

wo/87/2 [1]



APPLIED GEOLOGICAL MAPPING SOUTHAMPTON AREA

Cover photograph

We see Southampton city centre from the air, looking northwards over the Royal Pier and Mayflower Park (where a Boat show is taking place) in the foreground. The low-lying area in the left centre, occupied mainly by industrial buildings, is formed of reclaimed land over Estuarine Alluvium deposits. Most of the rest of the city is built on River Terrace Deposits overlying formations of the Bracklesham Group.

Cambridge University Copyright: photo 70K - BW 45

**MAPS OF
DRIFT THICKNESS
(C1-C6)**

VOLUME 4

BGS Research Report ICSO/87/2

This report has been generated from a scanned image of the document with any blank pages removed at the scanning stage.
Please be aware that the pagination and scales of diagrams or maps in the resulting report may not appear as in the original

Natural Environment Research Council
BRITISH GEOLOGICAL SURVEY

**APPLIED GEOLOGICAL MAPPING
SOUTHAMPTON AREA**

Area covered by
1:50 000 Geological sheet No. 315 (Southampton)
Parts of OS 1:10 000 sheets SU20, SU21, SU22, SU30, SU31,
SU32, SU40, SU41, SU42, SU50, SU51 and SU52

VOLUME 4: MAPS OF DRIFT THICKNESS

R. A. Edwards, R. C. Scrivener and A. Forster

*Production of this report was supported by
the Department of the Environment but the views
expressed in it are not necessarily those of
the Department*

Bibliographic reference

EDWARDS, R.A., SCRIVENER, R.C. and FORSTER, A. 1987.
Applied geological mapping: Southampton area.
Research Report of the British Geological Survey, No ICSO/87/2, vol 4.

Authors

R. A. Edwards BSc PhD
R. C. Scrivener BSc PhD
British Geological Survey
St Just
30 Pennsylvania Road
Exeter EX4 6BX

A. Forster BSc

British Geological Survey
Keyworth
Nottingham NG12 5GG

This page is blank

Notes to the user

There is considerable variation in the quality and reliability of the source data used to compile this report and the accompanying set of applied geology maps, as well as a great disparity in the density of site investigation data within the study area. Therefore, the accuracy and reliability of the interpreted information reflects that of the source data. However, emphasis has been placed throughout on the most reliable data, particularly those derived from authoritative sources such as geotechnical engineers and geologists.

Thus the report and maps are to be regarded as the *best interpretation of the information available at the time of compilation*. They should be used for preliminary studies only and are not intended as a substitute for on-site investigations or detailed local searches. The responsibility for assuring that geological, geotechnical and mineral and water resource data for any given site are as indicated in the maps and in the figures and text of this report must remain solely that of the user.

The possible occurrence of undetected anomalous site conditions should always be anticipated. The indicated occurrences of mineral deposits do not necessarily imply an economic resource. The possible presence of unmapped variable thicknesses of superficial deposits and Made Ground, particularly within the urban area of Southampton, should also be taken into account in any planning procedures.

There is no substitute for the knowledge provided by a detailed site investigation that takes into consideration the extent, nature and location of a proposed development. Therefore the report and maps are intended a) to give guidance on when to seek specialist advice and b) to aid developers in formulating effective investigations.

No information made available after the end of 1986 has been taken into account in this report.

All National Grid references in the report lie within the 100km square SU. Grid references are given to either eight figures (accurate to within 10m), or six figures for more extensive locations.

Data used in preparing this report and associated maps is lodged at the Exeter office of the British Geological Survey. Any enquiries concerning these documents should be directed to that office. Enquiries concerning the computer techniques or methodology should be directed to the Edinburgh or Keyworth office of the Survey. Enquiries about purchase of the report or maps should be

directed to the National Geosciences Data Centre, British Geological Survey, Keyworth, Nottingham NG12 5GG.

DESCRIPTION OF THE APPLIED GEOLOGY MAPS

Drift thickness (Maps C1-C6)

This set of maps consists of six sheets at the 1:25 000 scale giving an interpretation of drift thickness over the study area. For the purposes of these maps, Made Ground is included with drift, i.e. the maps show the thickness of all materials that rest on solid formations.

The maps are based on two sources of data. Firstly, the areas where drift is present are taken directly from the drift geological map. The criterion used in mapping is that the drift should be at least 1 metre thick. The second source of data consists of boreholes which wholly or partially penetrate drift deposits. Boreholes that do not reach the base of drift deposits provide minimum values of drift thickness. Head is widespread in the study area but generally not sufficiently extensive to be mapped. It is rarely thicker than 1.2m although locally there are considerably greater thicknesses. Thus, some boreholes outside the mapped area of drift show drift (mainly Head) to be present, but it is considered that such areas are generally patchy and localised, and no attempt had therefore been made to show them on the maps.

There are generally insufficient data to contour drift thickness in detail. Rather, areas of ground have been delineated within which boreholes or outcrop data indicate that the drift thickness is generally within the range indicated. The thickness ranges selected are as follows: 1 to 5m; 5 to 10m; 10 to 15m; 15 to 20m; and over 20m. These thickness categories are indicated by different ornaments on the thematic maps. Categorisation has been carried out manually, but it is anticipated that this function will eventually be carried out by an appropriate computerised package. The accuracy of the thickness classification is naturally a function of the borehole density (shown on the data distribution map which accompanies the drift thickness maps) but, in general, areas where the greatest variation in drift thickness would be expected coincide with areas of greatest borehole density.

The maps of drift thickness are generally self-explanatory, but the following notes are provided as a guide to the main features of the maps.

