | 0.5            | 0.6        |
|                                            | Clay, sandy with occasional flint pebbles; orange brown                                                                                                                       | 0.8            | 1.4        |
|                                            | Clay, with fine to coarse subangular to subrounded flint, and occasional brown ironstone, limestone and chalk, with predominantly medium quartz and flint sand; reddish brown | 2.2            | 3.6        |
| Lower Chalk<br>(Glaucinitic Marl)          | Silt and marl, clayey in upper 0.5 m, becoming increasingly glauconitic and silty in lower part, locally streaked reddish brown due to iron-staining; pale green              | 0.9+           | 4.5        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 49                           | 7                           | 27               | 4      | 6                       | 7     | 0.6-1.5                  | 44   | 51     | 5  |
| 49                           | 38                          |                  |        | 13                      |       | 1.5-2.5                  | 46   | 43     | 11 |
|                              |                             |                  |        |                         |       | 2.9-3.6                  | 59   | 15     | 26 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |       |           |
|-------------------------|-------------------------------------------|----------------------|-------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Chalk | Ironstone |
| 0.6-1.5                 | 98                                        | 0                    | 0     | 2         |
| 1.5-2.5                 | 99                                        | 0                    | 0     | 1         |
| 2.9-3.6                 | 95                                        | 0                    | 3     | 2         |
| Mean                    | 97                                        | 0                    | 1     | 2         |

**SU 69 SW 18 62119409 Near Berrick Prior, Berrick Salome**

Surface level (+54.6 m) +179 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 August 1975

Waste 1.2 m (4.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification            | Lithology                                                                                                                                                                                                             | Thickness<br>m | Depth<br>m |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium<br>(River Terrace Deposit?) | Soil, clayey; black                                                                                                                                                                                                   | 0.3            | 0.3        |
|                                      | 'Clayey' sandy gravel                                                                                                                                                                                                 | 0.9            | 1.2        |
|                                      | Gravel: fine to coarse mainly angular to subangular brown, grey and white coated flint with a trace of well rounded white quartz and ironstone<br>Sand: mainly flint with quartz, silty in parts, brown to dark brown |                |            |
| Gault                                | Clay, firm; greyish black to black                                                                                                                                                                                    | 0.2+           | 1.4        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 17                           | 18                          | 19               | 5      | 24                      | 17    | 0.3-0.8                  | 22   | 48     | 30 |
| 17                           | 42                          |                  |        | 41                      |       | 0.8-1.2                  | 11   | 34     | 55 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.3-0.8                 | 98                                        | 1                    | 0                   | 1         |
| 0.8-1.2                 | no sample                                 |                      |                     |           |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 0.3-0.8                 | 100                                       |                      |                     |           |
| 0.8-1.2                 | no sample                                 |                      |                     |           |

**SU 69 SW 19 62459333 Roke, Berrick Salome**

Surface level (+53.9 m) +177 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 August 1975

Waste 1.0 m (3.5 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification | Lithology                                        | Thickness<br>m | Depth<br>m |
|---------------------------|--------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, clayey and sandy; black                    | 0.2            | 0.2        |
|                           | Clay, sandy in parts, rare gravel; greyish black | 0.8            | 1.0        |
| Gault                     | Clay, firm; black                                | 0.2+           | 1.2        |

Surface level (+85.9 m) +282 ft  
 Water not struck  
 Shell and auger (modified), 8 inch (203 mm) diam.  
 September 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 2.5 m (8.0 ft)  
 Bedrock 0.8 m+ (2.5 ft+)

**LOG**

| Geological classification                  | Lithology                                                                                                                                                                                                                                                                                                           | Thickness<br>m | Depth<br>m |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| River Terrace Deposits<br>(Fourth Terrace) | Soil, sandy and clayey with pebbles of flint, quartz and quartzite                                                                                                                                                                                                                                                  | 0.2            | 0.2        |
|                                            | 'Clayey' gravel<br>Gravel: fine to coarse with occasional cobbles, essentially all angular to subangular and occasional subrounded grey, brown or white coated flint, traces of well rounded white quartzite, well rounded brown quartzite, ironstone and rare siltstone<br>Sand: fine to coarse flint; light brown | 2.5            | 2.7        |
| Upper Greensand                            | Sand, very clayey and silty with occasional fine pebbles of flint, quartz and quartzite, mildly calcareous and glauconitic; brown becoming greenish grey                                                                                                                                                            | 0.3            | 3.0        |
|                                            | Sand, clayey and silty, compact and hard, becoming increasingly sandy with depth, calcareous and glauconitic; greenish grey                                                                                                                                                                                         | 0.5+           | 3.5        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 13                           | 10                               | 10                 | 9      | 29                      | 29  | 0.2-1.2                  | 12   | 29     | 59 |
| 13                           | 29                               |                    |        | 58                      |     | 1.2-2.2                  | 13   | 27     | 60 |
|                              |                                  |                    |        |                         |     | 2.2-2.7                  | 16   | 29     | 55 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.2-1.2                 | 99                                        | 1                    | 0                   | 0         |
| 1.2-2.2                 | 99                                        | 0                    | 0                   | 1         |
| 2.2-2.7                 | 98                                        | 1                    | 0                   | 1         |
| Mean                    | 99                                        | 0                    | 0                   | 1         |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 0.2-1.2                 | 100                                       | 0                    | 0                   | 0         |
| 1.2-2.2                 | 100                                       | 0                    | 0                   | 0         |
| 2.2-2.7                 | 100                                       | 0                    | 0                   | 0         |
| Mean                    | 100                                       | 0                    | 0                   | 0         |

Surface level (+108.2 m) +355 ft  
 Water not struck  
 Shell and auger (modified), 8 inch (203 mm) diam.  
 September 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 5.2 m (17.0 ft)  
 Waste 0.6 m (2.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, sandy with numerous flint pebbles; brown                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.2            | 0.2        |
| Wallingford Fan Gravels   | 'Clayey' gravel with increasing gravel content towards the base<br>Gravel: fine to coarse with occasional cobbles, essentially all noticeably angular grey and greyish white flint, rare well rounded grey flint, traces of well rounded white quartz, brownish black ironstone, rare chalk and sandstone<br>Sand: medium and coarse with fine, flint with some quartz and ironstone, clayey with ferruginous bands in upper 1.0 m; reddish brown becoming brown | 5.2            | 5.4        |
|                           | Clay, with occasional fine flint pebbles; greenish brown                                                                                                                                                                                                                                                                                                                                                                                                         | 0.6            | 5.8        |
| Lower Chalk               | Chalk, soft and pliable; greyish white                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.2+           | 6.0        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 14                           | 15                          | 13               | 8      | 23                      | 27    | 0.2-1.2                  | 23   | 54     | 23 |
|                              |                             |                  |        |                         |       | 1.2-2.2                  | 16   | 35     | 49 |
| 14                           | 36                          |                  |        | 50                      |       | 2.2-3.2                  | 14   | 37     | 49 |
|                              |                             |                  |        |                         |       | 3.2-4.2                  | 10   | 32     | 58 |
|                              |                             |                  |        |                         |       | 4.2-5.4                  | 6    | 23     | 71 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.2-1.2                 | 99                                        | 1                    | 0         | 0     | tr        | 0                  |
| 1.2-2.2                 | 99                                        | 1                    | 0         | 0     | tr        | tr                 |
| 2.2-3.2                 | 97                                        | tr                   | 1         | tr    | 2         | 0                  |
| 3.2-4.2                 | 96                                        | 1                    | 0         | 2     | 1         | 0                  |
| 4.2-5.4                 | 98                                        | 1                    | 0         | 0     | 0         | 1                  |
| Mean                    | 98                                        | 1                    | tr        | tr    | 1         | tr                 |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
| 0.2-1.2                 | 99                                        | 1                    | 0         | 0     | 0         | 0                  |
| 1.2-2.2                 | 100                                       | 0                    | 0         | 0     | 0         | 0                  |
| 2.2-3.2                 | 100                                       | 0                    | 0         | 0     | 0         | 0                  |
| 3.2-4.2                 | 99                                        | 0                    | 0         | 0     | 1         | 0                  |
| 4.2-5.4                 | 100                                       | 0                    | 0         | 0     | 0         | 0                  |
| Mean                    | 100                                       | tr                   | 0         | 0     | tr        | 0                  |

