

GUIDELINES FOR ELECTRONIC TRANSFER OF SITE INVESTIGATION DATA

Edition 3.0



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ACKNOWLEDGEMENT

This document has been prepared by the Building and Construction Authority (BCA) for use in accordance with the practices in Singapore. The requirements and format of electronic transfer of non-geophysical/conventional site investigation data to be adopted for Singapore, named as AGS(SG), are based on AGS (Edition 3.1) established by the Association of Geotechnical and Geoenvironmental Specialists (AGS).

BCA acknowledges the AGS for the establishment of a standard interchange format for use in the geotechnical and geoenvironmental industries, and their encouragement in allowing BCA to use the electronic transfer format and other information contained in their manual for producing this guidelines document.

| Edition Reference | Date of issue | Amendments |
|--------------------------|----------------------|--|
| Edition 3.0 | Sep 2025 | Standards for Electronic Transfer of Site Investigation Data_Addendum 2025 |
| Edition 2.0 | Oct 2021 | Standards for Electronic Transfer of Site Investigation Data_Addendum 2021 |
| AGS 3.1 | 2013 | Original Issue |

1 INTRODUCTION

- 1.1 Presently in Singapore, the data from site investigation works is not widely submitted or prepared in electronic format. For those who adopt electronic format, the format is not standardised as each user has a different format for the data, resulting in the lack of compatibility among various database systems to enable the sharing of geo-information.
- 1.2 BCA's Singapore Geological Office (SGO) has therefore prepared a standardised electronic format based on the needs and practices in Singapore. The requirements and format of electronic transfer are tailored basing on, where applicable, the AGS (Edition 3.1) established by the Association of Geotechnical and Geoenvironmental Specialists, UK (AGS). Such electronic format protocol is compatible with the standard geotechnical and geophysical electronic data formats used internationally.
- 1.3 The seamless transfer, interchange, storage and retrieval of site investigation data in a standardised electronic format will minimise cost and time, and enable a more efficient and greater use of the geoinformation.
- 1.4 With a standardised electronic format, data can be used e.g. analyses and design, without time-consuming and costly re-entry of data with the associated potential for errors or incomplete data entry. It will also improve the preparation, transfer and storage of geo-information; promote education and research in engineering; and stimulate data exchange and collaboration among researchers and practitioners.
- 1.5 To encourage the data preparation, analysis, transfer and storage in electronic format, SGO prepares this guidelines document which presents a minimum standard for the electronic transfer of site investigation data.
- 1.6 The guidelines document covers two categories of data, namely non-geophysical or conventional data, and geophysical data. Basically, non-geophysical/conventional data will follow the AGS format while geophysical data follows the Log ASCII Standard (LAS), Log Information Standard (LIS) and Society of Exploration Geophysicists (SEG Y) formats

2 SCOPE

- 2.1 This publication is the first edition of the Singapore file format protocol and covers a standardised electronic format for the geological, geotechnical, geoenvironmental, geophysical field and laboratory testing data. It aims to standardise and encourage the use of the electronic format for site investigation data in Singapore

3 USER SUPPORT

To help users, BCA prepares document of “Guidelines for Electronic Transfer of Site Investigation Data” which is available and may be downloaded from the BCA website. An excel template for the preparation of AGS format can be downloaded from the BCA website.

4 SITE INVESTIGATION DATA

- 4.1 Figure 1 shows the overall grouping of the data which can be obtained from the different types, methods and techniques of site investigations commonly used in Singapore. The site investigation data is broadly divided into two categories, namely non-geophysical/conventional data; and geophysical data. Details on the management of these data are described in the ensuing Sections 5 and 6.

5 NON-GEOPHYSICAL/CONVENTIONAL DATA MANAGEMENT

- 5.1 For non-geophysical/conventional data, an electronic format, named as AGS(SG), will be adopted for use in Singapore. This format version AGS(SG) is tailored using the AGS format which has been developed by the Association of Geophysical and Geoenvironmental Specialists (AGS) in UK since 1991. Based on the prevailing site investigation practices in Singapore, new groups and headings for some data are created or added, and some data groups, which are not common, have been deleted or omitted.

- 5.2 Unless stated otherwise this document on AGS(SG) format shall take precedence over the published AGS document.

5.3 AGS(SG) Format

- 5.3.1 AGS(SG) format organizes the base data in GROUPS and FIELDS. It has rules and file format characteristics; and uses abbreviations, codes and units. The definitions of all GROUPS and FIELDS; lists of abbreviations, codes and units for the format are defined in the Data Dictionary.

- 5.3.2 **Appendix 1** contains the Data Dictionary. **Appendix 2** has the rules for the AGS Format based on AGS 3.1 version. The lists of abbreviations, codes and units for AGS(SG) format can be found in **Appendix 3**.

5.4 Base Data

5.4.1 AGS(SG) format contains base data of a particular site investigation project such as project background, borehole records and test data which are required to be reported in accordance to the relevant Singapore Standards, British Standards and other recognized documents. Interpreted or derived data should not be transmitted as any further processing being at the discretion and under the control of the receiving user.

5.5 Groups and Fields

5.5.1 The data is organized in the respective Data GROUPS within which are subdivided into a series of FIELDS. The GROUPS relate to specific elements of data which are obtained, such as project information, borehole details, field testing records and monitoring data.

5.5.2 Every FIELD represents a specific item such as stratum description, sample depth, etc. and has been defined as having the status of KEY or COMMON. KEY FIELDS are necessary in order to define the data unambiguously. Hence, KEY FIELDS include data such as Project ID, Hole ID, for maintaining data integrity. The COMMON FIELDS contain the associated data.

5.5.3 The different status of individual Data FIELDS is presented in the Data Dictionary as shown below:

| Status | Symbol |
|--------|--------|
| KEY | * |
| COMMON | Blank |

5.6 Lists of Abbreviations, Codes and Units

5.6.1 For consistency in terminology and brevity, GROUPS and FIELDS use a series of the abbreviations, standard codes and default units.

5.6.2 All the abbreviations and codes used in any GROUPS are defined in the ABBR Group which is included in every submission. This applies to both standard codes given in the lists of codes and abbreviations, and user defined, project specific codes.

5.6.3 The units listed in **Appendix 3** are the units in the data dictionary definitions and shall be used wherever possible to avoid potential confusion. They are either the appropriate SI units or the unit defined by the particular Singapore or British Standards relating to that specific item of data. A “data units” field is included within the data set in accordance with the rules.

5.6.4 Non-standard data units. It is recognised that situations will occur where

neither the SI unit nor the Singapore/British Standard unit is being used. In such situations, non-standard data units shall be declared in the data transfer file. Reference should be made to Rule 18 for AGS data format in **Appendix 2** for the appropriate data format rules relating to non-standard units.

5.7 Data Dictionary

5.7.1 The Data Dictionary for Singapore format AGS(SG), has been compiled to facilitate flexibility and ease of recognition. It comprises a series of tables of information on different aspects of site investigation information. Each table comprises a GROUP name, column headings, i.e., FIELDS, units, descriptions, examples, types and formats.

5.8 File Format

5.8.1 The AGS format relies on strict adherence to the rules listed in **Appendix 2**.

5.8.2 The file format of the electronic data should be transmissible using American Standard Code for Information Interchange (ASCII) files, which are text files with the data surrounded by quotes and separated by commas. All fields are text.

5.9 Group Hierarchy

5.9.1 The GROUPS are organized in a hierarchy with an inverted tree like structure.

5.9.2 At the top of the hierarchy is the HOLE Group, and all other Groups lie below this. One of the Groups immediately below HOLE is SAMP, and all laboratory testing groups lie below SAMP. HOLE is termed the "parent" Group of SAMP. Each Group has only one parent, but there can be many Groups below each parent. Each Group is linked to its parent (the Group above it in the hierarchy) by Key Fields. Equally, each Group is linked to the Group(s) below it by Key Fields. For this structure to work, and the link to be made correctly between related Groups, the data in the Key Fields should be consistent and unique. If a Data Group is included in a submission, its parent Group must also be included, and this applies all the way up the hierarchy. Therefore the HOLE Group must always be present and if there is any laboratory testing, the SAMP Group must be present. The relationship diagram for AGS(SG) is shown in Figure 2. The table defining the Group hierarchy by indicating the parent for each Group can be found in **Appendix 1**.

5.9.3 There are six Groups that are not part of this hierarchy. The PROJ, ABBR,

CODE, DICT, FILE and UNIT Groups sit above the hierarchy, and each has a general purpose:

- The PROJ, ABBR and UNIT Groups must always be included in the AGS(SG) file as they define the project, the submission details and the abbreviations, data types & units used within the data file (See Rules 18 to 20 for AGS data format in **Appendix 2**).
- The CODE Group must be included if the CNMT Group is used for chemical test results, as the CODE Group defines the determinand codes used within CNMT.
- The DICT Group must be included if any user defined Groups or Headings are present (See Rule 21 for AGS data format in **Appendix 2**).
- The FILE Group must be included if any associated files (non-AGS format files) are included in the submission (See Rule 22 for AGS data format in **Appendix 2**).

5.10 Singapore AGS Format

5.10.1 The type of geo-information included in AGS(SG) data format is based on the site investigation methods and techniques used in Singapore (**Figure 1**). The Data Dictionary for AGS(SG) containing the modified Groups and Headings is attached in **Appendix 1**.

5.10.2 New GROUPS, which are prefixed with "?", are added to the AGS(SG) data format to provide more details on the particular site investigation techniques or tests that are not covered in the existing AGS(Version 3.1) data format. They include:

| New GROUPS | Description |
|-------------------|--------------------------------------|
| ?BTVT | Borehole Televiwer Tests |
| ?LEMC | Emerson Class Tests |
| ?GMJT | Goodman Jack Tests |
| ?ISTR | In-situ Stress Tests |
| ?HORN | Borehole Orientation and Inclination |

6 **GEOPHYSICAL DATA MANAGEMENT**

6.1 Types of Geophysical Data

6.1.1 The data types include geophysical techniques such as seismic techniques, electrical, gravity, etc., and any re-processing of the same. Essentially, field records and supporting documents of the original field data including survey level data, navigation data, final processed data, quality control plots/calibrations, CD-ROM lists etc., and all processed data are required to be submitted. This is to allow an independent third party

user to re-process the original data or re-interpret the data, if required.
Tables 1 to 4 provide a list of data types, media type and format.