With few exceptions, drift deposits thicker than 5m are confined to the river valleys and estuaries of the study area, with deposits away from the

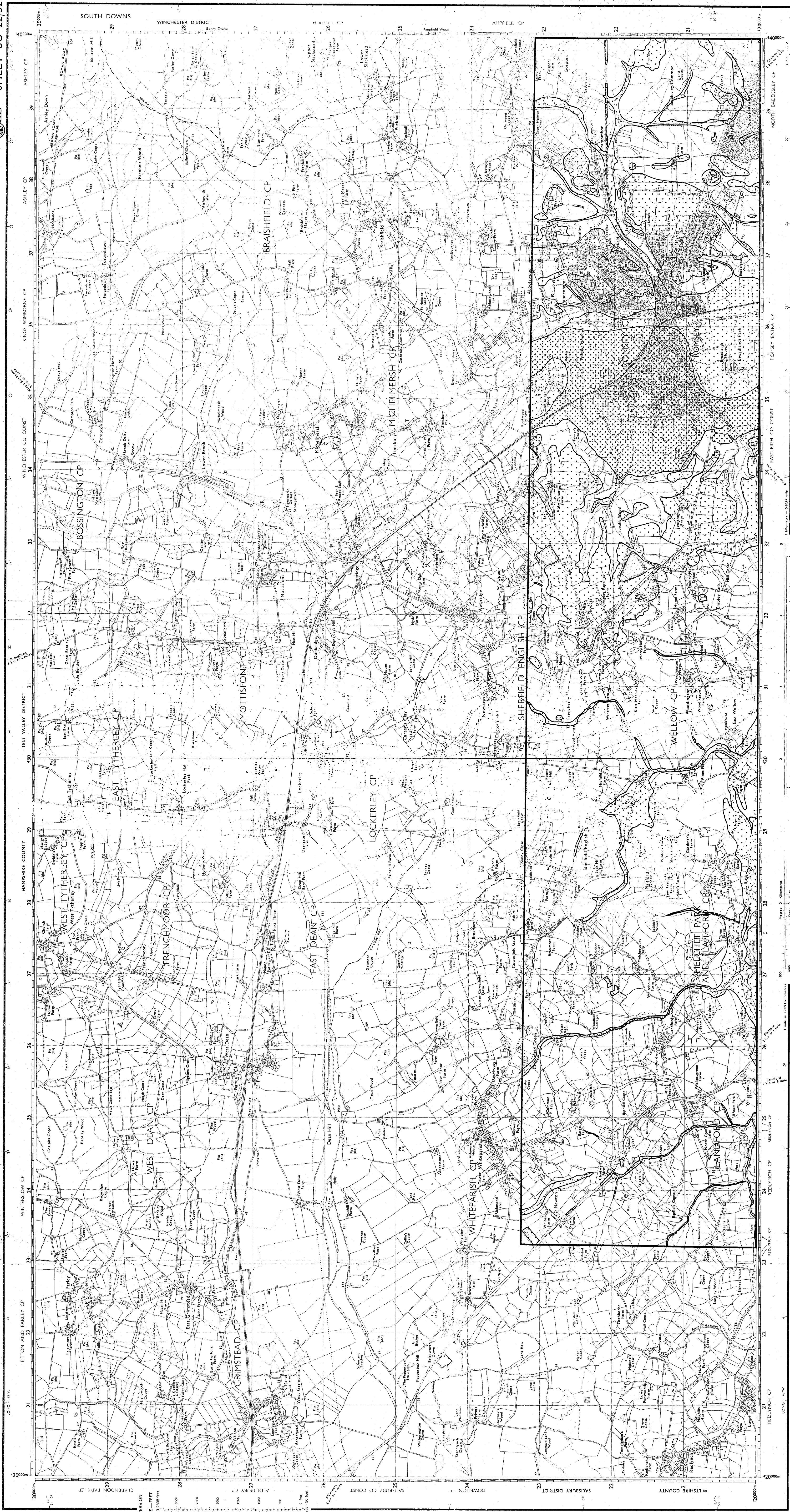
valleys and estuaries being in the thickness range of 1 to 5m. Thus, most River Terrace Deposits and the Older River Gravels are 1 to 5m thick; only in the southeast of the project area, around Hardley [431 047], Holbury and Fawley, and in the Lord's Hill [388 159], Shirley Warren [398 148] and Maybush [386 146] districts of Southampton, do River Terrace Deposits locally have thicknesses in the 5 to 10m range.

The most striking features of the maps is the buried channel of the River Test beneath Southampton Water, which, towards the southern edge of the study area, is filled with drift deposits exceeding 20m in thickness. The buried channel can be traced northwestwards to Southampton Docks in a belt in which thicknesses are in the range 10 to 15m. Drift-filled buried channels are also present beneath the valleys of the River Hamble and River Itchen; drift up to 20m thick is present near the mouth of the River Hamble, but this thickness is based on data from only two boreholes.

Along the alluvial tracts of the River Test and River Itchen, drift thicknesses are commonly in the range 5 to 10m, although considerable areas are also in the 1 to 5m category.

In the Test valley, the thickest (5 to 10m) drift extends in a broad belt along the west side of the valley, but at Millbrook [388 134] this belt of thicker drift swings across to the north side of the valley, and passes into an area of drift 10-15m thick that occupies a buried channel beneath the area of reclaimed land just south of Southampton city centre.

Along the Itchen valley, from Swaythling [441 157] southwards, much of the drift is between 5 and 10m thick; north of Swaythling the drift thickness range is 1 to 5m, with local areas of thicker (5 to 10m) drift.