Surface level (+106.1 m) +348 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam. and gravel pit exposure  
 July 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 9.5 m+ (31.0 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, sandy with flint pebbles; brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.3            | 0.3        |
| Wallingford Fan Gravels   | 'Clayey' gravel, having a sandy gravel horizon between 7.1 and 7.8 m, a clayey gravel horizon between 7.8 and 8.8 m and an iron rich horizon between 2.3 and 3.3 m<br>Gravel: fine to coarse with many cobbles essentially all flint which is noticeably angular with remnant subrounded surfaces (of which 1 to 4 percent are well rounded grey flint), invariably grey and/or white coated; traces of brownish black ironstone (locally concentrated) well rounded white quartz and rare siltstone<br>Sand: medium with fine and occasional coarse, mainly flint with quartz and ironstone; interbedded with 'clayey' horizons throughout; brown | 9.5+           | 9.8        |

**GRADING**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |         |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 12                           | 12                          | 20               | 5      | 23      | 28                      | 0.3-1.3                  | 10   | 24     | 66 |
| 12                           | 37                          |                  |        | 51      |                         | 1.3-2.3                  | 14   | 50     | 36 |
|                              |                             |                  |        |         |                         | 2.3-3.3                  | 11   | 32     | 57 |
|                              |                             |                  |        |         |                         | 3.3-4.3                  | 8    | 32     | 60 |
|                              |                             |                  |        |         |                         | 4.3-5.3                  | 10   | 33     | 57 |
|                              |                             |                  |        |         |                         | 5.3-6.3                  | 7    | 30     | 63 |
|                              |                             |                  |        |         |                         | 6.3-7.1                  | 14   | 54     | 32 |
|                              |                             |                  |        |         |                         | 7.1-7.8                  | 11   | 69     | 20 |
|                              |                             |                  |        |         |                         | 7.8-8.8                  | 17   | 35     | 48 |
|                              |                             |                  |        |         |                         | 8.8-9.8                  | 13   | 31     | 56 |

**COMPOSITION**

Depth below surface (m) *Percentage by weight in +4–16 mm fraction*

|                                                | Flint | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
|------------------------------------------------|-------|----------------------|---------------------|-----------|--------------------|
| 0.3–1.3                                        | 98    | tr                   | 0                   | 1         | 1                  |
| 1.3–2.3                                        | 92    | 1                    | 0                   | 2         | 5                  |
| 2.3–3.3                                        | 98    | tr                   | 0                   | 2         | 0                  |
| 3.3–4.3                                        | 99    | 1                    | 0                   | 0         | 0                  |
| 4.3–5.3                                        | 96    | 1                    | 0                   | 3         | 0                  |
| 5.3–6.3                                        | 95    | 1                    | 2                   | 2         | 0                  |
| 6.3–7.1                                        | 97    | 1                    | 0                   | 2         | 0                  |
| 7.1–7.8                                        | 94    | 2                    | 0                   | 0         | 4                  |
| 7.8–8.8                                        | 99    | 1                    | 0                   | 0         | 0                  |
| 8.8–9.8                                        | 94    | tr                   | 0                   | 0         | 6                  |
| Mean                                           | 96    | 1                    | 0                   | 1         | 2                  |
| <i>Percentage by weight in +16 mm fraction</i> |       |                      |                     |           |                    |
| 0.3–1.3                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 1.3–2.3                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 2.3–3.3                                        | 50    | 11                   | 0                   | 22        | 17                 |
| 3.3–4.3                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 4.3–5.3                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 5.3–6.3                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 6.3–7.1                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 7.1–7.8                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 7.8–8.8                                        | 100   | 0                    | 0                   | 0         | 0                  |
| 8.8–9.8                                        | 100   | 0                    | 0                   | 0         | 0                  |
| Mean                                           | 95    | 1                    | 0                   | 2         | 2                  |

Surface level (+48.5 m) +159 ft  
 Water struck at (+47.1 m)  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 September 1975

Overburden 0.2 m (0.5 ft)  
 Mineral 4.7 m (15.5 ft)  
 Bedrock 0.6 m+ (2.0 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                           | Soil, clay with occasional fine angular flint and numerous fine fragile white gastropod shells; dark brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.2            | 0.2        |
| River Terrace Deposits<br>(First Terrace) | <p><b>a</b> 'Clayey' sandy gravel, with some cobbles<br/>                     Gravel: fine to coarse, angular brown and white coated flint, rare well rounded grey flint (coarse and cobble size gravel predominantly flint), with white to greyish white, oval platy and occasionally tabular limestone, some brownish black ironstone and tabular greenish white siltstone, rare well rounded reddish brown quartzite<br/>                     Sand: medium with fine and some coarse, clayey and silty, quartz, flint and limestone, distinctly chalky; white to light brown</p> <p><b>b</b> Gravel<br/>                     Gravel: fine with coarse and occasional cobbles, predominantly brown to buff well rounded, ovoid oolitic limestone (coarse and cobble size gravel predominantly flint) with reddish brown ironstone, angular to subangular brown and grey flint, well rounded white quartz and reddish brown quartzite, some tabular and blocky greenish grey calcareous siltstone (Upper Greensand?)<br/>                     Sand: medium with coarse and a trace of fine, quartz flint, ironstone and limestone, distinctly reddish brown</p> | 3.0            | 3.2        |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.7            | 4.9        |
| Upper Greensand                           | Siltstone, blocky and tabular form, uniform, well-graded silt particles, calcareous, and glauconitic; greenish grey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.6+           | 5.5        |