6.1 Submission of Geophysical Data

6.2.1 Geophysical data are to be submitted in digital and hard copies. For digital files, the following data format is required

- (i) inclusion of metadata in header file,
- (ii) submission of data in standard, widely used file formats, including
- (iii) submission of drilling data in standard formats.

6.2.2 The data shall include all field recordings and supporting documentation necessary to allow future investigators to reprocess the original data and all processed data, including re-interpretation of the original data. The submission shall include all original field data, supporting documentation, navigation data, final processed data, quality control plots/calibrations, tape lists, etc.

6.2.3 Header data for specific data types should follow that of the Society of Exploration Geophysicists (SEG).

6.3 Metadata

6.3.1 Metadata provides information about a certain item's content and it should be included in the header of the data file. For example, an image may include metadata that describes how large the picture is, the colour depth, the image resolution, when the image was created, and other data. Metadata of a text document may contain information about how long is the document, who is the author, when was the document written and a short summary of the document.

6.3.2 These data should be presented in a file header at the top of the data and constructed in such a way as to present the information by category followed by subcategory.

6.3.3 Metadata include:

- The date when the data is produced
- The date when the data is altered
- The parameters controlling data acquisition
- The parameters controlling data alteration
- The name of the company for whom the data is produced
- The Client for which the data is produced
- The activity which produces the data, e.g. name of survey activity
- The name of the firm which produces the data

- Any translation parameters required for conversion of the data (especially location data)
- The equipment used to generate the data
- The original format of the data

6.3 Data Media

6.4.1 The following media may be accepted for electronic data submission. In recognition of ongoing improvements in technology or changes in industry standards, other media may be accepted. It must however be appropriate to both format and volume of the data being supplied.

- 650 megabytes (MB) CD
- 4.7 gigabytes (GB) DVD
- 8.5 gigabytes (GB) double-layer DVD

6.4.2 All media should be clearly labelled both on the CD or DVD and the cover (See **Section 7** for labelling).

6.5 Data Content

6.5.1 It shall be the responsibility of the party making the submission to ensure that the data is both accurate and complete.

7 MEDIA LABELLING, DATA CHECKING AND VIRUS PROTECTION

7.1 Labelling

7.1.1 Clear labelling of files media, and conventions for its security and management is important to the implementation of a practical system.

7.1.2 AGS(SG) Format Data All media should be properly labelled and clearly marked with the following:

Title 'AGS(SG) Format Data'
Project identification (PROJ_ID)
Project location (PROJ_LOC)
Number of boreholes/ CPT tests
Date of Project (PROJ_DATE)
Name of the Contractor or Firm
Name of the Client
Version: AGS (SG)
Reference number of CD-ROM (e.g. CD 1 of 1)

7.1.3 Geophysical Format Data All media should be properly labelled and clearly

marked with the following:

Title 'Geophysical Data'
Project identification (PROJ_ID)
Project location (PROJ_LOC)
Number of Survey Lines
Number of drilling holes
Date of Project (PROJ_DATE)
Name of the Contractor or Firm
Name of Specialist Contractor
Name of the Client
Reference number of CD or DVD (e.g. CD 1 of 1)

7.2 Data Checking

7.2.1 The party making the submission e.g. developers, builders or contractors, site investigation firms, consultants, qualified persons or engineers, etc., shall be responsible to provide true, correct and accurate data. Data format and integrity, data completeness and data validation checks shall be carried out on each data set issued or received prior to submission. For geo-information, the party making the submission shall also validate the data and any shortfalls must be corrected accordingly.

7.3 Virus Protection

7.3.1 All electronic data files shall be virus-free. Precluding executable files from the data set reduces the risk of transfer of a virus. Appropriate and current virus scanning programmes should be used to check the files for the presence of viruses. Such virus-checking programme shall be used by the party making the submission to scan each data set medium prior to the submission.

8 **DATA SUBMISSION**

8.1 When making submission, the party shall provide a soft copy of the media containing electronic data which shall be the current electronic copies of all data, preliminary or final. In addition to the labelling requirement in **Section 7**, the electronic copies of data, being submitted in a CD or DVD, shall be labelled 'PRELIMINARY' or 'FINAL' as appropriate.

9 **DISCLAIMER OF DATA**

9.1 The data is provided to a party on an "as-is" basis without any warranty whatsoever. Any risk associated with using the data, shall be borne by the party who is using or having access to such data. BCA disclaims any and all representation or warranty regarding the data whether express or

implied, including but not limited to warranties as to accuracy, timelines, completeness, merchantability or fitness for a particular purpose or compliance with a particular description or any implied warranty arising from the course of performance, course of dealing, usage of trade or otherwise, to the fullest extent permitted by law. In particular, BCA makes no warranty that the data will meet the requirements of any party or is error-free or that all errors in the data can be corrected or that the Data will be in a form or format required by the any party.

- 9.2 BCA, its employees or its agents shall in no event, be responsible for any errors or inaccuracies that may be contained in the data. BCA, its employees and/or its agents, shall not be liable for any damages whatsoever (including but not limited to direct, indirect, loss of profits and consequential losses) suffered or incurred by any party which may arise (whether in contract, tort, including negligence under statute or otherwise) by reason of or in connection with the access to the date, or use of the data in any manner whatsoever.

10 REFERENCE

- 10.1 Association of Geotechnical and Geoenvironmental Specialists (AGS), 2005. Electronic Transfer of Geotechnical and Geoenvironmental Data (Edition 3.1), AGS, May 2005.