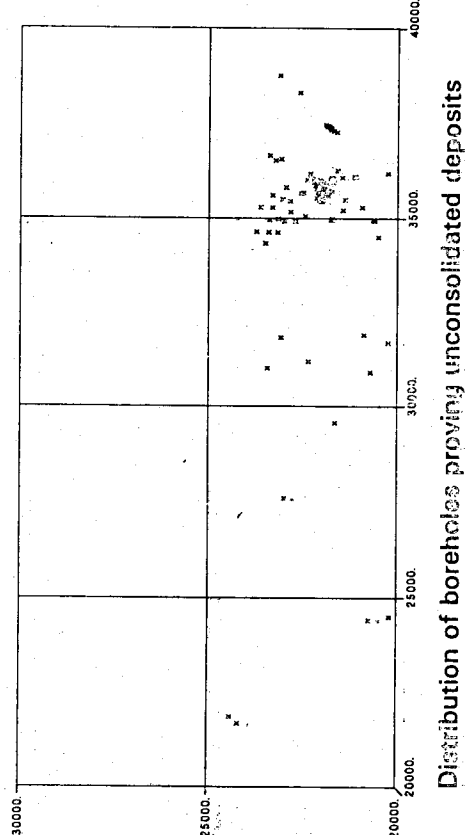


THEMATIC GEOLOGY MAP
SOUTHAMPTON
(SU 22/32)

THICKNESS OF UNCONSOLIDATED
DEPOSITS (INCLUDING MADE GROUND)

EXPLANATION

- Unconsolidated deposits generally less than 1 m thick
- Unconsolidated deposits generally from 1 to 5 m thick
- Unconsolidated deposits generally from 5 to 10 m thick



Based on geological survey at 1:10,000 scale by
W. Whitaker and C. Reid from 1889 to 1890.
Revised at 1:10,000 scale by R.A. Edwards
from 1977 to 1980.

Compiled by J. L. Laxton and K. C. Menim, BGS
Edinburgh, March 1987.

Any enquiries concerning this map should be directed to

British Geological Survey
33 Pentonville Road
London N1 9PL
020 7616 6000

This map and the accompanying report were
commissioned and financed by the Department of the
Environment.

Topography, Ordnance Survey 1:25,000 Series

Thematic geology, British Geological Survey

This map provides only general indications of (general) conditions and must not be relied upon as a
source of detailed information about specific areas. It is intended for use as a guide to the
general geology of the area. For detailed information about specific areas, by seeking appropriate professional advice and
ground surveys, then most satisfactory. This map is not a substitute for professional advice and
any professional liability is not accepted.

© Crown copyright 1987

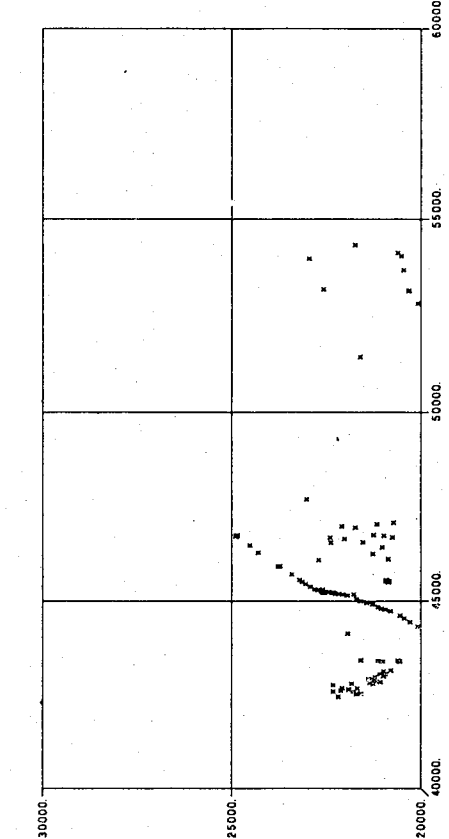
Scale 1:25,000

**THEMATIC GEOLOGY MAP
SOUTHAMPTON**
(SU 42/52)

**THICKNESS OF UNCONSOLIDATED
DEPOSITS (INCLUDING MADE GROUND)**

EXPLANATION

- Unconsolidated deposits generally less than 1 m thick
- Unconsolidated deposits generally from 1 to 5 m thick
- Unconsolidated deposits generally from 5 to 10 m thick



Distribution of boreholes proving unconsolidated deposits

Based on geological survey at 1:10 560 scale by
M.T. Holder and R.C. Scrivener from 1979 to 1980.
Resurveyed at 1:10 000 scale by R.A. Edwards.
Compiled by J. L. Laxton and K. C. Menim, BGS
Edinburgh, March 1987.