**GRADING a**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 19                           | 21                          | 28               | 8      | 12                      | 12    | 0.2-1.2                  | 24   | 50     | 26 |
|                              |                             |                  |        |                         |       | 1.2-2.2*                 | 20   | 46     | 34 |
| 19                           | 57                          |                  |        | 24                      |       | 2.2-3.2*                 | 13   | 74     | 13 |

**COMPOSITION a**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |           |       |           |                    |
|-------------------------|-------------------------------------------|----------------------|-----------|-------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone | Chalk | Ironstone | Minor Constituents |
| 0.2-1.2                 | 65                                        | 0                    | 30        | 3     | 2         | 0                  |
| 1.2-2.2                 | 47                                        | 1                    | 36        | 12    | 2         | 2                  |
| 2.2-3.2                 | 34                                        | 3                    | 50        | 8     | 5         | 0                  |
| Mean                    | 49                                        | 1                    | 39        | 5     | 5         | 1                  |
|                         | Percentage by weight in +16 mm fraction   |                      |           |       |           |                    |
| 0.2-1.2                 | 98                                        | 0                    | 2         | 0     | 0         | 0                  |
| 1.2-2.2                 | 100                                       | 0                    | 0         | 0     | 0         | 0                  |
| 2.2-3.2                 | 87                                        | 13                   | 0         | 0     | 0         | 0                  |
| Mean                    | 95                                        | 4                    | 1         | 0     | 0         | 0                  |



**GRADING b**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  |        | Gravel  |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 3                            | 5                           | 22               | 18     | 35      | 17                      | 3.2-4.2*                 | 2    | 39     | 59 |
| 3                            | 45                          |                  |        | 52      |                         | 4.2-4.9*                 | 4    | 52     | 44 |

**COMPOSITION b**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                                                                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------------------------------------------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite                                                 | Limestone and Chalk | Ironstone | Minor Constituents |
| 3.2-4.2                 | 10                                        | 4                                                                    | 71                  | 15        |                    |
| 4.2-4.9                 | 16                                        | 9                                                                    | 62                  | 13        |                    |
| Mean                    | 13                                        | 6                                                                    | 67                  | 14        |                    |
|                         | Percentage by weight in +16 mm fraction   |                                                                      |                     |           |                    |
| 3.2-4.2                 | 47                                        | 24 { $\begin{matrix} 3 = \text{Qz} \\ 21 = \text{Qzte} \end{matrix}$ | 28                  | 0         |                    |
| 4.2-4.9                 | 68                                        | 3 { Qz                                                               | 29                  | 0         | 1                  |
| Mean                    | 57                                        | 14                                                                   | 29                  | 0         | tr                 |

Surface level (+50.6 m) +166 ft  
 Water struck at (+48.7 m)  
 Hand auger, 6 inch (152 mm) diam.  
 February 1976

Overburden 1.2 m (4.0 ft)  
 Mineral 2.1 m+ (6.8 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, with clay; black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.7            | 0.7        |
|                                           | Clay, with occasional fine to medium flint pebbles; greyish brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5            | 1.2        |
| River Terrace Deposits<br>(First Terrace) | 'Clayey' pebbly sand, consisting of two distinct horizons; the upper 0.7 m comprises predominantly flint gravel with reddish brown clayey sand, the lower 1.4 m comprises limestone with flint and quartz, and a grey silty sand<br>Gravel: mainly fine with some coarse, angular and occasionally subrounded grey, white and brown flint, well rounded platy and ovoid buff and brown limestone, with occasional well rounded white quartz, ironstone and a trace of siltstone<br>Sand: predominantly medium with some coarse and fine, quartz and flint; reddish brown becoming grey | 2.1+           | 3.3        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 12                           | 16                          | 40               | 15     | 12                      | 5     | 1.2-1.9                  | 20   | 63     | 17 |
| 12                           | 71                          |                  |        | 17                      |       | 1.9-3.3                  | 8    | 74     | 18 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 1.2-1.9                 | 86                                        | 1                    | 11                  | 2         |
| 1.9-3.3                 | 35                                        | 4                    | 54                  | 7         |
| Mean                    | 52                                        | 3                    | 40                  | 5         |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 1.2-1.9                 | 100                                       | 0                    | 0                   | 0         |
| 1.9-3.3                 | 88                                        | 0                    | 12                  | 0         |
| Mean                    | 92                                        | 0                    | 8                   | 0         |

SU 69 SW 25 6154 9435 West of Berrick Priory, Berrick Salome

Surface level (+52.1 m) +171 ft  
 Water struck at (+50.9 m)  
 Hand auger, 6 inch (152 mm) diam.  
 January 1976

Waste 1.2 m (4.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

LOG

| Geological classification | Lithology                                                                                        | Thickness<br>m | Depth<br>m |
|---------------------------|--------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                  | Soil, 'clayey', black                                                                            | 0.3            | 0.3        |
|                           | Clay, with trace of fine, white coated flint pebbles, faintly mottled rusty brown; greyish black | 0.9            | 1.2        |
| Gault                     | Clay, bluish grey                                                                                | 0.2+           | 1.4        |

SU 69 SW 26 6069 9372 North of Gallows Leaze, Warborough

Block C

Surface level (+50.9 m) +167 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 January 1976

Overburden 1.0 m (3.5 ft)  
 Mineral 1.0 m+ (3.5 ft+)

LOG

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Clay, silty with trace of fine gravel and sand; black                                                                                                                                                                                                                                                                                                                      | 1.0            | 1.0        |
| River Terrace Deposits<br>(First Terrace) | Pebbly sand<br>Gravel: fine with a trace of coarse, mainly subrounded, ovoid or platy brown to buff limestone with angular to subrounded brown or white flint, occasional ironstone and rare well rounded quartz with a trace of brown quartzite and siltstone<br>Sand: dominantly medium with some fine and coarse, mainly flint and quartz with ironstone; reddish brown | 1.0+           | 2.0        |

GRADING

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 6                            | 14                          | 45               | 18     | 15                      | 2     | 1.0-1.4                  | 9    | 87     | 4  |
| 6                            | 77                          |                  |        | 17                      |       | 1.4-2.0                  | 3    | 68     | 29 |

COMPOSITION

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.0-1.4                 | 17                                        | 2                    | 74                  | 7         | 0                  |
| 1.4-2.0                 | 26                                        | 6                    | 55                  | 12        | 1                  |
| Mean                    | 21                                        | 4                    | 65                  | 10        | 0                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 1.0-1.4                 | no coarse                                 |                      |                     |           |                    |
| 1.4-2.0                 | 94                                        | 0                    | 6                   | 0         | 0                  |
| Mean                    | 94                                        | 0                    | 6                   | 0         | 0                  |

**SU 69 SW 27 6173 9344 Near Berrick Littleworth, Benson**

Surface level (+52.4 m) +172 ft  
 Water struck at (+51.1 m)  
 Hand auger, 6 inch (152 mm) diam.  
 January 1976

Waste 1.8 m (6.0 ft)  
 Bedrock 0.3 m+ (0.5 ft+)