FIGURES

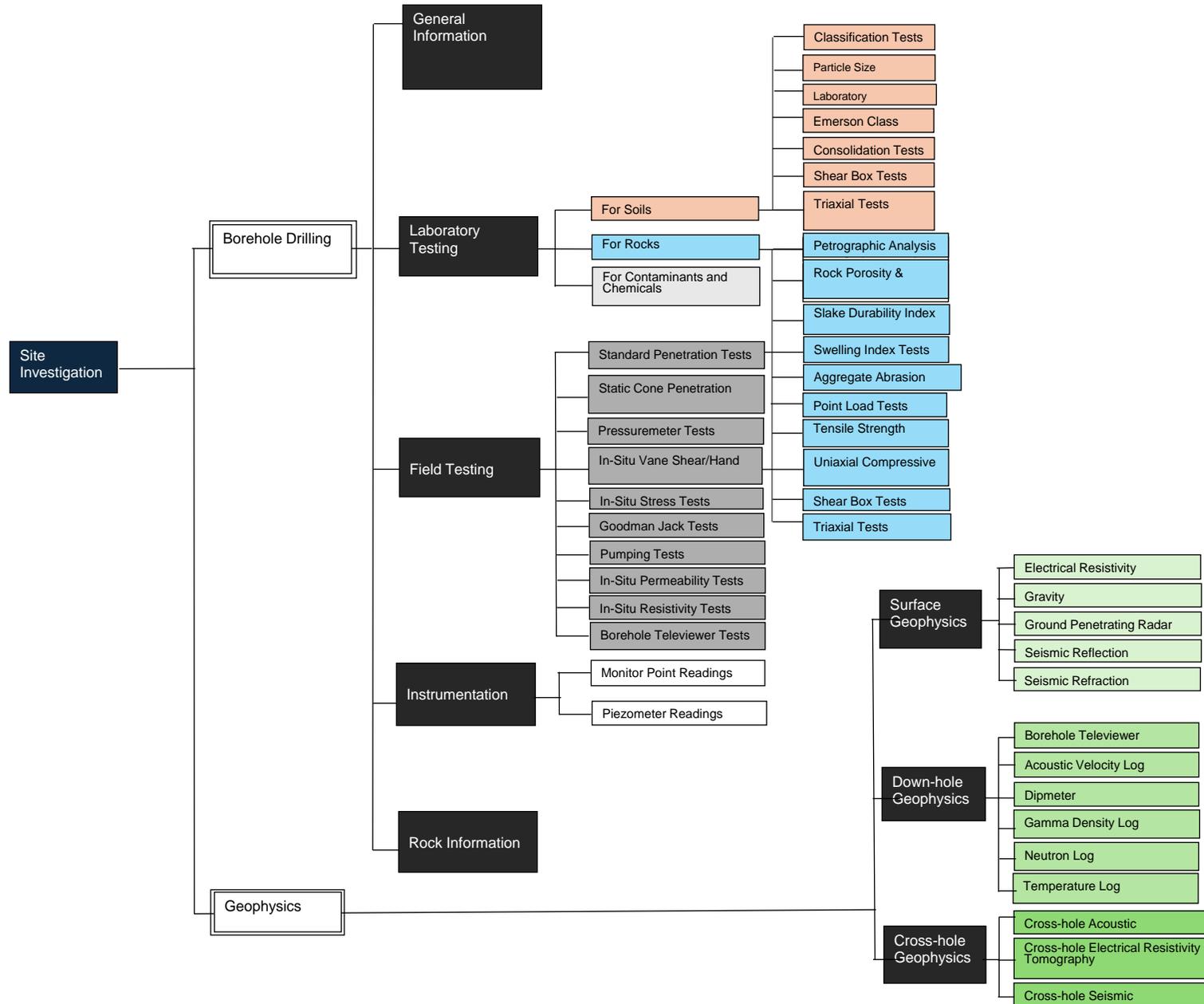


Figure 1: Relationship Diagram for Site Investigation

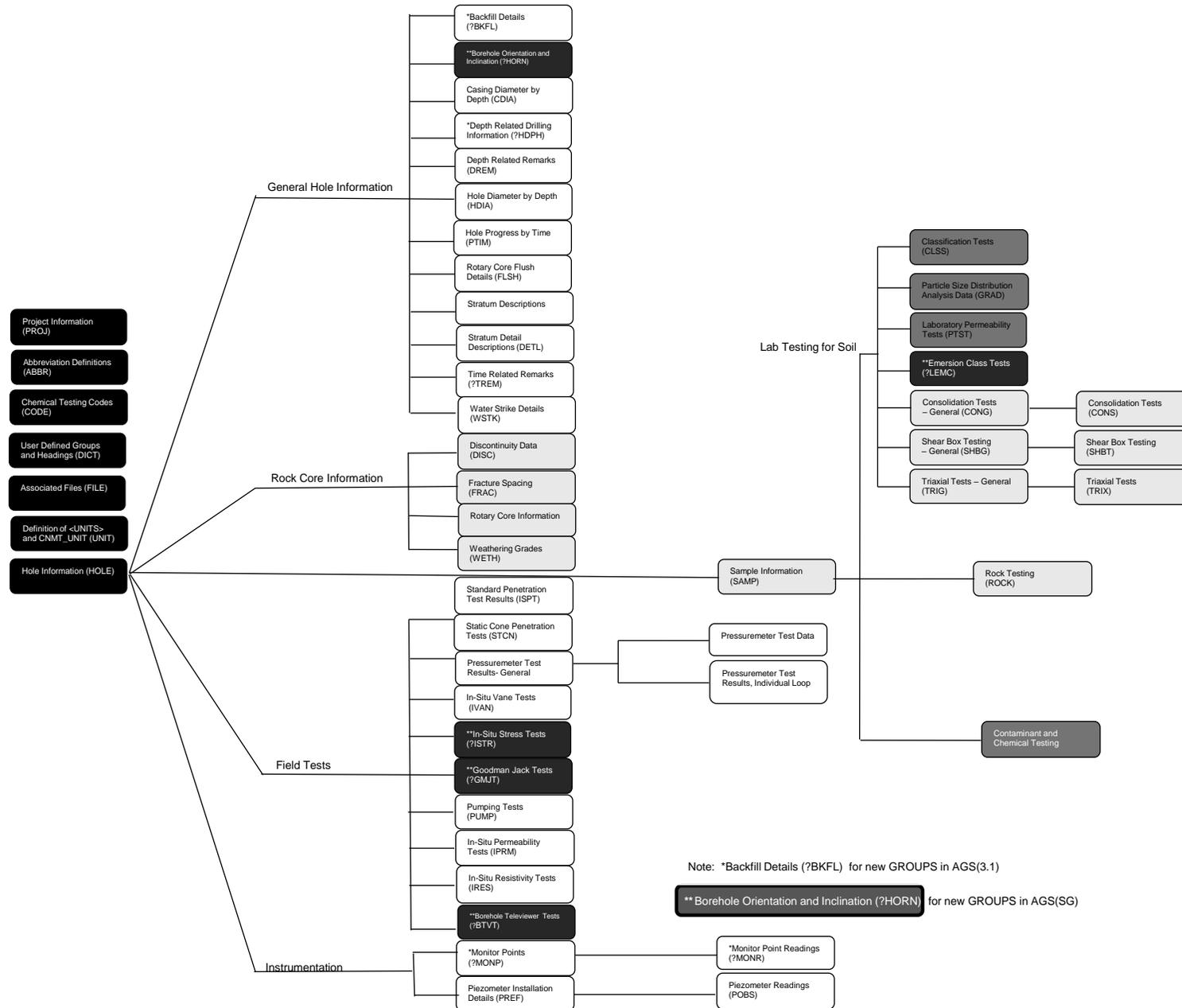


Figure 2: Relationship Diagram for AGS

TABLES

SUBMISSION OF GEOPHYSICAL DATA

TABLE 1: SEISMIC DATA

| No. | DATA REQUIRED | FORMAT | REMARKS |
|-----|--|--------------------------------|--|
| | FIELD DATA 2D | | |
| 1 | Shot point location data must include coordinate listings including elevation/ bathymetry data | Format with header information | <ul style="list-style-type: none"> Format with header information of navigation/ shot point location data including elevations or bathymetry. Coordinates must be provided for source, receiver (if applicable) and CDP (common depth point) locations. All survey data shall be based on SLA's SVY21 system and height control based on PLD. One hundred metres (100m) may be added to the reduced levels of PLD for engineering survey and an explanatory note is to be included in the header information. For marine survey works, the Chart Datum established by the MPA Hydrographic Department shall be adopted as the datum for sounding and reference shall be made to MPA Tide Table. |
| 2 | Seismic field data | SEG-Y SEG-2 | <ul style="list-style-type: none"> Data submit in high density media |
| 3 | Seismic support data | Digital & hard copy | <ul style="list-style-type: none"> Digital: Including Observers logs (ASCII or PDF or Microsoft Word or Microsoft Excel), Navigation data - Permanent Marker listings (ASCII or EXCEL) and other information as appropriate. Hard copy: Data including Observer logs, Permanent Marker details, Chainage Notes and Intersection Diagrams, to be organized in a Line basis. |
| 4 | Uphole data | ASCII & hard copy | <ul style="list-style-type: none"> ASCII: Data to include line name, shot point numbers, date, elevation, total drill depth and coordinate details plus time depth pairs for each uphole. Hard copy: Require field plots showing trace data, time picks and bore logs. |

TABLE 1: SEISMIC DATA (Continued)

| No. | DATA REQUIRED | FORMAT | REMARKS |
|--------------------------|---|--------------------------------|--|
| PROCESSED DATA 2D | | | |
| 1 | Shot point location data must include processed coordinate listings including elevation/bathymetry data | Format with header information | <ul style="list-style-type: none"> All survey data shall be based on SLA's SVY21 system and height control based on PLD. One hundred metres (100m) may be added to the reduced levels of PLD for engineering survey and an explanatory note is to be included in the header information. For marine survey works, the Chart Datum established by the MPA Hydrographic Department shall be adopted as the datum for sounding and reference shall be made to MPA Tide Table. |
| 2 | Stack data and migrated stack data | SEG-Y | <ul style="list-style-type: none"> EBCDIC (Extended Binary Coded Decimal Interchange Code) header shall contain text which describes the area name, line name, shot point range, recording parameters, processing history, etc. |
| 3 | Image of processed migrated data | TIFF and hard copy | <ul style="list-style-type: none"> Ensure there is no loss of detail through lossy data compression Hardcopy used for Quality Control |
| 4 | Shot point to common depth point relationship | ASCII | <ul style="list-style-type: none"> Sufficient SP (Shot point) /CDP (common depth point) data for workstation loading and interpretation. |
| FINAL REPORTS 2D | | | |
| 1 | Operation report | PDF and hard copy | |
| 2 | Interpretation report | PDF and hard copy | |

TABLE 2: SEISMIC REPROCESSING DATA

| No. | DATA REQUIRED | FORMAT | REMARKS |
|-----|---|-------------------|--|
| | 2D DATA | | |
| 1 | Final stack data | SEG-Y | <ul style="list-style-type: none"> EBCDIC header shall contain text which describes the area name, line name, shot point range, recording parameters, processing history, etc |
| 2 | Image of processed migrated data | TIFF and hardcopy | <ul style="list-style-type: none"> Ensure there is no loss of detail through lossy data compression Hardcopy used for QC check and plot |
| 3 | Shot point to common-depth-point relationship | ASCII | <ul style="list-style-type: none"> Sufficient SP (Shot point) / CDP (common depth point) data for loading and interpretation. |
| | REPORTS | | |
| 1 | Final operation report (reprocessing) | PDF and hardcopy | |
| 2 | Final interpretation report | PDF and hardcopy | |

TABLE 3: GRAVITY, MAGNETIC AND OTHER SURVEY DATA

| No. | DATA REQUIRED | FORMAT | REMARKS |
|------------------------------------|----------------------------|--------------------|---|
| GRAVITY DATA | | | |
| 1 | Processed gravity data | ASCII Excel | <ul style="list-style-type: none"> • Must include headers detailing survey name, license, date, operators, and base station information. Data file to contain key items such as station, meter reading, observed gravity, elevation final processed gravity value etc. • Data columns in the file includes headers identifying the value of each column • All survey data shall be based on SLA's SVY21 system and height control based on PLD. One hundred metres (100m) may be added to the reduced levels of PLD for engineering survey and an explanatory note is to be included in the header information. • For marine survey works, the Chart Datum established by the MPA Hydrographic Department shall be adopted as the datum for sounding and reference shall be made to MPA Tide Table. |
| ELECTRICAL RESISTIVITY DATA | | | |
| 1 | Processed resistivity data | ASCII, DAT | <ul style="list-style-type: none"> • Must include headers detailing survey name, array type, electrode spacing, coordinates, etc. • All survey data shall be based on SLA's SVY21 system and height control based on PLD. One hundred metres (100m) may be added to the reduced levels of PLD for engineering survey and an explanatory note is to be included in the header information. • For marine survey works, the Chart Datum established by the MPA Hydrographic Department shall be adopted as the datum for sounding and reference shall be made to MPA Tide Table. |

TABLE 3: GRAVITY, MAGNETIC AND OTHER SURVEY DATA (Continued)

| No. | DATA REQUIRED | FORMAT | REMARKS |
|---------------------------------|--------------------------------|--------------|---|
| MAGNETIC DATA | | | |
| 1 | Processed magnetic data | ASCII, SEG-Y | <ul style="list-style-type: none"> • Fixed column ASCII including SEG format including pre and post micro-levelling data. • All coordinate data must clearly state the datum, spheroid, projection used and in latitude and longitude. • All survey data shall be based on SLA's SVY21 system and height control based on PLD. One hundred metres (100m) may be added to the reduced levels of PLD for engineering survey and an explanatory note is to be included in the header information. • For marine survey works, the Chart Datum established by the MPA Hydrographic Department shall be adopted as the datum for sounding and reference shall be made to MPA Tide Table. • Transformation parameters are required where field data coordinate system is not the same as process coordinate system. |
| GROUND PENETRATION RADAR | | | |
| 1 | Processed electromagnetic data | SEG-2 | <ul style="list-style-type: none"> • To be submitted in high density media |

TABLE 3: GRAVITY, MAGNETIC AND OTHER SURVEY DATA (Continued)

| No. | DATA REQUIRED | FORMAT | REMARKS |
|-----|--|-----------------------|--|
| | FINAL REPORTS AND IMAGES | | |
| 1 | Operation report (including operations, navigation and processing) | PDF and hardcopy | |
| 2 | Interpretation report | PDF and hardcopy | |
| 3 | Geophysical maps | PDF and hardcopy | • Eg. TMI (Total Magnetic Intensity) map, Bouguer gravity map |
| 4 | Geophysical images | ER Mapper Grid format | • Digital images files of maps and data included in the Interpretation Report. |

TABLE 4: BOREHOLE GEOPHYSICAL DATA

| No. | DATA REQUIRED | FORMAT | REMARKS |
|-----|--|---|--|
| 1 | Geophysical borehole data logging (including borehole televiewer and dipmeter) | LAS v 2.0 LIS DLIS Delimited ASCII Adobe Acrobat TIFF (colour) TIFF (greyscale) JPEG | <ul style="list-style-type: none"> • File Extension: .las • File Extension: .lis • File Extension: .lis • ASCII (format must be explained) • Reproducible at 300 dpi, 24 bit • Reproducible at 300 dpi, 8 bit • Reproducible at 300 dpi |
| 2 | Log plots | Adobe Acrobat TIFF (colour) TIFF (greyscale) JPEG | <ul style="list-style-type: none"> • File Extension: PDF • Reproducible at 300 dpi, 24 bit • Reproducible at 300 dpi, 8 bit • Reproducible at 300 dpi |
| 3 | Processed down-hole velocity data | SEG Y, Rev. 1 | <ul style="list-style-type: none"> • File Extension: .sgy |
| 4 | Cross-hole tomography | ASCII, SEG-Y | <ul style="list-style-type: none"> • File Extension: .XYZ, .dat, .cfg, .sgy |

NOTES ON SUBMISSION OF GEOPHYSICAL DATA

The AGS Format does not cater for geophysical data (other than resistivity) as there are already well established international standards for the digital exchange of geophysical data. The geophysical data submission shall follow the formats described in **Tables 1 to 4**.