Any enquiries concerning this map should be directed to

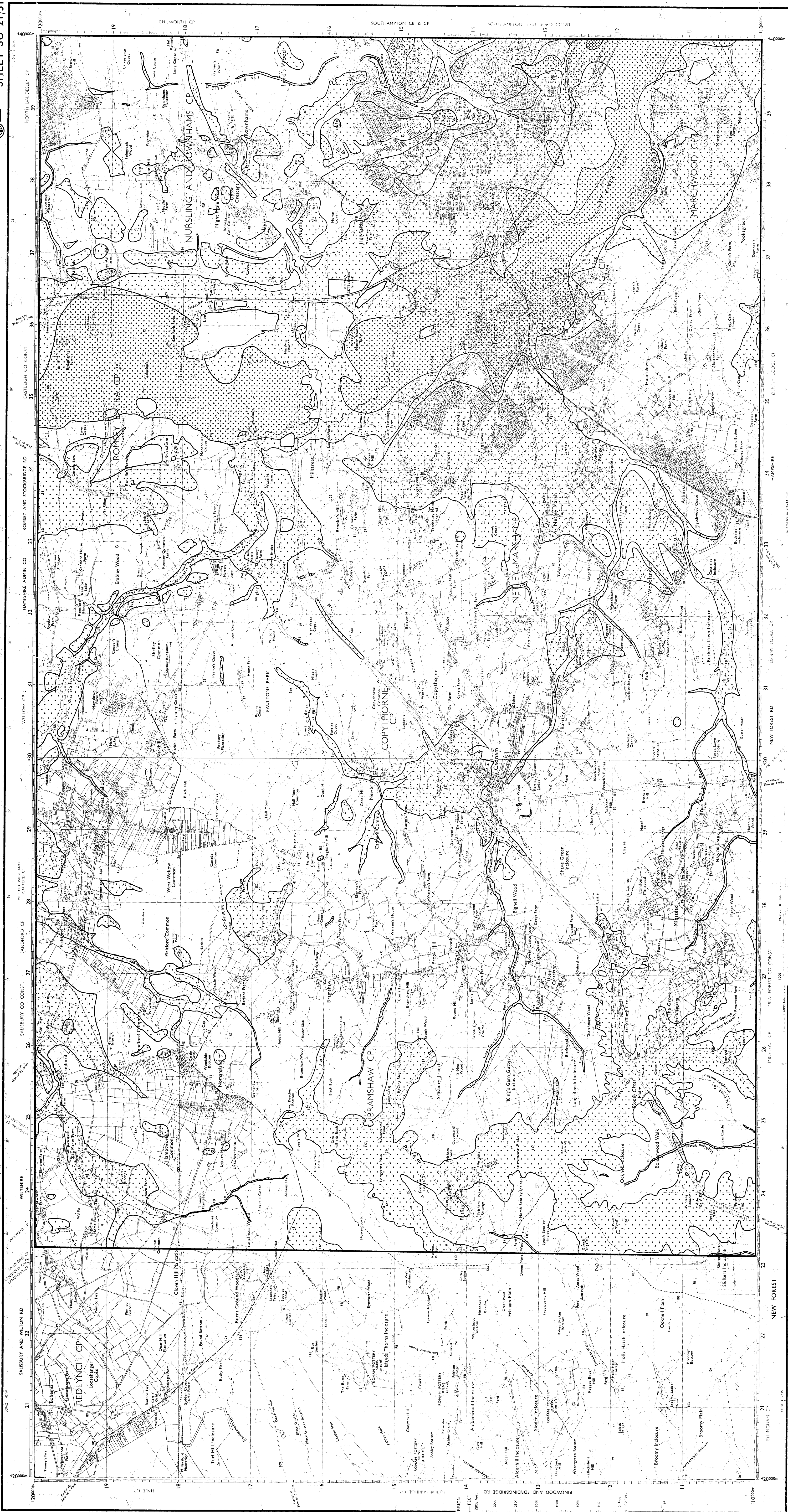
British Geological Survey
61, Whiteknights Road
Reading, RG6 2AL
EX4 6BX

This map and the accompanying report were
commissioned and financed by the Department of the
Environment.

Topography, Ordnance Survey 1:25 000 Series

This map provides only general indications of ground conditions and must not be relied upon as a
basis for detailed investigations. Users must satisfy themselves, by seeking appropriate professional advice and
carrying out ground surveys and site investigations if necessary, that ground conditions are suitable
for any particular land use or development.

© Crown copyright 1987



Scale 1:25 000

© Crown copyright 1987

THEMATIC GEOLOGY MAP SOUTHAMPTON (SU 21/31)

THICKNESS OF UNCONSOLIDATED DEPOSITS (INCLUDING MADE GROUND)

EXPLANATION

- Unconsolidated deposits generally less than 1 m thick
- Unconsolidated deposits generally from 1 to 5 m thick
- Unconsolidated deposits generally from 5 to 10 m thick
- Unconsolidated deposits generally from 10 to 15 m thick