**LOG**

| Geological classification                    | Lithology                                                                                                                                                                                                                                                                             | Thickness<br>m | Depth<br>m |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                                              | Soil, silty and peaty; brown                                                                                                                                                                                                                                                          | 0.2            | 0.2        |
| Alluvium                                     | Clay, silty and peaty, becoming sandy with depth; greyish brown                                                                                                                                                                                                                       | 1.2            | 1.4        |
| River Terrace Deposit (?)<br>(First Terrace) | 'Very clayey' sandy gravel<br>Gravel: fine to coarse dominantly angular to subrounded brown and white coated flint with some ironstone and greyish white siltstone, rare well rounded white quartz<br>Sand: coarse with medium and some fine mainly quartz and flint; yellowish brown | 0.4            | 1.8        |
| Gault                                        | Clay, stiff; bluish grey                                                                                                                                                                                                                                                              | 0.3+           | 2.1        |

**GRADING**

| Mean for deposit percentages |                             |                  |        |         | Depth below surface (m) | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|---------|-------------------------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |         |                         | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$ | $+16$                   |                          |      |        |    |
| 27                           | 8                           | 14               | 17     | 23      | 11                      | 1.4-1.8                  | 27   | 39     | 34 |
| 27                           | 39                          |                  | 34     |         |                         |                          |      |        |    |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |                    |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|--------------------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone | Minor Constituents |
| 1.4-1.8                 | 82                                        | 2                    | 0                   | 8         | 8                  |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |                    |
| 1.4-1.8                 | 100                                       | 0                    | 0                   | 0         | 0                  |

**SU 69 NE 1 6888 9650 Knightsbridge Farm, Pyrton**

Surface level (+94.8 m) +311 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 December 1974

Waste 0.9 m (3.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification | Lithology                                                                                         | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, 'with some angular flint; brownish black                                                    | 0.3            | 0.3        |
| Head                      | Clay, with fine to coarse angular to subrounded flint and some greensand fragments; greyish brown | 0.6            | 0.9        |
| Upper Greensand           | Sand, clayey with glauconitic and marly bands; greenish grey                                      | 0.9+           | 1.8        |

Surface level (+117.9 m) +387 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Waste 2.9 m (9.5 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                   | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Head                      | Soil, reddish brown                                                                                                         | 0.4            | 0.4        |
|                           | Clay, very silty with occasional subangular to subrounded flint pebbles; reddish brown                                      | 0.4            | 0.8        |
|                           | Clay, very sandy with fine to coarse subangular flint pebbles, silty in parts; orange brown                                 | 0.3            | 1.1        |
|                           | Clay, stiff, with some coarse angular flint pebbles in parts and occasional buff grey chalk pellets; brown to reddish brown | 1.8            | 2.9        |
| Lower Chalk               | Chalk; light grey to white                                                                                                  | 0.5+           | 3.4        |

Surface level (+122.5 m) +402 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.2 m (0.5 ft)  
 Mineral 9.2 m (30.0 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Wallingford Fan Gravels   | Soil, with occasional flint pebbles; reddish brown                                                                                                                                                                                              | 0.2            | 0.2        |
|                           | 'Clayey' gravel<br>Gravel: fine to cobble size dominantly subangular to subrounded flint with traces of well rounded yellowish white quartz and brown ironstone<br>Sand: medium to coarse with a trace of fine flint with quartz; reddish brown | 9.2            | 9.4        |
| Lower Chalk               | Chalk, with brown clay in upper 0.2 m; light grey to white                                                                                                                                                                                      | 0.4+           | 9.8        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 17                           | 1                                | 12                 | 10     | 25                      | 35  | 0.2-0.8                  | 28   | 27     | 45 |
| 17                           | 23                               |                    |        | 60                      |     | 0.8-1.8                  | 23   | 18     | 59 |
|                              |                                  |                    |        |                         |     | 1.8-2.8                  | 19   | 25     | 56 |
|                              |                                  |                    |        |                         |     | 2.8-3.8                  | 15   | 24     | 61 |
|                              |                                  |                    |        |                         |     | 3.8-4.8                  | 11   | 29     | 60 |
|                              |                                  |                    |        |                         |     | 4.8-5.8                  | 16   | 24     | 60 |
|                              |                                  |                    |        |                         |     | 5.8-6.8                  | 17   | 24     | 59 |
|                              |                                  |                    |        |                         |     | 6.8-7.8                  | 18   | 22     | 60 |
|                              |                                  |                    |        |                         |     | 7.8-9.4                  | 14   | 17     | 69 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.2-0.8                 | 98                                        | 1                    | 0                   | 1         |
| 0.8-1.8                 | 96                                        | 3                    | 0                   | 1         |
| 1.8-2.8                 | 98                                        | 1                    | 0                   | 1         |
| 2.8-3.8                 | 98                                        | 1                    | 0                   | 1         |
| 3.8-4.8                 | 85                                        | 2                    | 1                   | 12        |
| 4.8-5.8                 | 99                                        | 1                    | 0                   | 0         |
| 5.8-6.8                 | 98                                        | 0                    | 0                   | 2         |
| 6.8-7.8                 | 98                                        | 1                    | 0                   | 1         |
| 7.8-9.4                 | 84                                        | 8                    | 0                   | 8         |
| Mean                    | 95                                        | 2                    | 0                   | 3         |

Surface level (+117.0 m) +384 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 November 1971

Overburden 0.4 m (1.5 ft)  
 Mineral 4.0 m (13.0 ft)  
 Bedrock 0.5 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                                                                                     | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil with occasional subrounded flint and trace of reddish brown quartzite pebbles; brown                                                                                                                                                                                                                                                     | 0.4            | 0.4        |
| Wallingford Fan Gravels   | 'Very clayey' grayel<br>Gravel: fine to coarse with cobbles dominantly subangular to subrounded flint, some subrounded brown ironstone and a trace of well rounded reddish brown quartzite<br>Sand: medium and coarse with fine, mainly flint with some quartz, black patches of carbonaceous material, iron staining in parts; reddish brown | 4.0            | 4.4        |
| Lower Chalk               | Chalk with clay layer in top 0.1 m, soft, light grey to white                                                                                                                                                                                                                                                                                 | 0.5+           | 4.9        |

**GRADING**

| Mean for deposit percentages |                                  |                    |        | Depth below surface (m) |     | Bulk samples percentages |      |        |    |
|------------------------------|----------------------------------|--------------------|--------|-------------------------|-----|--------------------------|------|--------|----|
| Fines                        | Sand                             |                    | Gravel |                         |     | Fines                    | Sand | Gravel |    |
| - $\frac{1}{16}$             | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                   | +16 |                          |      |        |    |
| 21                           | 3                                | 9                  | 9      | 17                      | 41  | 0.4-1.4                  | 27   | 21     | 52 |
|                              |                                  |                    |        |                         |     | 1.4-2.4                  | 18   | 14     | 68 |
| 21                           | 21                               |                    |        | 58                      |     | 2.4-3.4                  | 24   | 23     | 53 |
|                              |                                  |                    |        |                         |     | 3.4-4.4                  | 14   | 33     | 53 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.4-1.4                 | 95                                        | 2                    | 0                   | 3         |
| 1.4-2.4                 | 93                                        | 0                    | 0                   | 7         |
| 2.4-3.4                 | 84                                        | 1                    | 0                   | 15        |
| 3.4-4.4                 | 84                                        | 1                    | 0                   | 15        |
| Mean                    | 88                                        | 1                    | 0                   | 11        |