To include associated geophysical data files in an AGS Format, compatible submission shall:

1. For borehole wireline geophysical logs, reference the data set of geophysical files under the FILE_FSET Heading of the relevant borehole in the HOLE Group. Detail all the files contained within the data set in the FILE Group as explained in item (4).
2. For surface geophysical data sets (seismic, gravity, etc.), give a unique HOLE_ID in the HOLE Group for each data run, profile or point and then reference the data set of files under the FILE_FSET Heading of the HOLE Group. If the data set covers a linear run or profile then give the start and end co-ordinates of the line using the HOLE_NATE, HOLE_NATN, HOLE_ETRV and HOLE_NTRV Headings. The ground levels of the start and end of the line should be given using the HOLE_GL and HOLE_LTRV Headings. Detail all the files contained within the data set in the FILE Group as explained in item (4).

The type of survey line shall be defined under the HOLE_TYPE in the following:

| | | |
|-----------|------|--------------------------------|
| HOLE_TYPE | SREL | Seismic Reflection Line Survey |
| HOLE_TYPE | SRAL | Seismic Refraction Line Survey |
| HOLE_TYPE | GRAL | Gravity Line Survey |
| HOLE_TYPE | RESL | Resistivity Line Survey |
| HOLE_TYPE | MAGL | Magnetic Line Survey |
| HOLE_TYPE | BGP | Borehole Geophysics Survey |

3. For in situ resistivity profile data, use the IRES Group of the AGS Format.

4. Referencing associated files for geophysical data sets

Geophysical data shall be included in an AGS compatible submission by including the data in an associated file and referencing it in the AGS Format. It is preferable that associated files are not compressed; however, large files that may cause difficulties during data transfer may be compressed using the ZIP file format. Zipped files must indicate the original file format plus the zipped file format. Compressed files should only be used with permission. The AGS Format files in a submission should not be compressed.

The associated files must have an up to 8 character file name and a 3 character file type extension. Long file names must not be used.

The referencing procedure is in two parts:

- (a) The associated data files are collected together in data sets. Each data set must have a

unique reference number and this reference number is given in the FILE_FSET field of the HOLE Group. The following shows examples of borehole geophysics survey (BGP) and seismic reflection survey (SREL) data files to be captured in HOLE Group.

```

**HOLE
*HOLE_ID,"HOLE_TYPE","HOLE_NATE","HOLE_NATN","HOLE_GL","HOLE_ETRV",
HOLE_NTRV","HOLE_LTRV","FILE_FSET"
<UNITS>","","m","m","m","m","m","m","m",""
BH1,"BGP","532154","176163","78.4","","","","FS1"
**HOLE
*HOLE_ID,"HOLE_TYPE","HOLE_NATE","HOLE_NATN","HOLE_GL","HOLE_ETRV",
HOLE_NTRV","HOLE_LTRV","FILE_FSET"
<UNITS>","","m","m","m","m","m","m","m",""
L1A1,"SREL","532154","176163","78.4","632154","173123","76.4","FS2"

```

(b) The content of each file set are described in the FILE group. The File Name within each File Set must be unique, so that the combination of the Key Fields of FILE_FSET and FILE_NAME is unique.

```

**FILE
*FILE_FSET,"FILE_NAME","FILE_DESC","FILE_TYPE","FILE_PROG","FILE_DATE",
?FILE_DOCT"
<UNITS>","","","","","dd/mm/yyyy"
FS1,"BH1A1PS.las","Suspension PS Logging BH1","LAS","GLog ver 3","02/05/1999","DATA"
FS2,"L1A1.dat","Seismic Reflection Line L1A1","SEG2","StrataVisorNZXP","02/05/1999","DATA"
FS3,"L1C1.dat"," Seismic Refraction Line L1C1","SEG2 "," StrataVisorNZXP", "02/05/1999","DATA"

```

APPENDIX 1

Data Dictionary

DATA DICTIONARY

Data Sets

Entries of the data dictionary for the Data Groups with their associated KEY and COMMON Fields have been defined in this section. Each Field Heading has its definition as listed below:

| Status | Symbol |
|--------|--------|
| KEY | * |
| COMMON | Blank |

Units of Measurement

The units of measurement shall be those given in the UNITS line. The preferred units are defined. The unit of measurement shall not be included in the ASCII Data Field.

Examples

Typical examples are given against most of the Data Fields to indicate the type of information which may be expected. They are not intended to be representative of any one soil or rock and hence may not be mutually compatible.

Notes

See Appendix 3 for a list of the common standard abbreviations to be used in the indicated fields. Other abbreviations may be defined as required, see Rules 20 and 25.

Key to Change Control Used

New New Group in AGS(SG)
Modified New Field in AGS(SG)

LIST OF GROUPS

| Group Name | Contents | Parent Group | Revision |
|------------|--|--------------|-----------------|
| ABBR | Abbreviation Definitions | - | |
| ?BKFL | Backfill Details | HOLE | |
| ?BTVT | Borehole Televiwer Tests | HOLE | |
| CDIA | Casing Diameter by Depth | HOLE | |
| CLSS | Classification Tests | SAMP | |
| CNMT | Contaminant and Chemical Testing | SAMP | |
| CODE | Chemical Testing Codes | - | |
| CONG | Consolidation Tests - General | SAMP | |
| CONS | Consolidation Tests | CONG | |
| CORE | Rotary Core Information | HOLE | |
| DETL | Stratum Detail Descriptions | HOLE | |
| DICT | User Defined Groups and Headings | - | |
| DISC | Discontinuity Data | HOLE | |
| DREM | Depth Related Remarks | HOLE | |
| FILE | Associated Files | - | |
| FLSH | Rotary Core Flush Details | HOLE | |
| FRAC | Fracture Spacing | HOLE | |
| GEOL | Stratum Descriptions | HOLE | Modified |
| ?GMJT | Goodman Jack Tests | HOLE | |
| GRAD | Particle Size Distribution Analysis Data | SAMP | |
| HDIA | Hole Diameter by Depth | HOLE | |
| ?HDPH | Depth Related Drilling Information | HOLE | |
| HOLE | Hole Information | - | Modified |
| ?HORN | Borehole Orientation and Inclination | HOLE | |
| IPRM | In-Situ Permeability Tests | HOLE | |
| IRES | In-Situ Resistivity Tests | HOLE | |
| ISPT | Standard Penetration Test Results | HOLE | |
| ?ISTR | In-Situ Stress Tests | HOLE | |

| Group Name | Contents | Parent Group | Revision |
|------------|--|--------------|----------|
| IVAN | In-Situ Vane Tests | HOLE | |
| ?LEMC | Emerson Class Tests | SAMP | |
| ?MONP | Monitor Points | HOLE | |
| ?MONR | Monitor Point Readings | ?MONP | |
| POBS | Piezometer Readings | PREF | |
| PREF | Piezometer Installation Details | HOLE | |
| PROJ | Project Information | - | |
| PRTD | Pressuremeter Test Data | PRTG | |
| PRTG | Pressuremeter Test Results, General | HOLE | |
| PRTL | Pressuremeter Test Results, Individual Loops | PRTG | |
| PTIM | Hole Progress by Time | HOLE | |
| PTST | Laboratory Permeability Tests | SAMP | |
| PUMP | Pumping Tests | HOLE | |
| ROCK | Rock Testing | SAMP | |
| SAMP | Sample Reference Information | HOLE | |
| SHBG | Shear Box Testing - General | SAMP | |
| SHBT | Shear Box Testing | SHBG | |
| STCN | Static Cone Penetration Tests | HOLE | |
| ?TREM | Time Related Remarks | HOLE | |
| TRIG | Triaxial Tests - General | SAMP | |
| TRIX | Triaxial Tests | TRIG | |
| UNIT | Definition of <UNITS> and CNMT_UNIT | - | |
| WETH | Weathering Grades | HOLE | |
| WSTK | Water Strike Details | HOLE | |

GROUPS AND HEADINGS

| Group Name: PROJ - Project Information | | | | | | |
|---|----------------|-------------|----------------------------------|--|-------------|---------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | PROJ_ID | | Project identifier | 6421/A | Text | |
| | PROJ_NAME | | Project title | Acme Gas Works | Text | |
| | PROJ_LOC | | Location of site | London Road, Croydon | Text | |
| | PROJ_CLNT | | Client name | Acme Enterprises | Text | |
| | PROJ_CONT | | Contractors name | Acme Drilling Ltd | Text | |
| | PROJ_ENG | | Project engineer | Acme Consulting | Text | |
| | PROJ_MEMO | | General project comments | 6 boreholes, field and laboratory test results | Text | |
| | PROJ_DATE | dd/mm/yyyy | Date of production of data | 31/07/1999 | Date | dd/mm/yyyy |
| | ?PROJ_CID | | Monitoring contractor identifier | KS123 | Text | |
| | ?PROJ_PROD | | Data file producer | Acme Drilling Ltd | Text | |
| | ?PROJ_RECV | | Data file recipient | Acme Consulting | Text | |
| | ?PROJ_ISNO | | Issue sequence number | 2 | Text | |
| | ?PROJ_STAT | | Status of data within submission | Draft | Text | |
| | PROJ_AGS | | AGS edition number | 3.1 | Text | |
| | FILE_FSET | | Associated file reference | FS1 | Text | |

| Group Name: ABBR - Abbreviation Definitions | | | | | | |
|--|----------------|-------------|-----------------------------|----------------|-------------|---------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ABBR_HDNG | | Field Heading in Group | HOLE_TYPE | Text | |
| * | ABBR_CODE | | Abbreviation used | TP | Text | |
| | ABBR_DESC | | Description of Abbreviation | Trial Pit | Text | |