CONVERSION

METRES - FEET

1 metre = 3.28 feet

1.25 metres = 4.1 feet

1.5 metres = 4.9 feet

1.75 metres = 5.7 feet

2.0 metres = 6.6 feet

2.25 metres = 7.4 feet

2.5 metres = 8.2 feet

2.75 metres = 9.0 feet

3.0 metres = 9.8 feet

3.25 metres = 10.7 feet

3.5 metres = 11.5 feet

3.75 metres = 12.3 feet

4.0 metres = 13.1 feet

4.25 metres = 13.9 feet

4.5 metres = 14.8 feet

4.75 metres = 15.6 feet

5.0 metres = 16.4 feet

5.25 metres = 17.2 feet

5.5 metres = 18.0 feet

5.75 metres = 18.9 feet

6.0 metres = 19.7 feet

6.25 metres = 20.5 feet

6.5 metres = 21.3 feet

6.75 metres = 22.1 feet

7.0 metres = 22.9 feet

7.25 metres = 23.8 feet

7.5 metres = 24.6 feet

7.75 metres = 25.4 feet

8.0 metres = 26.2 feet

8.25 metres = 27.1 feet

8.5 metres = 27.9 feet

8.75 metres = 28.7 feet

9.0 metres = 29.5 feet

9.25 metres = 30.3 feet

9.5 metres = 31.2 feet

9.75 metres = 32.0 feet

10.0 metres = 32.8 feet

10.25 metres = 33.6 feet

10.5 metres = 34.4 feet

10.75 metres = 35.3 feet

11.0 metres = 36.1 feet

11.25 metres = 36.9 feet

11.5 metres = 37.7 feet

11.75 metres = 38.5 feet

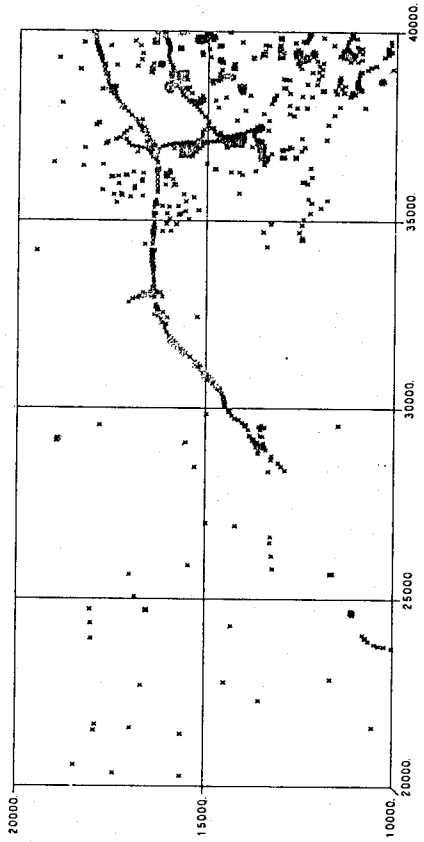
12.0 metres = 39.4 feet

12.25 metres = 40.2 feet

12.5 metres = 41.0 feet

12.75 metres = 41.8 feet

13.0 metres = 42.7 feet



Distribution of boreholes proving unconsolidated deposits

Based on geological survey at 1:10 560 scale by C. Reid
and others from 1895 to 1935. Resurveyed at
1:10 000 scale by R.A. Edwards and E.C. Tretham from
1975 to 1980.

Compiled by J. L. Laxton and K. C. Menhinick, BGS
Edinburgh, June 1987.

Any enquiries concerning this map should be directed to

British Geological Survey
31, Great Ouse Valley Road
Edinburgh
EH4 6BX

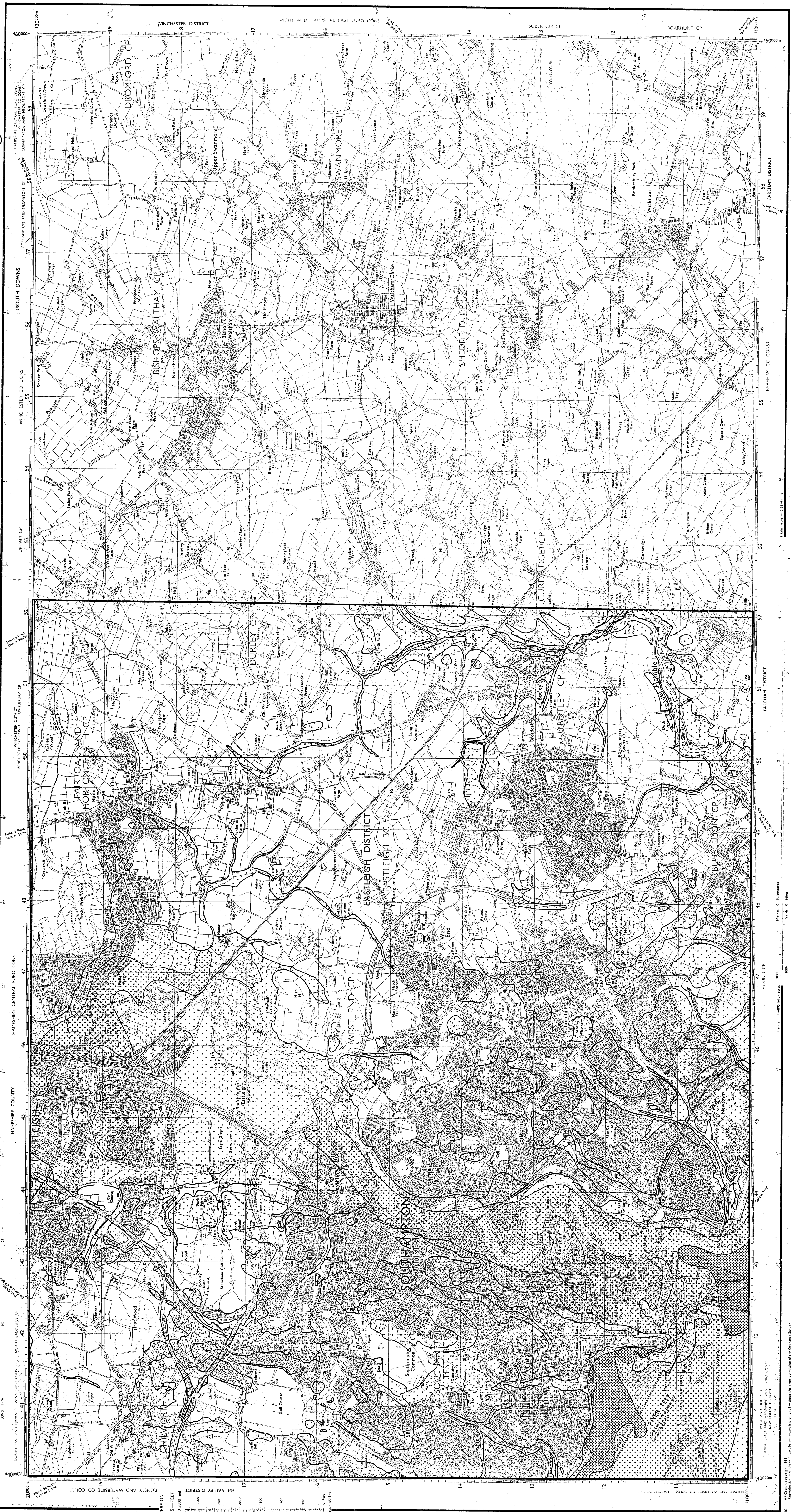
This map and the accompanying report were
commissioned and financed by the Department of the
Environment.