Surface level (+117.6 m) +386 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.2 m (0.5 ft)  
 Mineral 2.4 m (8.0 ft)  
 Waste 1.0 m (3.5 ft)  
 Bedrock 0.4 m+ (1.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                               | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Wallingford Fan Gravels   | Soil with occasional flint pebbles; brown                                                                                                                                                                                                                                               | 0.2            | 0.2        |
|                           | 'Very clayey' gravel, more sandy and clayey in upper 0.6 m<br>Gravel: fine to coarse with cobbles dominantly subangular to subrounded flint with a trace of brown ironstone and rare brown quartzite<br>Sand: medium with some coarse and fine, mainly flint with quartz; reddish brown | 2.4            | 2.6        |
|                           | Clay, with some fine to cobble size flint, sandy and silty in parts, occasional black carbonaceous patches, chalk pellets in lower 0.3 m; reddish brown                                                                                                                                 | 1.0            | 3.6        |
| Lower Chalk               | Chalk, light grey                                                                                                                                                                                                                                                                       | 0.4+           | 4.0        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                                  |                    |        | Depth below<br>surface (m) |     | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|----------------------------------|--------------------|--------|----------------------------|-----|------------------------------------|------|--------|----|
| Fines                                  | Sand                             |                    | Gravel |                            |     | Fines                              | Sand | Gravel |    |
| - $\frac{1}{16}$                       | + $\frac{1}{16}$ - $\frac{1}{4}$ | + $\frac{1}{4}$ -1 | +1-4   | +4-16                      | +16 |                                    |      |        |    |
| 37                                     | 2                                | 10                 | 3      | 17                         | 31  | 0.2-0.8                            | 41   | 36     | 23 |
| 37                                     | 15                               |                    |        | 48                         |     | 0.8-1.8                            | 30   | 14     | 56 |
|                                        |                                  |                    |        |                            |     | 1.8-2.6                            | 34   | 11     | 55 |

**COMPOSITION**

| Depth below<br>surface (m) | <i>Percentage by weight in +4-16 mm fraction</i> |                         |                        |           |
|----------------------------|--------------------------------------------------|-------------------------|------------------------|-----------|
|                            | Flint                                            | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone |
| 0.2-0.8                    | 96                                               | 0                       | 0                      | 4         |
| 0.8-1.8                    | 100                                              | 0                       | 0                      | 0         |
| 1.8-2.6                    | 100                                              | 0                       | 0                      | 0         |
| Mean                       | 99                                               | 0                       | 0                      | 1         |



Surface level (+138.1 m) +453 ft  
 Water not struck  
 Shell and auger (modified), 6 inch (152 mm) diam.  
 October 1971

Overburden 0.3 m (1.0 ft)  
 Mineral 3.1 m (10.0 ft)  
 Bedrock 0.9 m+ (3.0 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Wallingford Fan Gravels   | Soil with some pebbles; dark brown                                                                                                                                                                                                                              | 0.3            | 0.3        |
|                           | 'Very clayey' gravel<br>Gravel: fine to coarse with cobbles dominantly subangular to subrounded flint with traces of rounded reddish brown quartzite and brownish black ironstone<br>Sand: medium and coarse with fine, mainly flint with quartz; reddish brown | 3.1            | 3.4        |
| Middle Chalk              | Chalk with reddish brown clay horizon in upper 0.2 m; greyish white                                                                                                                                                                                             | 0.9+           | 4.3        |

**GRADING**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 29                           | 3                           | 9                | 7      | 20                      | 32    | 0.3-1.3                  | 28   | 22     | 50 |
| 29                           | 19                          |                  |        | 52                      |       | 1.3-2.3                  | 31   | 19     | 50 |
|                              |                             |                  |        |                         |       | 2.3-3.4                  | 28   | 16     | 56 |

**COMPOSITION**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.3-1.3                 | 97                                        | 1                    | 0                   | 2         |
| 1.3-2.3                 | 99                                        | 0                    | 0                   | 1         |
| 2.3-3.4                 | 99                                        | 1                    | 0                   | 0         |
| Mean                    | 98                                        | 1                    | 0                   | 1         |

Surface level (c. +113.4 m) c. +372 ft  
 Water not recorded  
 Air flush rotary drill  
 January 1974

Overburden 0.1 m (0.5 ft)  
 Mineral 1.1 m (3.5 ft)  
 Bedrock 74.5 m+ (244.4 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                          | Thickness<br>m | Depth<br>m |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil                                                                                                                                                                                                               | 0.1            | 0.1        |
| Wallingford Fan Gravels   | 'Very clayey' sandy gravel<br>Gravel: fine to coarse with cobbles (up to 70 mm), dominantly flint with chalk pellets in the fine size range<br>Sand: fine to coarse, chalk and flint, light brown                  | 1.1            | 1.2        |
| Lower Chalk               | Chalk, marly, irregular fracture crumbly; yellowish grey to olive grey                                                                                                                                             | 3.2            | 4.4        |
|                           | Totternhoe Stone, chalk marl, fairly hard with black phosphatic nodules; yellowish grey to light olive grey                                                                                                        | 0.5            | 4.9        |
|                           | Chalky marl, soft to hard, crumbly with irregular fracture, occasional fish scales and shell fragments, locally some mica glauconite or pyrite. Yellowish grey to light olive grey                                 | 49.0           | 53.9       |
|                           | Chloritic marl, very glauconitic occasional burrows and pyritized trails with shell fragments; light olive green to greenish grey                                                                                  | 0.1            | 54.0       |
| Upper Greensand           | Siltstone, hard, massive and crumbly in parts; glauconitic with burrows, pyritized trails and shell fragments, occasionally micaceous and interbedded with unconsolidated bands; light olive grey to greenish grey | 21.7+          | 75.7       |

Surface level (+107 m) +351 ft  
 Water not struck  
 Hand auger, 6 inch (152 mm) diam.  
 September 1975