Group Name: ?BKFL - Backfill Details

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|---|----------------------|--------|------------|
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?BKFL_TOP | m | Depth to top of section | 1.40 | Double | 0.00 |
| | ?BKFL_BASE | m | Depth to base of section | 11.40 | Double | 0.00 |
| | ?BKFL_LEG | | Backfill legend code | 904 (See Appendix 3) | Text | |
| | ?BKFL_DATE | dd/mm/yyyy | Date of backfill | 01/04/2004 | Date | dd/mm/yyyy |
| | ?BKFL_REM | | Backfill remarks | Grout | Text | |
| | ?FILE_FSET | | Associated file reference | FS20 | Text | |

| Group Name: ?BTVT - Borehole Televiewer Tests | | | | | | |
|---|------------|------|---|-----------------------|---------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?BTVT_TREF | | Test reference | BTVT1 | Text | |
| * | ?BTVT_DPTH | m | Depth of test | 34.07 | Double | 0.00 |
| | ?BTVT_DD | deg | Dip direction | 203 | Integer | 0 |
| | ?BTVT_DA | deg | Dip angle | 32 | Integer | 0 |
| | ?BTVT_APTR | mm | Joint aperture | 11.08 | Double | 0.00 |
| | ?BTVT_RGHN | | Joint roughness | Planar | Text | |
| | ?BTVT_JCDN | | Joint condition | Stained and infilling | Text | |
| | ?BTVT_REM | | Remarks | Bedding plane | Text | |

| Group Name: CDIA - Casing Diameter by Depth | | | | | | |
|---|-----------|------|---|---------|---------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | CDIA_CDEP | m | Depth achieved at CDIA_HOLE | 18.55 | Double | 0.00 |
| * | CDIA_HOLE | mm | Casing diameter | 200 | Integer | 0 |

| | | | | | | |
|--|----------|--|---------|--|------|--|
| | CDIA_REM | | Remarks | Casing stuck in 30m below ground level | Text | |
|--|----------|--|---------|--|------|--|

| Group Name: CLSS - Classification Tests | | | | | | |
|---|-----------|-------------------|--|--------------------|---------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.55 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 1 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.60 | Double | 0.00 |
| | CLSS_NMC | % | Natural moisture content | 57 | Integer | 0 |
| | CLSS_LL | % | Liquid limit | 62 | Integer | 0 |
| | CLSS_PL | % | Plastic limit | 38 | Integer | 0 |
| | CLSS_BDEN | Mg/m ³ | Bulk density | 1.66 | Double | 0.00 |
| | CLSS_DDEN | Mg/m ³ | Dry density | 1.06 | Double | 0.00 |
| | CLSS_PD | Mg/m ³ | Particle density | 2.65 | Double | 0.00 |
| | CLSS_425 | % | Percentage passing 425 μ m sieve | 12 | Integer | 0 |
| | CLSS_PREP | | Method of preparation | Wet sieve etc | Text | |
| | CLSS_SLIM | % | Shrinkage limit | 17 | Integer | 0 |
| | CLSS_LS | % | Linear shrinkage | 11 | Integer | 0 |
| | CLSS_HVP | kN/m ² | Hand vane undrained shear strength (peak) | 40.00 | Double | 0.00 |
| | CLSS_HVR | kN/m ² | Hand vane undrained shear strength (remoulded) | 15.00 | Double | 0.00 |
| | CLSS_PPEN | kN/m ² | Pocket penetrometer undrained shear strength | 40.00 | Double | 0.00 |
| | CLSS_VNPK | kN/m ² | Laboratory vane undrained shear strength (peak) | 35.00 | Double | 0.00 |
| | CLSS_VNRM | kN/m ² | Laboratory vane undrained shear strength (remoulded) | 25.00 | Double | 0.00 |

| | | | | | | |
|--|------------|--|---------------------------------|---------------------------|------|--|
| | ?CLASS_REM | | Notes on classification testing | 1 point liquid limit test | Text | |
| | ?FILE_FSET | | Associated file reference | FS231 | Text | |

Group Name: CNMT - Contaminant and Chemical Testing

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------|---|----------------------------|-------------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.55 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | ES (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 4 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.90 | Double | 0.00 |
| * | CNMT_TYPE | | Determinand | CL (See Appendix 3) | Text | |
| * | CNMT_TTYP | | Test type | SOLID_WAT (See Appendix 3) | Text | |
| | CNMT_RESL | | Test result | 0.2 | Text | |
| | CNMT_UNIT | | Test result units | % (See Appendix 3) | Text | |
| | CNMT_CAS | | Chemical abstract service registry number (where appropriate) | | Text | |
| | CNMT_METH | | Test method | BS 1377-3:1990:7.2 | Text | |
| | CNMT_PREP | | Sample preparation | Air dried | Text | |
| | CNMT_REM | | Comments on test | | Text | |
| | CNMT_LIM | | Method lower detection limit | | Text | |
| | ?CNMT_ULIM | | Method upper detection limit | | Text | |
| | CNMT_NAME | | Client/laboratory preferred name of determinand | Dry weight chloride | Text | |
| | CNMT_LAB | | Name of testing laboratory/Organisation | Chemical Test House | Text | |
| | CNMT_CRED | | Accrediting body (When appropriate) | SAC-SINGLAS / 2010-0422-A | LA- Text | |

| | | | | | | |
|--|------------|--|-------------------------------|----------|------|--|
| | ?CNMT_LBID | | Laboratory Internal Reference | LB234675 | Text | |
| | FILE_FSET | | Associated file reference | FS22 | Text | |

Group Name: CODE - Chemical Testing Codes

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|------------------|----------|------|--------|
| * | CODE_CODE | | Code | CL | Text | |
| | CODE_DESC | | Code Description | Chloride | Text | |

Group Name: CONG - Consolidation Tests - General

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|--------------------|---|--|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.25 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 4 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.29 | Double | 0.00 |
| | CONG_TYPE | | Oedometer or Rowe, primary or secondary consolidation | Oed, Rowe | Text | |
| | CONG_COND | | Sample condition | Undisturbed, remoulded, etc. | Text | |
| | CONG_REM | | Test details including method statement | Temperature 21 degrees C, sample from base of U100 sample, axis vertical | Text | |
| | CONG_INCM | m ² /MN | Coefficient of volume compressibility over CONG_INCD | 0.360 | Double | 0.000 |
| | CONG_INCD | kN/m ² | Defined stress range | 0 to 400 | Text | |
| | CONG_DIA | mm | Test specimen diameter | 75.0 | Double | 0.0 |
| | CONG_HIGT | mm | Test specimen height | 19.0 | Double | 0.0 |

| | | | | | | |
|--|------------|-------|--|--------|--------|-------|
| | CONG_MCI | % | Initial moisture content | 21.00 | Double | 0.00 |
| | CONG_MCF | % | Final moisture content | 18.00 | Double | 0.00 |
| | CONG_BDEN | Mg/m3 | Initial bulk density | 2.12 | Double | 0.00 |
| | CONG_DDEN | Mg/m3 | Initial dry density | 1.75 | Double | 0.00 |
| | CONG_PDEN | Mg/m3 | Particle density (BS 1377) with # if assumed | 2.65 | Double | 0.00 |
| | CONG_SATR | % | Initial degree of saturation | 98.00 | Double | 0.00 |
| | CONG_SPRS | kN/m2 | Swelling pressure | 100.00 | Double | 0.00 |
| | CONG_SATH | % | Height change of specimen on saturation as percentage of original height | 1.10 | Double | 0.00 |
| | FILE_FSET | | Associated file reference | FS9 | Text | |
| | ?CONG_IVR | | Initial voids ratio | 0.80 | Double | 0.00 |
| | ?CONG_RCOM | | Recompression index before P _o | 0.121 | Double | 0.000 |
| | ?CONG_COM | | Compression index over CONF_INCD | 0.640 | Double | 0.000 |
| | ?CONG_PRCP | kPa | Preconsolidated pressure | 68.000 | Double | 0.000 |

Group Name: CONS - Consolidation Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|--------------------|---------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 4 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.90 | Double | 0.00 |
| * | CONS_INCN | | Oedometer stress increment number | 3 | Integer | 0 |
| | CONS_IVR | | Voids ratio at start of increment | 0.800 | Double | 0.000 |

| | | | | | | |
|--|------------|-------|---|--------------------------|--------|-------|
| | CONS_INCF | kN/m2 | Stress at end of stress increment/decrement | 400.00 | Double | 0.00 |
| | CONS_INCE | | Voids ratio at end of stress increment | 0.620 | Double | 0.000 |
| | CONS_INMV | m2/MN | Reported coefficient of volume compressibility over stress increment | 0.320 | Double | 0.000 |
| | CONS_INCV | m2/yr | Reported coefficient of consolidation over stress increment | 4.120 | Double | 0.000 |
| | CONS_INSC | | Coefficient of secondary compression over stress increment | 0.120 | Double | 0.000 |
| | ?CONS_CVRT | m2/yr | Coefficient of consolidation determined by the root time method | 2.100 | Double | 0.000 |
| | ?CONS_CVLG | m2/yr | Coefficient of consolidation determined by the log time method | 4.120 | Double | 0.000 |
| | ?CONS_REM | | Remarks including method used to determine coefficients reported under CONS_INMV and selected CONS_INCV (from either of ?CONS_CVRT or ?CONS_CVLG) | Log time method reported | Text | |

