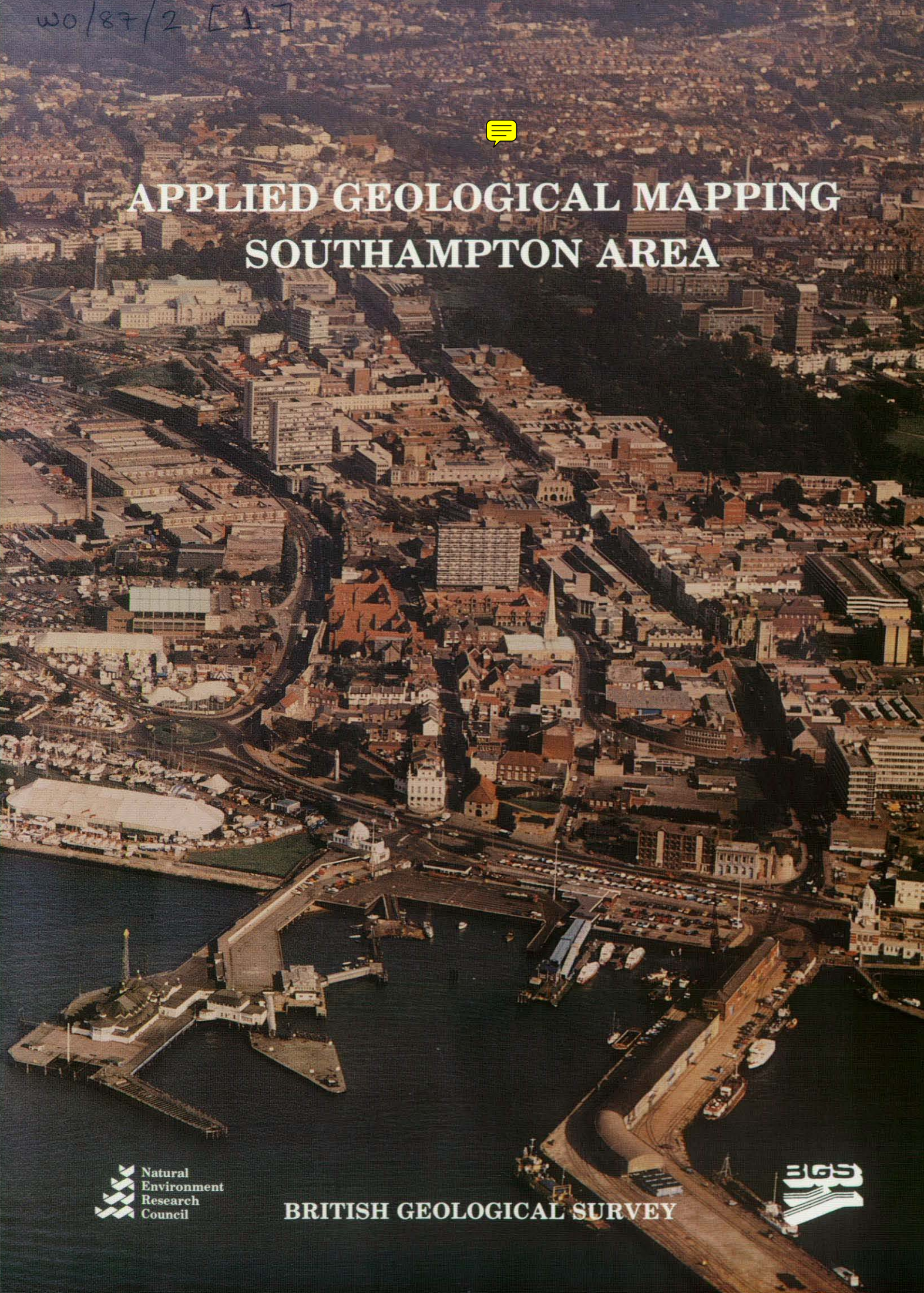


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# APPLIED GEOLOGICAL MAPPING SOUTHAMPTON AREA



BRITISH GEOLOGICAL SURVEY





**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.

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**MAPS OF  
AVAILABILITY  
OF GEOTECHNICAL  
TEST DATA  
(I1-I7)**

**VOLUME 8**

**BGS Research Report ICSO/87/2**

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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 8: MAPS OF AVAILABILITY OF GEOTECHNICAL  
TEST DATA**

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

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## 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**

### **Availability of geotechnical test data (Maps I1-I7)**

These maps, at 1:50 000 scale, each show the distribution of a particular type of geotechnical test data. The topics covered on individual maps are standard penetration tests, particle size analysis, consolidation tests, shear strength tests and chemical analyses of soil and ground water including sulphates.

The maps are based on an analysis of the test results contained in site investigation reports held by BGS. Where a report contains data on a particular type of test then all boreholes referred to in the report have been plotted. The assumption has therefore been made that the same tests have been carried out on samples from all boreholes referred to in a report, and while this is often the case, it is by no means always so. The maps therefore tend to overestimate the number of individual sites from which test data has been obtained, but can be taken as a guide to distribution and relative abundance of data referring to different types of test.

The geotechnical data used to classify the geological formations into groups of similar engineering behaviour was obtained mainly from commercial site investigation reports on sites within the project area. This was supplemented by a lesser amount of information obtained from books, and papers published in scientific journals.

The data is therefore not necessarily statistically representative of the geological formations present in the area. Some formations have no geotechnical data available and some formations have information about only part of their outcrop. The values quoted are, therefore, only a guide to the geotechnical behaviour and are not to be used for foundation or building design.

The results of the following geotechnical tests were abstracted from the site investigation reports and entered into a data base.

1. Standard Penetration Test
2. Bulk Density
3. Dry Density
4. Moisture Content
5. Liquid Limit
6. Plastic Limit
7. Plasticity Index
8. Particle Size Distribution
9. Permeability

10. Triaxial Test (drained and undrained)
11. Shear Box Test (drained and undrained)
12. Vane Test
13. Consolidation
14. Compaction
15. California Bearing Ratio
16. Specific Gravity
17. pH
18. Sulphate Content
19. Organic Content

Details of these tests are given in the Appendix.

Most samples had been tested for only a few of the parameters, only rarely had a full range of tests been done. In order to assist the classification of the materials in terms of their engineering behaviour, the results of the more important and more common tests were analysed, namely:-

1. Standard Penetration Test
2. Bulk Density
3. Dry Density
4. Moisture Content
5. Liquid Limit
6. Plastic Limit
8. Particle Size Distribution
10. Triaxial Test (undrained)
13. Consolidation

The results of this analysis are quoted in the tables of geotechnical properties on the Engineering Geology of Solid Deposits and the Engineering Geology of Superficial Deposits Maps.

Where geotechnical information about a formation was not available from within the project area, data from outside the area have been used (where possible) and the source quoted.

Although the geotechnical data obtained by the project is not a statistically valid sample of the formations present, it does form the basis for a guide to the engineering behaviour of the materials of the area. The classification may be used as a guide when planning a site investigation rather than as a substitute for a site investigation.