Overburden 0.9 m (3.0 ft)  
 Mineral 1.9 m (6.0 ft)  
 Waste 0.6 m (2.0 ft)  
 Mineral 1.2 m (4.0 ft)  
 Bedrock 1.1 m+ (3.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Thickness<br>m | Depth<br>m |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
|                           | Soil, clayey with numerous flint pebbles; brown                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.9            | 0.9        |
| Wallingford Fan Gravels   | <p><b>a</b> 'Clayey' gravel<br/>                     Gravel: fine to coarse with occasional cobbles, predominantly angular to subrounded grey brown or white coated flint, (of which 2-7 percent are well rounded grey flint or well rounded black cherts) with some well rounded chalk, occasional brownish black ironstone and a trace of well rounded white quartz<br/>                     Sand: fine and medium with some coarse, quartz and flint, clayey throughout; brown</p> | 1.9            | 2.8        |
|                           | Clay, sandy in parts with black iron oxide staining, faintly mottled bluish grey; brown                                                                                                                                                                                                                                                                                                                                                                                               | 0.6            | 3.4        |
|                           | <p><b>b</b> 'Clayey' sandy gravel<br/>                     Gravel: fine to coarse with many cobbles angular grey or white coated flint with well rounded white chalk, traces of well rounded reddish brown quartzite, brownish black ironstone, tabular calcareous siltstone (Glauconitic Marl) rare well rounded white quartz<br/>                     Sand: mainly medium with fine and occasional coarse, quartz and flint, black iron-oxide staining in parts; dark brown</p>     | 1.2            | 4.6        |
| Lower Chalk               | Chalky clay, pliable and soft, silty in parts with fine black glauconite grains; light green becoming greenish white and white                                                                                                                                                                                                                                                                                                                                                        | 1.1+           | 5.7        |

**GRADING a**

| Mean for deposit percentages |                             |                  |        | Depth below surface (m) |       | Bulk samples percentages |      |        |    |
|------------------------------|-----------------------------|------------------|--------|-------------------------|-------|--------------------------|------|--------|----|
| Fines                        | Sand                        |                  | Gravel |                         |       | Fines                    | Sand | Gravel |    |
| $-\frac{1}{16}$              | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                 | $+16$ |                          |      |        |    |
| 14                           | 11                          | 12               | 4      | 20                      | 39    | 0.9-1.9                  | 12   | 29     | 59 |
| 14                           | 27                          |                  |        | 59                      |       | 1.9-2.8                  | 16   | 26     | 58 |

**COMPOSITION a**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 0.9-1.9                 | 90                                        | 0                    | 4                   | 6         |
| 1.9-2.8                 | 56                                        | 0                    | 42                  | 2         |
| Mean                    | 73                                        | 0                    | 23                  | 4         |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 0.9-1.9                 | 100                                       | 0                    | 0                   | 0         |
| 1.9-2.8                 | 99                                        | 0                    | 1                   | 0         |
| Mean                    | 100                                       | 0                    | tr                  | 0         |

**GRADING b**

| Mean for deposit percentages |           |        |      |        |     | Depth below surface (m) | Bulk samples percentages |      |        |
|------------------------------|-----------|--------|------|--------|-----|-------------------------|--------------------------|------|--------|
| Fines                        | Sand      |        |      | Gravel |     |                         | Fines                    | Sand | Gravel |
| -1/16                        | +1/16-1/4 | +1/4-1 | +1-4 | +4-16  | +16 |                         |                          |      |        |
| 19                           | 16        | 31     | 8    | 10     | 16  | 3.4-4.3                 | 19                       | 59   | 22     |
| 19                           | 55        |        |      | 26     |     | 4.3-4.6                 | 18                       | 43   | 39     |

**COMPOSITION b**

| Depth below surface (m) | Percentage by weight in +4-16 mm fraction |                      |                     |           |
|-------------------------|-------------------------------------------|----------------------|---------------------|-----------|
|                         | Flint                                     | Quartz and Quartzite | Limestone and Chalk | Ironstone |
| 3.4-4.3                 | 54                                        | 1                    | 42                  | 3         |
| 4.3-4.6                 | 43                                        | 1                    | 54                  | 2         |
| Mean                    | 49                                        | 1                    | 48                  | 2         |
|                         | Percentage by weight in +16 mm fraction   |                      |                     |           |
| 3.4-4.3                 | 98                                        | 0                    | 2                   | 0         |
| 4.3-4.6                 | 95                                        | 0                    | 5                   | 0         |
| Mean                    | 97                                        | 0                    | 3                   | 0         |

Surface level (+101.8 m) +334 ft  
 Water not struck  
 Shell and auger (modified), 8 inch (203 mm) diam.  
 September 1975

Overburden 0.3 m (1.0 ft)  
 Mineral 1.4 m (4.5 ft)  
 Waste 0.1 m (0.5 ft)  
 Bedrock 0.7 m+ (2.5 ft+)

**LOG**

| Geological classification | Lithology                                                                                                                                                                                                                                                                                                                                                       | Thickness<br>m | Depth<br>m |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Wallingford Fan Gravels   | Soil, sandy; light brown                                                                                                                                                                                                                                                                                                                                        | 0.3            | 0.3        |
|                           | 'Very clayey' sandy gravel<br>Gravel: fine to coarse with occasional cobbles, essentially all angular to subangular grey and white coated flint with a trace of well rounded white quartz, brownish black ironstone and well rounded chalk<br>Sand: fine with some medium and occasional coarse, mainly flint and quartz, becomes more clayey with depth; brown | 1.4            | 1.7        |
|                           | Clay, sandy with occasional angular coarse to cobble size flint pebbles; greenish brown                                                                                                                                                                                                                                                                         | 0.1            | 1.8        |
| Lower Chalk               | Chalk, soft; white                                                                                                                                                                                                                                                                                                                                              | 0.7+           | 2.5        |

**GRADING**

| Mean for deposit<br>percentages |       |      |        | Depth below<br>surface (m) |     | Bulk samples<br>percentages |      |        |    |
|---------------------------------|-------|------|--------|----------------------------|-----|-----------------------------|------|--------|----|
| Fines                           | Sand  |      | Gravel |                            |     | Fines                       | Sand | Gravel |    |
| -16                             | +16-4 | +4-1 | +1-4   | +4-16                      | +16 |                             |      |        |    |
| 28                              | 22    | 13   | 3      | 15                         | 19  | 0.3-1.7                     | 28   | 38     | 34 |
| 28                              | 38    |      | 34     |                            |     |                             |      |        |    |

**COMPOSITION**

| Depth below<br>surface (m) | Percentage by weight in +4-16 mm fraction |                         |           |       |           |
|----------------------------|-------------------------------------------|-------------------------|-----------|-------|-----------|
|                            | Flint                                     | Quartz and<br>Quartzite | Limestone | Chalk | Ironstone |
| 0.3-1.7                    | 97                                        | 1                       | 0         | 1     | 1         |
|                            | Percentage by weight in +16 mm fraction   |                         |           |       |           |
| 0.3-1.7                    | 100                                       | 0                       | 0         | 0     | 0         |

Surface level (+95.7 m) +314 ft  
 Water struck at (+95.0 m)  
 Hand auger, 6 inch (152 mm) diam.  
 March 1976

Waste 1.9 m (6.0 ft)  
 Bedrock 0.2 m+ (0.5 ft+)