Group Name: CORE - Rotary Core Information

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|--|---------|---------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6423/A | Text | |
| * | CORE_TOP | m | Depth to top of core run | 2.54 | Double | 0.00 |
| * | CORE_BOT | m | Depth to bottom of core run | 3.54 | Double | 0.00 |
| | CORE_PREC | % | Percentage of core recovered in core run (TCR) | 32 | Integer | 0 |
| | CORE_SREC | % | Percentage of solid core recovered in core run (SCR) | 23 | Integer | 0 |
| | CORE_RQD | % | Rock quality designation for core run (RQD) | 20 | Integer | 0 |

| | | | | | | |
|--|-----------|----|---------------------------|-----------------------------|--------|-----|
| | CORE_REM | | Rotary remarks | Rods dropped 200mm at 3.10m | Text | |
| | CORE_DIAM | mm | Core diameter | 75.0 | Double | 0.0 |
| | FILE_FSET | | Associated file reference | FS5 | Text | |

| Group Name: DETL - Stratum Detail Descriptions | | | | | | |
|--|-----------|------|---|-----------|--------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | DETL_TOP | m | Depth to top of detail description | 3.46 | Double | 0.00 |
| * | DETL_BASE | m | Depth to base of detail description | 3.76 | Double | 0.00 |
| | DETL_DESC | | Detail description | Claystone | Text | |

| Group Name: DICT - User Defined Groups and Headings | | | | | | |
|---|------------|------|--|-------------------|------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | DICT_TYPE | | Flag to indicate definition is a GROUP or HEADING (ie can be either of GROUP or HEADING) | HEADING | Text | |
| * | DICT_GRP | | Group name | ISPT | Text | |
| * | DICT_HDNG | | Heading name | ISPT_CALN | Text | |
| | DICT_STAT | | Heading status KEY or COMMON (blank for Group) | COMMON | Text | |
| | DICT_DESC | | Description | Corrected N value | Text | |
| | DICT_UNIT | | Units | | Text | |
| | DICT_EXMP | | Example | 20 | Text | |
| | ?DICT_PGRP | | Parent group name | HOLE | Text | |

Group Name: DISC - Discontinuity Data

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------------------|---------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | DISC_TOP | m | Depth to top in hole, or distance to start on traverse, of discontinuity zone, or discontinuity | 10.26 | Double | 0.00 |
| * | DISC_BASE | m | Depth to base in hole, or distance to end on traverse, of discontinuity zone | 12.67 | Double | 0.00 |
| * | FRAC_SET | | Discontinuity set reference number | J3 | Text | |
| * | DISC_NUMB | | Discontinuity number | 57 | Integer | 0 |
| | DISC_TYPE | | Type of discontinuity | Joint | Text | |
| | DISC_DIP | deg | Dip of discontinuity | 08 | Integer | 0 |
| | DISC_DIR | deg | Dip direction of discontinuity | 247 | Integer | 0 |
| | DISC_RGH | | Small scale roughness (ISRM 1978) | Smooth | Text | |
| | DISC_PLAN | | Intermediate scale planarity (ISRM 1978) | Planar | Text | |
| | DISC_WAVE | m | Large scale waviness, wavelength (ISRM 1978) | 15.00 | Double | 0.00 |
| | DISC_AMP | m | Large scale waviness, amplitude (ISRM 1978) | 0.50 | Double | 0.00 |
| | DISC_JRC | | Joint roughness coefficient | 10 | Integer | 0 |
| | DISC_APP | | Surface appearance | Slightly polished | Text | |
| | DISC_APT | mm | Discontinuity aperture measurement | 2 | Integer | 0 |
| | DISC_APOB | | Discontinuity aperture observation | Infilled | Text | |
| | DISC_INFM | | Infilling material | Soft clay | Text | |
| | DISC_TERM | | Discontinuity termination (lower, upper) (ISRM 1978) | XR (See Appendix 3) | Text | |
| | DISC_PERS | m | Persistence measurement | 10.5 | Double | 0.0 |
| | DISC_STR | MPa | Discontinuity wall strength | 50.0 | Double | 0.0 |
| | DISC_WETH | | Discontinuity wall weathering | Slightly weathered | Text | |

| | | | | | | |
|--|-----------|-------|----------------------------|---------------|--------|-----|
| | DISC_SEEP | | Seepage rating (ISRM 1978) | VI | Text | |
| | DISC_FLOW | l/min | Water flow estimate | 2.0 | Double | 0.0 |
| | DISC_REM | | Remarks | Cooling Joint | Text | |
| | FILE_FSET | | Associated file reference | FS24 | Text | |

Group Name: DREM - Depth Related Remarks

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------|---|---------------------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | DREM_DPTH | m | Depth of DREM_REM | 12.50 | Double | 0.00 |
| | ?DREM_BDEP | m | Base depth | 13.80 | Double | 0.00 |
| | DREM_REM | | Depth related remark | Driving boulder ahead of casing | Text | |

Group Name: FILE - Associated Files

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|-----------------------------------|----------------------|------|------------|
| * | FILE_FSET | | File set reference number | FS128 | Text | |
| * | FILE_NAME | | File name | BH1CORO8.JPG | Text | |
| | FILE_DESC | | Description of content | BH1 Core photo box 8 | Text | |
| | FILE_TYPE | | File type | JPG | Text | |
| | FILE_PROG | | Parent program and version number | Paintshop Pro v 5.0 | Text | |
| | ?FILE_DOCT | | Document type | PH (See Appendix 3) | Text | |
| | FILE_DATE | dd/mm/yyyy | File date | 18/03/1991 | Date | dd/mm/yyyy |

Group Name: FLSH - Rotary Core Flush Details

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | FLSH_FROM | m | Depth to top of flush zone | 10.00 | Double | 0.00 |

| | | | | | | |
|---|-----------|---|-------------------------------|-------|---------|------|
| * | FLSH_TO | m | Depth to bottom of flush zone | 20.00 | Double | 0.00 |
| | FLSH_TYPE | | Type of flush | Water | Text | |
| | FLSH_RETN | % | Flush return | 50 | Integer | 0 |
| | FLSH_COL | | Colour of flush return | White | Text | |

| Group Name: FRAC - Fracture Spacing | | | | | | |
|-------------------------------------|-----------|------|---|---------------------|---------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6423/A | Text | |
| * | FRAC_TOP | m | Depth to top in hole, or distance to start on traverse, of the zone | 31.20 | Double | 0.00 |
| * | FRAC_BASE | m | Depth to base in hole, or distance to end on traverse, of the zone | 33.65 | Double | 0.00 |
| * | FRAC_SET | | Discontinuity set reference number | J3 | Text | |
| | FRAC_FI | | Fracture index over zone (fractures per metre) | 15 | Integer | 0 |
| | FRAC_IMAX | mm | Maximum fracture spacing over zone | 350 | Integer | 0 |
| | FRAC_IAVE | mm | Average fracture spacing over zone | 220 | Integer | 0 |
| | FRAC_IMIN | mm | Minimum fracture spacing over zone | 12 | Integer | 0 |
| | FILE_FSET | | Associated file reference | FS4 | Text | |
| | ?FRAC_REM | | Details on fracture spacing description | Conjugate joint set | Text | |

| Group Name: GEOL - Stratum Descriptions | | | | | | |
|---|-----------|------|---|---------|--------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | GEOL_TOP | m | Depth to top of stratum | 16.21 | Double | 0.00 |
| * | GEOL_BASE | m | Depth to base of description | 17.25 | Double | 0.00 |

| | | | | | | |
|--|------------|--|---|---|------|--|
| | GEOL_DESC | | General description of stratum | Very soft,Grey,CLAY with traces of organic matter | Text | |
| | GEOL_LEG | | Legend code | 201 (See Rule 20 and Appendix 3) | Text | |
| | GEOL_GEO1 | | Geology code | M (See Appendix 3) | Text | |
| | GEOL_GEO2 | | Second geology code | Cl (See Appendix 3) | Text | |
| | ?GEOL_GEO3 | | Third geology code | Ktrf (See Appendix 3) | Text | |
| | GEOL_STAT | | Stratum reference shown on trial pit or traverse sketch | 1 | Text | |
| | FILE_FSET | | Associated file reference | FS4 | Text | |

Group Name: ?GMJT - Goodman Jack Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------|---|---------|--------|--------|
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?GMJT_DPTH | m | Depth of test zone | 35.00 | Double | 0.00 |
| * | ?GMJT_TESN | | Test reference | GMJ1 | Text | |
| | ?GMJT_GMJ | GPa | Test result of modulus of deformation | 60.00 | Double | 0.00 |

Group Name: GRAD - Particle Size Distribution Analysis Data

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|--------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.05 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 2 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.09 | Double | 0.00 |
| * | GRAD_SIZE | mm | Sieve or particle size | 0.002 | Double | 0.000 |
| | GRAD_PERP | % | Percentage passing/finer | 25.05 | Double | 0.00 |

| | | | | | | |
|--|-----------|--|----------------------------|---------------------|------|--|
| | GRAD_TYPE | | Grading analysis test type | WS (See Appendix 3) | Text | |
|--|-----------|--|----------------------------|---------------------|------|--|

Group Name: HDIA - Hole Diameter by Depth

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------------------|---------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | HDIA_HDEP | m | Depth achieved at HDIA_HOLE | 18.00 | Double | 0.00 |
| | HDIA_HOLE | mm | Borehole diameter | 200 | Integer | 0 |
| | ?HDIA_REM | | Remarks | Cased to full depth | Text | |

Group Name: ?HDPH - Depth Related Hole Information

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|---|---------------------|--------|------------|
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6422/A | Text | |
| * | ?HDPH_TOP | m | Depth to top of section | 1.40 | Double | 0.00 |
| | ?HDPH_BASE | m | Depth to base of section | 3.40 | Double | 0.00 |
| | ?HOLE_TYPE | | Type of exploratory Hole | TP (see Appendix 3) | Text | |
| | ?HDPH_STAR | dd/mm/yyyy | Date of start of section | 01/04/2004 | Date | dd/mm/yyyy |
| | ?HDPH_STAT | hhmm | Time of start of section | 0930 | Time | hhmm |
| | ?HDPH_ENDD | dd/mm/yyyy | Date of end of section | 01/04/2004 | Date | dd/mm/yyyy |
| | ?HDPH_ENDT | hhmm | Time of end of section | 1030 | Time | hhmm |
| | ?HDPH_CREW | | Name of crew | Bill Mallard | Text | |
| | ?HDPH_LOG | | The definitive person responsible for logging the section | DPG | Text | |
| | ?HDPH_EXC | | Plant used | YBM-18 | Text | |
| | ?HDPH_SHOR | | Shoring/support used | None | Text | |
| | ?HDPH_REM | | Remarks | Breaker required | Text | |
| | ?FILE_FSET | | Associated file reference | FS21 | Text | |