Topography, Ordnance Survey 1:25 000 Series
Thematic geology copyright, British Geological Survey

This map provides only general indications of ground conditions and must not be relied upon as a
basis for detailed information about specific areas, or as a substitute for site investigations or
other detailed surveys. It is not intended to be used for detailed design or construction work and
carrying out ground surveys and site investigations if necessary, that ground conditions are suitable
for any particular land use or development.

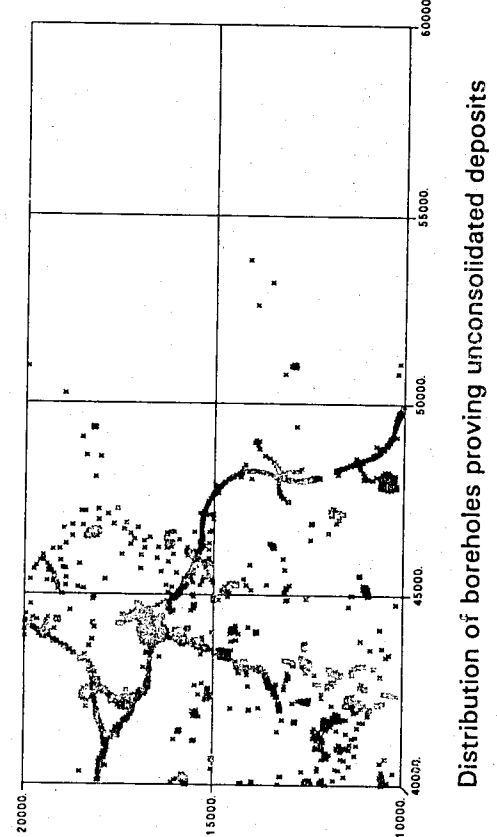
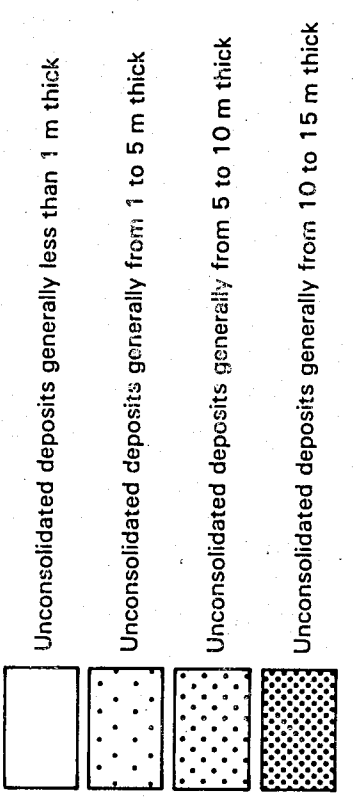
© Crown copyright 1987

WO 87/2



THEMATIC GEOLOGY MAP SOUTHAMPTON (SU 41/51)

THICKNESS OF UNCONSOLIDATED DEPOSITS (INCLUDING MADE GROUND)



Based on geological survey at 1:10,000 scale by C. Reid and W. Whitaker from 1889 to 1898. Reprinted by permission of the British Geological Survey. Compiled by J. L. Laxton and K. C. Menzies, BGS, Edinburgh, March 1987.

Any enquiries concerning this map should be directed to

British Geological Survey
Sheffield
30 Pennywell Road
Edinburgh
EH4 6BX

This map and the accompanying report were commissioned and financed by the Department of the Environment.

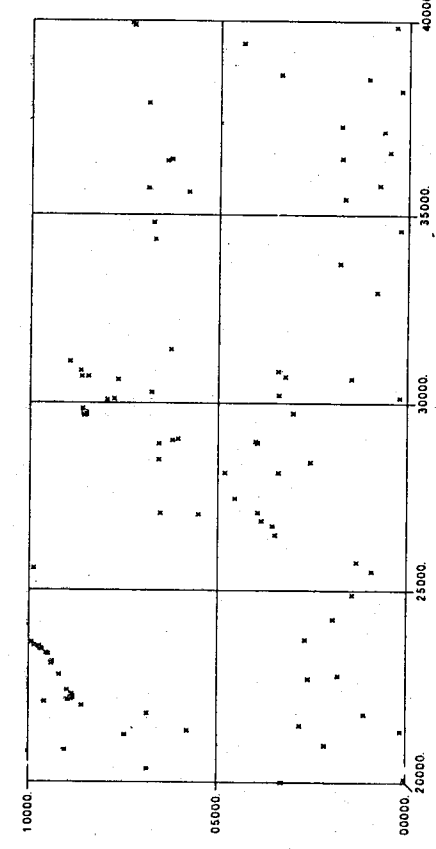
Topography, Ordnance Survey 1:25,000 Series
Thematic geology copyright, British Geological Survey

This map provides only general indications of ground conditions and must not be relied upon as a basis for design or as a basis for site investigations or for any other purpose. It is not intended to be used as a basis for any other purpose. It is not intended to be used as a basis for any other purpose. It is not intended to be used as a basis for any other purpose.

THICKNESS OF UNCONSOLIDATED
DEPOSITS (INCLUDING MADE GROUND)

EXPLANATION

- | | |
|---|---|
|  | Unconsolidated deposits generally less than 1 m thick |
|  | Unconsolidated deposits generally from 1 to 5 m thick |



Distribution of boreholes proving unconsolidated deposits

Based on geological survey at 1:10 560 scale by C. Reid in 1892 and 1897.
Resurveyed at 1:10 000 scale by E.C. Freshney and R.C. Scrivener from 1976 to 1978.

Compiled by J. L. Laxton and K. C. Mennim, BGS
Edinburgh, March 1987.