**LOG**

| Geological classification                 | Lithology                                                                                                                                                                                                                                                                                                                                                  | Thickness<br>m | Depth<br>m |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Alluvium                                  | Soil, very peaty and silty; black                                                                                                                                                                                                                                                                                                                          | 0.3            | 0.3        |
|                                           | Clay, very peaty, silty and sandy in parts, with some fine to cobble size black angular to subrounded flint; greyish black                                                                                                                                                                                                                                 | 0.9            | 1.2        |
| River Terrace Deposits<br>(First Terrace) | 'Very clayey' gravel, silty throughout<br>Gravel: dominantly fine to cobble size subrounded to angular black and grey flint, with medium to fine subrounded chalk and greyish green siltstone (Glaucconitic Marl), trace of well rounded white quartz, chalky throughout with occasional sand lenses<br>Sand: mostly chalk and flint; grey to whitish grey | 0.7            | 1.9        |
| Lower Chalk                               | Chalk, soft and silty with occasional flint pebble becoming firm and hard with depth; greyish white                                                                                                                                                                                                                                                        | 0.2+           | 2.1        |

**GRADING**

| Mean for deposit<br><i>percentages</i> |                             |                  |        | Depth below<br>surface (m) |       | Bulk samples<br><i>percentages</i> |      |        |    |
|----------------------------------------|-----------------------------|------------------|--------|----------------------------|-------|------------------------------------|------|--------|----|
| Fines                                  | Sand                        |                  | Gravel |                            |       | Fines                              | Sand | Gravel |    |
| $-\frac{1}{16}$                        | $+\frac{1}{16}-\frac{1}{4}$ | $+\frac{1}{4}-1$ | $+1-4$ | $+4-16$                    | $+16$ |                                    |      |        |    |
| 32                                     | 7                           | 14               | 3      | 12                         | 32    | 1.2-1.9                            | 32   | 24     | 44 |
| 32                                     | 24                          |                  | 44     |                            |       |                                    |      |        |    |

**COMPOSITION**

| Depth below<br>surface (m) | <i>Percentage by weight in +4-16 mm fraction</i> |                         |                        |           |                       |
|----------------------------|--------------------------------------------------|-------------------------|------------------------|-----------|-----------------------|
|                            | Flint                                            | Quartz and<br>Quartzite | Limestone<br>and Chalk | Ironstone | Minor<br>Constituents |
| 1.2-1.9                    | 87                                               | tr                      | 12                     | 0         | 1                     |
|                            | <i>Percentage by weight in +16 mm fraction</i>   |                         |                        |           |                       |
| 1.2-1.9                    | 100                                              | 0                       | 0                      | 0         | 0                     |

## APPENDIX G

### LIST OF ACTIVE AND DISUSED WORKINGS

In the latter half of 1976 there were four active working pits. Two are near Dorchester in First Terrace Deposits and two are located south of Ewelme in the Wallingford Fan Gravels. The total worked-out area to date in the whole resource area is about 1.4 km<sup>2</sup> (Table 3).

The pits near Dorchester lie in areas of high water table and are worked by dragline when wet or by tractor-mounted grabs or excavators when pumped dry. In contrast the thick deposits around Ewelme are usually naturally dry and are worked by excavators.

In the Dorchester area some of the worked-out areas have been partially back-filled, but most remain as flooded gravel pits. One large pit to the north of Dorchester lying between the main Oxford and Abingdon roads has been landscaped into a boating lake.

In the Ewelme area worked-out pits have been backfilled using local refuse. The worked out area near Rumbold's Copse [645 927] has been completely back-filled.

Old abandoned gravel pits are to be found east of Sotwell [593 905], and near Marsh Baldon [577 978], Shillingford [602 923], and Brightwell Upperton [651 937].

Minor gravel pits, which are worked occasionally for aggregate for farm roads and dams, are located near Brightwell Upperton [652 939] and near Newington [606 975].

**Table 11** List of active and disused pits

| Location                                    | Deposit worked          | Area (hectares) |
|---------------------------------------------|-------------------------|-----------------|
| <b>Active pits (1976)</b>                   |                         |                 |
| Dyke Hills [572 942], west of Dorchester    | First Terrace           | 14              |
| Wally Corner [582 957], north of Dorchester | First Terrace           | 4               |
| Rabbits Hill [645 906], south of Ewelme     | Wallingford Fan Gravels | 2               |
| Beggar Bush Hill [644 904], south of Ewelme | Wallingford Fan Gravels | 5               |
| <b>Disused pits</b>                         |                         |                 |
| North and east of Dorchester [580 950]      | First Terrace           | 70              |
| West of Dorchester [571 948]                | First Terrace           | 10              |
| East of Shillingford [602 923]              | First Terrace           | 5               |
| Broadmoor Barn [577 978], Marsh Baldon      | Second Terrace          | 5               |
| Sotwell [593 905]                           | Second Terrace          | 2               |
| Beggar Bush Hill [645 902], south of Ewelme | Wallingford Fan Gravels | 12              |
| Rumbold's Copse [645 927], north of Ewelme  | Wallingford Fan Gravels | 4               |
| Brightwell Upperton [652 939]               | Wallingford Fan Gravels | 2               |
|                                             | <b>Total</b>            | <b>135</b>      |