Group Name: HOLE - Hole Or Location Equivalent

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|--|--|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 327/16A | Text | |
| | HOLE_TYPE | | Type of exploratory hole | RO (See Appendix 3) | Text | |
| | HOLE_NATE | m | National grid easting of hole or start of traverse (based on SLA's SVY 21 system) | 4638.120 | Double | 0.000 |
| | HOLE_NATN | m | National grid northing of hole or start of traverse (based on SLA's SVY 21 system) | 31823.970 | Double | 0.000 |
| | HOLE_GL | m | Ground level relative to datum of hole or start of traverse (based on SLA's Singapore Height Datum, SHD) | 3.240 | Double | 0.000 |
| | ?HOLE_CDL | m | Chart datum level relative to datum of hole or start of traverse (based on MPA's Chart datum) | 3.256 | Double | 0.000 |
| | HOLE_FDEP | m | Final depth of hole | 133.75 | Double | 0.00 |
| | HOLE_STAR | dd/mm/yyyy | Date of start of excavation | 18/03/1991 | Date | dd/mm/yyyy |
| | HOLE_LOG | | The definitive person responsible for logging the hole | DPG | Text | |
| | HOLE_REM | | General remarks on hole | Standpipe(WSP-A5)was installed at 103m | Text | |
| | HOLE_ETRV | m | National grid easting of end of traverse (based on SLA's SVY 21 system) | 4668.120 | Double | 0.000 |
| | HOLE_NTRV | m | National grid northing of end of traverse (based on SLA's SVY 21 system) | 31853.970 | Double | 0.000 |

| | | | | | | |
|--|------------|------------|--|--------------------------|---------|------------|
| | HOLE_LTRV | m | Ground level relative to datum of end of traverse (based on SLA's Singapore Height Datum, SHD) | 10.300 | Double | 0.000 |
| | HOLE_LETT | | Ordnance survey letter grid reference | | Text | |
| | HOLE_LOCX | m | Local grid x co-ordinate | 4668.120 | Double | 0.000 |
| | HOLE_LOCY | m | Local grid y co-ordinate | 31853.970 | Double | 0.000 |
| | HOLE_LOCZ | m | Level to local datum | 10.300 | Double | 0.000 |
| | HOLE_ENDD | dd/mm/yyyy | Hole end date | 22/03/1991 | Date | dd/mm/yyyy |
| | HOLE_BACD | dd/mm/yyyy | Hole backfill date | 22/03/1991 | Date | dd/mm/yyyy |
| | HOLE_CREW | | Name of driller | A.B. Driller | Text | |
| | HOLE_ORNT | deg | Orientation of hole or traverse (degrees from north) | 180 | Integer | 0 |
| | HOLE_INCL | deg | Inclination of hole or traverse (measured positively down from horizontal) | 65 | Integer | 0 |
| | HOLE_EXC | | Plant used | YBM-18 | Text | |
| | HOLE_SHOR | | Shoring/support used | None | Text | |
| | HOLE_STAB | | Stability | Stable during excavation | Text | |
| | HOLE_DIML | m | Trial pit or logged traverse length | 27.56 | Double | 0.00 |
| | HOLE_DIMW | m | Trial pit or logged traverse width | 1.35 | Double | 0.00 |
| | HOLE_LOCM | | Method of location | dGPS | Text | |
| | HOLE_LOCA | | Location sub division within project | SubStation 1 | Text | |
| | HOLE_CLST | | Hole cluster reference number | CLSTO1 | Text | |
| | ?HOLE_OFFS | | Offset | 10.35 | Double | 0.00 |
| | ?HOLE_CNGE | | Chainage | 23255.55 | Double | 0.00 |
| | ?HOLE_STAT | | Status of hole information | Preliminary | Text | |

| | | | | | | |
|--|------------|--|---------------------------|------------|------|--|
| | FILE_FSET | | Associated file reference | FS2 | Text | |
| | ?HOLE_FREQ | | Hole field description | 6421/A/BH1 | Text | |

Group Name: ?HORN - Borehole Orientation and Inclination

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------|--|---|---------|--------|
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?HORN_TOP | m | Depth to top of exploratory hole section | 10.00 | Double | 0.00 |
| * | ?HORN_BASE | m | Depth to base of exploratory hole section | 10.15 | Double | 0.00 |
| | ?HORN_ORNT | deg | Orientation of exploratory hole section or traverse (degrees from north) | 210 | Integer | 0 |
| | ?HORN_INCL | deg | Inclination of exploratory hole section or traverse (measured positively down from horizontal) | 65 | Integer | 0 |
| | ?HORN_REM | | Remarks relating to orientation and inclination of hole section | Inclined borehole cross dyke body at 5m bgl | Text | |
| | ?FILE_FSET | | Associated file reference (e.g. test result sheets) | As-built Location Plan.pdf | Text | |
| | ?HORN_EAST | m | Easting for the top of inclined section | 11299.245 | Double | 0.000 |
| | ?HORN_NOth | m | Northing for the top of inclined section | 26732.243 | Double | 0.000 |
| | ?HORN_ELEV | m | Elevation/ depth for the top of inclined section | -4.972 | Double | 0.000 |

Group Name: IPRM - In-Situ Permeability Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6471/A | Text | |
| * | IPRM_TOP | m | Depth to top of test zone | 12.20 | Double | 0.00 |
| * | IPRM_BASE | m | Depth to base of test zone | 12.95 | Double | 0.00 |
| * | IPRM_STG | | Stage number of multistage packer test | 1 | Text | |

| | | | | | | |
|---|------------|------------|---|--|--------|------------|
| * | ?IPRM_TESN | | Test number | 2 | Text | |
| | IPRM_TYPE | | Type of test | Rising, Falling, Constant Head | Text | |
| | IPRM_PRWL | m | Depth to water in borehole or piezometer immediately prior to test | 10.06 | Double | 0.00 |
| | IPRM_SWAL | m | Depth to water at start of test | 5.45 | Double | 0.00 |
| | IPRM_TDIA | m | Diameter of test zone | 0.15 | Double | 0.00 |
| | IPRM_SDIA | m | Diameter of standpipe or casing | 0.019 | Double | 0.000 |
| | IPRM_IPRM | m/s | Permeability | 5.00E-09 | Double | 0.00 |
| | IPRM_REM | | Test remarks | Test performed in 7 days after hole completion | Text | |
| | IPRM_FLOW | l/s | Average flow during packer test stage | 2.35 | Double | 0.00 |
| | IPRM_AWL | m | Depth to assumed standing water level | 10.25 | Double | 0.00 |
| | IPRM_HEAD | m | Applied total head of water during test stage at centre of packer test zone | 20.25 | Double | 0.00 |
| | ?IPRM_DATE | dd/mm/yyyy | Test date | 20/02/2003 | Date | dd/mm/yyyy |
| | FILE_FSET | | Associated file reference | FS26 | Text | |

Group Name: IRES - In-Situ Resistivity Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|--|--------------------------------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A or RES/12 | Text | |
| * | IRES_DPTH | m | Depth range to which in-situ resistivity test relates | 0 to 10.00 | Double | 0.00 |
| * | ?IRES_TESN | | Test number | 2 | Text | |
| | IRES_TYPE | | Type of resistivity test | Soil resistivity test (Wenner array) | Text | |
| | ?IRES_DATE | dd/mm/yyyy | Test date | 20/02/2003 | Date | dd/mm/yyyy |
| | IRES_IRES | ohm cm | Result | 2000.25 | Double | 0.00 |
| | IRES_REM | | Details of test e.g. electrode spacing and configuration | Wenner 4 pin method | Text | |

| | | | | | | | |
|--|-----------|--|---|---|--|------|--|
| | GEOL_STAT | | Stratum reference shown on trial pit or traverse sketch | 1 | | Text | |
|--|-----------|--|---|---|--|------|--|

| Group Name: ISPT - Standard Penetration Test Results | | | | | | |
|--|-----------|------|--|--------------------|---------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ISPT_TOP | m | Depth to top of test | 13.50 | Double | 0.00 |
| | ISPT_SEAT | | Number of blows for seating drive | 14 | Integer | 0 |
| | ISPT_MAIN | | Number of blows for main test drive | 35 | Integer | 0 |
| | ISPT_NPEN | mm | Total penetration for seating drive and test drive | 450 | Integer | 0 |
| | ISPT_NVAL | | SPT 'N' value | 35 | Integer | 0 |
| | ISPT_REP | | SPT reported result | 6,8/8,9,9,9 N=35 | Text | |
| | ISPT_CAS | m | Casing depth at time of test | 12.00 | Double | 0.00 |
| | ISPT_WAT | m | Depth to water at time of test | 2.50 | Double | 0.00 |
| | ISPT_TYPE | | Type of SPT test | S (See Appendix 3) | Text | |
| | ?ISPT_SWP | mm | Self-weight penetration | 25 | Integer | 0 |
| | ISPT_REM | | Remarks for SPT Hammer Serial Number (HSN) and Energy Ratio (ER) | HSN123, ER65 | Text | |
| | ISPT_INC1 | | Number of blows for 1st increment (Seating) | 6 | Integer | 0 |
| | ISPT_INC2 | | Number of blows for 2nd increment (Seating) | 8 | Integer | 0 |
| | ISPT_INC3 | | Number of blows for 1st increment (Test) | 8 | Integer | 0 |
| | ISPT_INC4 | | Number of blows for 2nd increment (Test) | 9 | Integer | 0 |
| | ISPT_INC5 | | Number of blows for 3rd increment (Test) | 9 | Integer | 0 |
| | ISPT_INC6 | | Number of blows for 4th increment (Test) | 9 | Integer | 0 |

| | | | | | | |
|--|-----------|----|---|----|---------|---|
| | ISPT_PEN1 | mm | Penetration for 1st increment (Seating Drive) | 75 | Integer | 0 |
| | ISPT_PEN2 | mm | Penetration for 2nd increment (Seating Drive) | 75 | Integer | 0 |
| | ISPT_PEN3 | mm | Penetration for 1st increment (Test) | 75 | Integer | 0 |
| | ISPT_PEN4 | mm | Penetration for 2nd increment (Test) | 75 | Integer | 0 |
| | ISPT_PEN5 | mm | Penetration for 3rd increment (Test) | 75 | Integer | 0 |
| | ISPT_PEN6 | mm | Penetration for 4th increment (Test) | 75 | Integer | 0 |