Any enquiries concerning this map should be directed to

British Geological Survey

30 Pennsylvania Road
Exeter
EX4 6BX

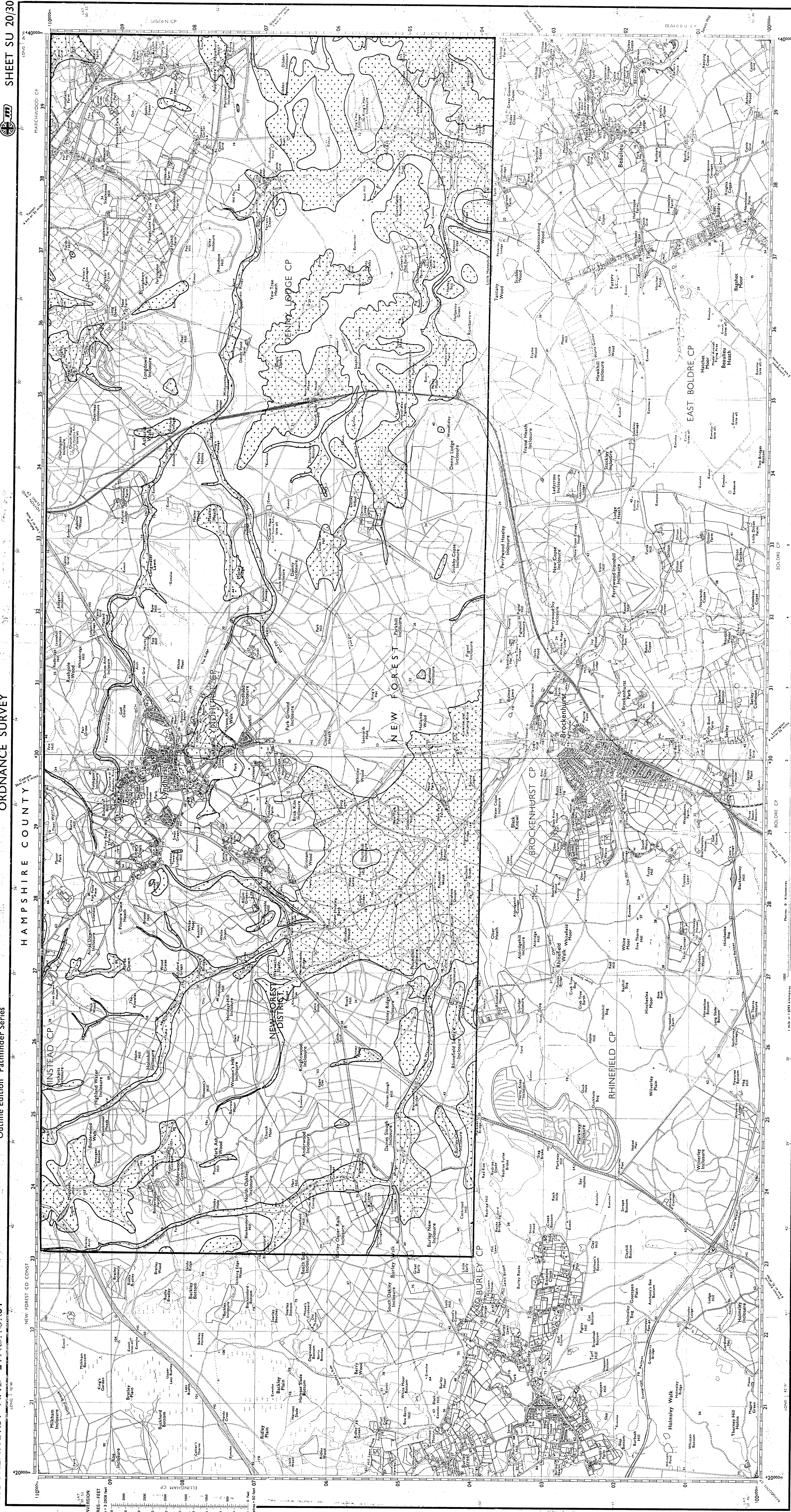
This map and the accompanying report were commissioned and financed by the Department of the Environment.

Topography, Ordnance Survey 1:25 000 Series
Thematic geology overprint, British Geological Survey