**APPENDIX H**

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

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



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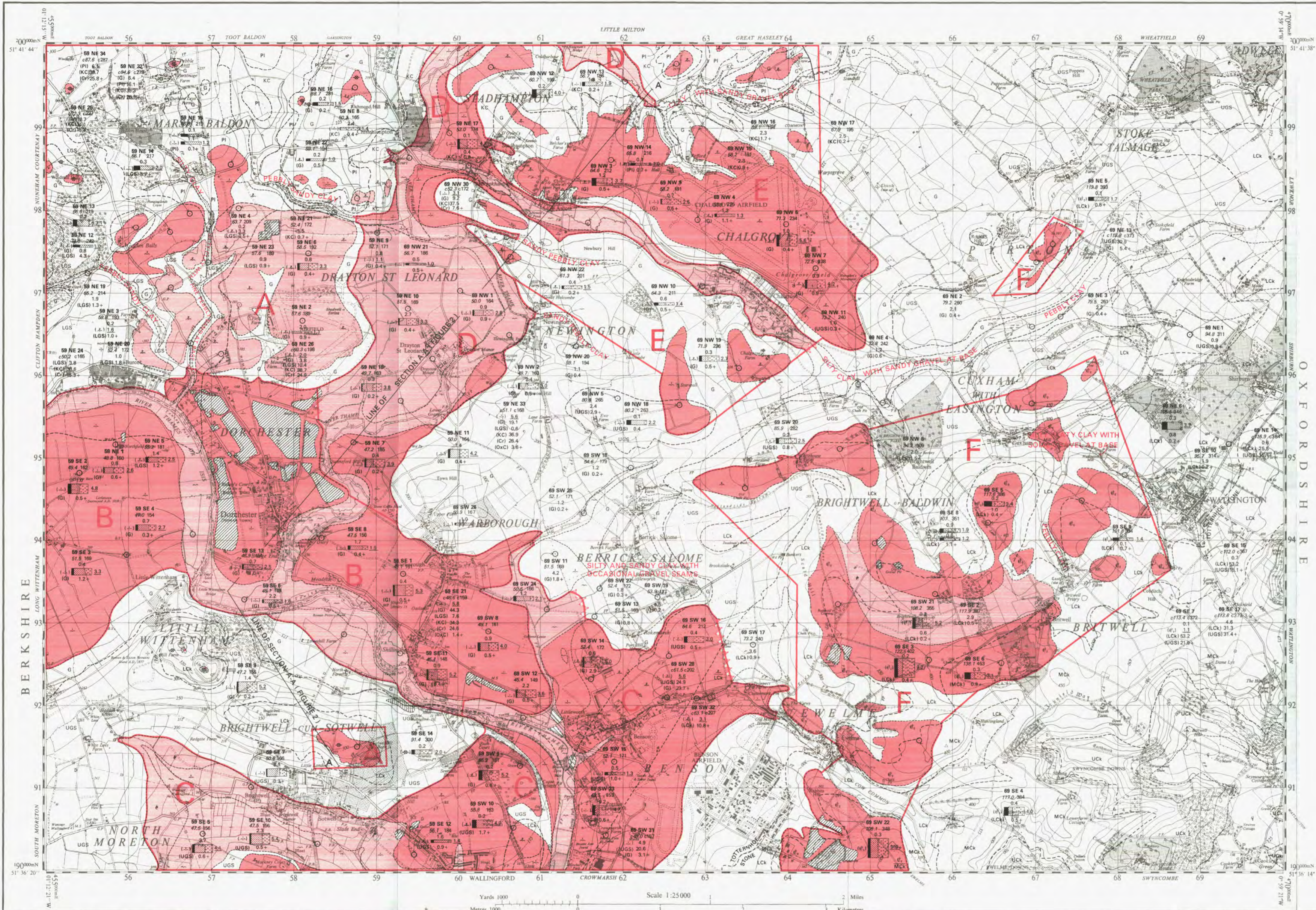
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THE SAND AND GRAVEL RESOURCES OF SHEET SU 69 AND PART OF SU 59 (DORCHESTER - WATLINGTON, OXON)

Scale 1:25'000 or about 2 1/4 Inches to 1 Mile

ORDNANCE SURVEY  
SHEET SU 69 & Pt SU 59  
PROVISIONAL EDITION



81

EXPLANATION OF SYMBOLS AND ABBREVIATIONS

- DRIFT**
- Landlip L-1
  - Alluvium - grey calcareous silt or silty clay with occasional lenses of sand. Often overlying sand and gravel. A-53
  - First Terrace - (Flood Plain Terrace of the Thames and Thame Valleys) 1T-30
  - Second Terrace - (Summertown - Radley Terrace) 2T-22
  - Third Terrace - (Wolvercote Terrace) 3T-18
  - Fourth Terrace - (Hanborough Terrace) 4T-11
  - Sand and Gravel of unknown origin - vein-quartz, quartzite and flint with occasional exotic pebbles in a reddish brown sandy clay matrix. SG-12
  - Head-souffleur products derived from chalk and Upper Greensand rocks. H-32
  - Younger Coombe Deposits - ill sorted chalk suffoliation products. Y-4
  - Wallingford Fan Gravels - flint gravel in a brown sandy clay matrix. WA-2
  - Clay with Flints - brown clay with coarse flints. CF-6

- SOLID**
- Upper Chalk - white chalk with nodular and tabular flint; including Chalk Rock.
  - Middle Chalk - soft white chalk with Melbourn flint at base.
  - Lower Chalk - soft grey marly chalk with Tottonhoe Stone.
  - Upper Greensand - pale grey micaceous sandy siltstones.
  - Gault - dark grey, silty and laminated clay.
  - Lower Greensand - coarse ferruginous quartz sands.
  - Portland Beds - interbedded sands and limestones.
  - Kimmeridge Clay - dark grey clay and glauconitic silty sand.
  - Corallian Beds - interbedded limestones, sands and clays.
  - Oxford Clay - grey silty clay.

- BOUNDARY LINES**
- Geological boundary, Drift.
  - Geological boundary, Solid.
  - Line of Fault, crossmark indicates downthrow side.
  - Inferred boundary between recognised categories of deposits.
  - Resource Block Boundary.
- Broken lines denote uncertainty

- BOREHOLE DATA**
- SITE LOCATIONS**
- Industrial Minerals Assessment Unit (I. M. A. U.) boreholes
  - Other boreholes

- I.M.A.U. BOREHOLES**
- Borehole Registration Number → 59 NE 15  
Borehole Site → 66.8 219  
Waste → 1.4  
Geological Classification → UGS1
- Grading Diagram

- Grading Diagrams**
- Each grading diagram shows the mean particle size distribution of a distinct deposit of sand and gravel.
- The height of the diagram is proportional to the mineral thickness.  
The widths of the divisions show the proportions of Fines, Sand and Gravel.

- OTHER BOREHOLES**
- The layout of information is the same as for I. M. A. U. boreholes, although data available may not be as comprehensive. They are registered in the same series.

- EXPOSURE RECORDS**
- Information from the inspection of exposures is shown in the same way as for boreholes, but they are located by an asterisk, thus \*. Grading and composition analysis is shown in the same way as boreholes.

- CATEGORIES OF DEPOSITS**
- Exposed mineral. CAT-E6
  - Continuous or almost continuous spreads of mineral beneath overburden. CAT-C1
  - Sand and Gravel either not potentially workable (see Report) or absent. CAT-A2
  - Sand and Gravel not assessed. CAT-N1

- RESOURCE BLOCKS**
- For the purpose of assessment, the mineral is divided into Resource Blocks (see Report). Each is designated by a letter.
- Detailed records may be consulted on application to the Head, Industrial Minerals Assessment Unit, Institute of Geological Sciences, Keyworth, Nottingham NG12 5GG.

The representation on this map of a Road, Track or Footpath is an evidence of a right of way.  
Primary Six-inch Geological Survey by A.J. Jukes - Brown in 1888-87, J.H. Blake 1887-89 and 1905-07.  
T.L. Preece 1905 and H. B. Woodward in 1907.  
Amendments to the boundary of the Chalk base by S.C.A. Holmes and P.H. Edmunds in 1946.  
Resurvey in 1974 by D. Foster, A.W. Kemp and S.R. Mills. G.A. Kellaway and G.W. Green, District Geologists.

Sand and Gravel Survey by H.C. Squirrell, C.E. Cozart and P. Robson 1971-76.  
R.G. Thurrell, Head, Industrial Minerals Assessment Unit.

1:25 000 Sand and Gravel Resource Sheet published 1981.  
G.M. Brown, D.Sc. F.R.S. Director, Institute of Geological Sciences.  
1981.

The GRID lines on this sheet are at 1 Kilometre interval.  
Heights are in feet above Mean Sea Level at Newlyn.  
Contour Values are in feet.  
I refer back to this map represents 1981.

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 so variable as sand and gravel. However, estimates of the volume and mean grading of the mineral as a whole in each Resource Block and given in the Report.

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