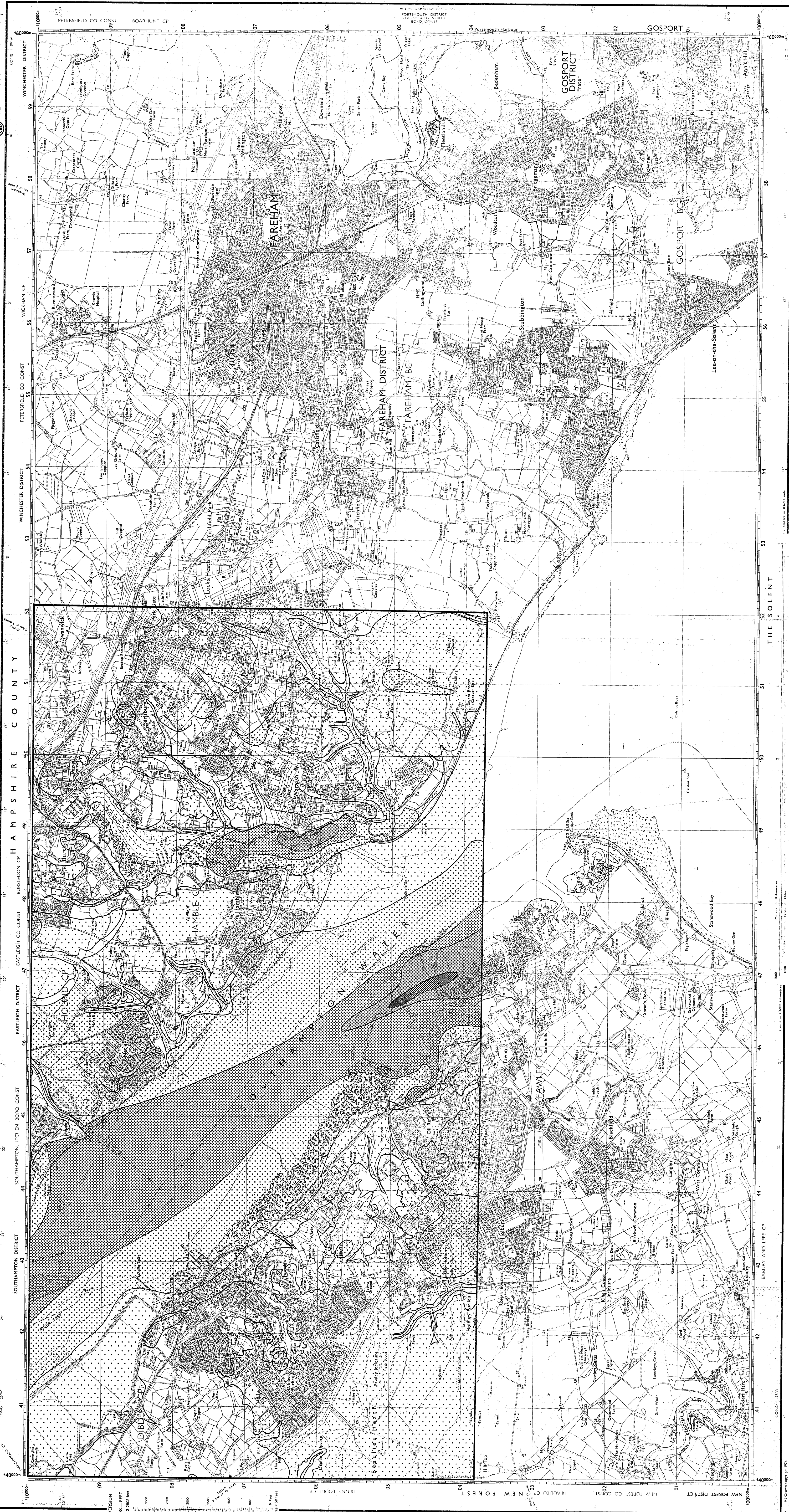
This map provides only general indications of ground conditions and must not be relied upon as a source of detailed information about specific areas, or as a substitute for site investigations or ground surveys. Users must satisfy themselves, by seeking appropriate professional advice and carrying out ground surveys and site investigations if necessary, that ground conditions are suitable for any particular land use or development.

© Crown copyright 1987

W0/87/2



Scale 1:25 000



CONCRETE
METRES—FEET
1 metre = 3.2808 feet
1000 900 800 700 600 500 400 300 200 100 0
1:25,000 Scale

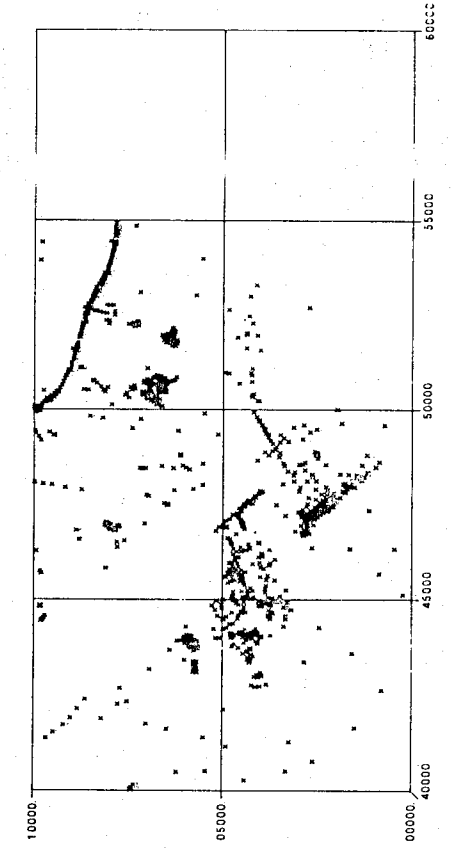
THEMATIC GEOLOGY MAP SOUTHAMPTON (SU 40/50)

THICKNESS OF UNCONSOLIDATED DEPOSITS (INCLUDING MADE GROUND)

EXPLANATION

- Unconsolidated deposits generally less than 1 m thick
- Unconsolidated deposits generally from 1 to 5 m thick
- Unconsolidated deposits generally from 5 to 10 m thick
- Unconsolidated deposits generally from 10 to 15 m thick
- Unconsolidated deposits generally from 15 to 20 m thick
- Unconsolidated deposits generally from 20 to 25 m thick

W0/87/a



Based on geological survey at 1:10 560 scale by C. Reid
thicker from 1891 to 1898. Resurveyed at
1:11 000 scale by E. C. Freeman from 1976 to 1980.
Compiled by J. L. Laxton and K. C. Mannin, BGS
Edinburgh, March 1987.

Any enquiries concerning this map should be directed to
British Geological Survey
St. James
30 Pennsylvania Road
Exeter
EX4 6BX

This map and the accompanying report were
commissioned and financed by the Department of the
Environment.
Topography, Ordnance Survey 1:25 000 Series
Thematic geology copyright, British Geological Survey

This map provides only general indications of ground conditions and must not be relied upon as a
source of detailed information about specific areas, or as a substitute for site investigations or
other specialist surveys. It is intended to provide a general overview of the ground conditions and
carrying out detailed surveys and site investigations if necessary, that ground conditions are suitable
for any particular land use or development.

W0/87/a