| Group Name: ?ISTR - In-Situ Stress Tests | | | | | | |
|--|------------|------|--|-------------------------------|--------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?ISTR_TOP | m | Depth to top of test zone | 81.00 | Double | 0.00 |
| * | ?ISTR_TESN | | In-situ test number | 2 | Text | |
| | ?ISTR_BASE | m | Depth to base of test zone | 167.00 | Double | 0.00 |
| | ?ISTR_METH | | Test method/instrument type | ISRM Part III: 2003: 3.2-3.3 | Text | |
| | ?ISTR_MASH | MPa | Maximum horizontal principal stress, S_H (Calculated from equation) | 10.01 | Double | 0.00 |
| | ?ISTR_MISH | MPa | Minimum horizontal principal stress, S_h (Calculated from equation) | 20.01 | Double | 0.00 |
| | ?ISTR_SY | MPa | Vertical principal stress, S_v (Calculated from equation) | 30.01 | Double | 0.00 |
| | ?ISTR_DIR | deg | Direction angle range of the acting maximum horizontal principal stress, S_H | N10~13 | Text | |
| | ?ISTR_TEN | MPa | Hydraulic fracturing rock tensile strength | 9.01 | Double | 0.00 |
| | ?ISTR_REM | | Notes on stress-depth relations/test remarks | Test zone is highly fractured | Text | |
| | ?FILE_FSET | | Associated file reference | Field Testing report.pdf | Text | |
| | ?GEOL_STAT | | Stratum reference shown on trial pit or traverse sketch | 1 | Text | |

Group Name: IVAN - In-Situ Vane Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|---|---------------------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A or VAN 15 | Text | |
| * | IVAN_DPTH | m | Depth of vane test | 13.50 | Double | 0.00 |
| * | IVAN_TESN | | Vane test number | 2 | Text | |
| | IVAN_REM | | Details of vane test, vane size, vane type | Blade size= 65/130, Genor | Text | |
| | IVAN_IVAN | kN/m2 | Vane test result | 60.00 | Double | 0.00 |
| | IVAN_IVAR | kN/m2 | Vane test remoulded result | 45.00 | Double | 0.00 |
| | IVAN_IPEN | kN/m2 | Hand penetrometer result | 23.00 | Double | 0.00 |
| | ?IVAN_DATE | dd/mm/yyyy | Test Date | 20/02/2003 | Date | dd/mm/yyyy |
| | GEOL_STAT | | Stratum reference shown on trial pit or traverse sketch | 1 | Text | |

Group Name: ?LEMC - Emerson Class Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------|--|---|--------|--------|
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | ?SAMP_TOP | m | Depth to top of sample | 24.55 | Double | 0.00 |
| * | ?SAMP_REF | | Sample reference | TW1 | Text | |
| * | ?SAMP_TYPE | | Sample type | TW (See Appendix 3) | Text | |
| * | ?SPEC_REF | | Specimen reference | 1 | Text | |
| * | ?SPEC_DPTH | m | Specimen depth | 24.59 | Double | 0.00 |
| | ?SPEC_DESC | | Specimen description | Very soft, greenish grey CLAY | Text | |
| | ?SPEC_PREP | | Details of specimen preparation including time between preparation and testing | Representative samples are obtained by selecting 3 air-dry aggregates, 5mm - 10mm diameter. | Text | |
| | ?LEMC_LEMC | | Emerson class number | Class 1 to Class 8 (See Appendix 3) | Text | |
| | ?LEMC_WTYP | | Type of water used | Deionised | Text | |
| | ?LEMC_TEMP | DegC | Temperature of water used | 27.5 | Double | 0.0 |

| | | | | | | |
|--|------------|--|--|------------------------------|------|--|
| | ?LEMC_METH | | Test method | AS 1289.3.8.1-1997 | Text | |
| | ?LEMC_LAB | | Name of testing laboratory/organisation | ABC Laboratory | Text | |
| | ?LEMC_CRED | | Accrediting body and reference number (when appropriate) | SAC-SINGLAS / LA-2010-0422-A | Text | |
| | ?LEMC_STAT | | Test status | Draft | Text | |
| | ?FILE_FSET | | Associated file reference | FS6 | Text | |

| Group Name: ?MONP - Monitor Points | | | | | | |
|---|----------------|-------------|---|---------------------|-------------|---------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6422/A | Text | |
| * | ?MONP_DIS | m | Distance of monitoring point from HOLE_ID | 2.03 | Double | 0.00 |
| * | ?MONP_ID | | Monitoring point identifier | ZT102 | Text | |
| | ?MONP_DATE | dd/mm/yyyy | Installation date | 01/02/2003 | Date | dd/mm/yyyy |
| | ?MONP_TYPE | | Instrument type | TS (See Appendix 3) | Text | |
| | ?MONP_TRZ | m | Distance to start of response zone from HOLE_ID datum | 5.25 | Double | 0.00 |
| | ?MONP_BRZ | m | Distance to end of response zone from HOLE_ID datum | 7.25 | Double | 0.00 |
| | ?MONP_BRGA | deg | Bearing of monitoring axis A (compass bearing) | 190 | Integer | 0 |
| | ?MONP_BRGB | deg | Bearing of monitoring axis B (compass bearing) | 180 | Integer | 0 |
| | ?MONP_BRGC | deg | Bearing of monitoring axis C (compass bearing) | NA | Integer | 0 |
| | ?MONP_INCA | deg | Inclination of instrument axis A (measured positively down from horizontal) | 80 | Integer | 0 |
| | ?MONP_INCB | deg | Inclination of instrument axis B (measured positively down from horizontal) | 70 | Integer | 0 |

| | | | | | | |
|--|------------|-----|---|---------------------------|---------|---|
| | ?MONP_INCC | deg | Inclination of instrument axis C (measured positively down from horizontal) | NA | Integer | 0 |
| | ?MONP_RSCA | | Reading sign convention in direction A | Displacement to East +ve | Text | |
| | ?MONP_RSCB | | Reading sign convention in direction B | Displacement to South +ve | Text | |
| | ?MONP_RSCC | | Reading sign convention in direction C | Displacement up +ve | Text | |
| | ?MONP_REM | | Remarks | Behind wall | Text | |
| | ?FILE_FSET | | Associated file reference | FS27 | Text | |

| Group Name: ?MONR - Monitor Point Readings | | | | | | |
|--|------------|------------|---|------------|--------|------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ?HOLE_ID | | Exploratory hole or location equivalent | 6422/A | Text | |
| * | ?MONP_DIS | m | Distance of monitoring point from HOLE_ID | 2.30 | Double | 0.00 |
| * | ?MONP_ID | | Monitoring point identifier | ZT102 | Text | |
| * | ?MONR_DATE | dd/mm/yyyy | Date of reading | 20/02/2003 | Date | dd/mm/yyyy |
| * | ?MONR_TIME | hhmmss | Time of reading | 134000 | Time | hhmmss |
| | ?MONR_WDEP | m | Depth to water from HOLE_ID datum | 6.42 | Double | 0.00 |
| | ?MONR_WHD | m | Head of water above tip | 2.01 | Double | 0.00 |
| | ?MONR_DSPA | mm | Displacement in direction A | 24.25 | Double | 0.00 |
| | ?MONR_DSPB | mm | Displacement in direction B | 12.27 | Double | 0.00 |
| | ?MONR_DSPC | mm | Displacement in direction C | -10.842 | Double | 0.000 |
| | ?MONR_PRES | kN/m2 | Pressure | 20.64 | Double | 0.00 |
| | ?MONR_ANGA | deg | Rotation/Tilt in direction A | 0.023 | Double | 0.000 |
| | ?MONR_ANGB | deg | Rotation/Tilt in direction B | -0.284 | Double | 0.000 |
| | ?MONR_ANGC | deg | Rotation in direction C | 2.420 | Double | 0.000 |
| | ?MONR_STRA | % | Strain in direction A | -1.87 | Double | 0.00 |
| | ?MONR_STRB | % | Strain in direction B | 1.09 | Double | 0.00 |

| | | | | | |
|------------|------|--|------------|--------|-------|
| ?MONR_STRC | % | Strain in direction C | 1.23 | Double | 0.00 |
| ?MONR_FORC | kN | Force | 62.18 | Double | 0.00 |
| ?MONR_TEMP | DegC | Temperature | 21.12 | Double | 0.00 |
| ?MONR_WDEP | m | Depth to water from HOLE_ID datum | 6.42 | Double | 0.00 |
| ?MONR_EAST | m | Absolute position (Easting) | 523145.215 | Double | 0.000 |
| ?MONR_NRTH | m | Absolute position (Northing) | 178963.236 | Double | 0.000 |
| ?MONR_LEV | m | Absolute position (Level) | 103.256 | Double | 0.000 |
| ?MONR_WHD | m | Head of water above tip | 2.01 | Double | 0.00 |
| ?MONR_GAUG | m | Gauge length | 0.55 | Double | 0.00 |
| ?MONR_FLOW | l/s | Flow | 20.15 | Double | 0.00 |
| ?MONR_REM | | Details for instrument reference, probe logger, serial numbers | | Text | |
| ?FILE_FSET | | Associated file reference | FS28 | Text | |

| Group Name: POBS - Piezometer Readings | | | | | | |
|---|-----------|------------|--|---------------------------------|--------|------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | PREF_TDEP | m | Depth to reference level of piezometer tip | 7.25 | Double | 0.00 |
| * | POBS_DATE | dd/mm/yyyy | Date of piezometer reading | 26/03/1991 | Date | dd/mm/yyyy |
| * | POBS_TIME | hhmmss | Time of piezometer reading | 164000 | Time | hhmmss |
| | POBS_DEP | m | Depth to water below ground surface | 6.45 | Double | 0.00 |
| | POBS_HEAD | m | Head of water above piezometer tip | 0.85 | Double | 0.00 |
| | POBS_REM | | Remarks | Reading taken during heavy rain | Text | |

| Group Name: PREF - Piezometer Installation Details | | | | | | |
|---|--|--|--|--|--|--|
|---|--|--|--|--|--|--|

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|---|---|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | PREF_TDEP | m | Depth to reference level of piezometer tip | 7.25 | Double | 0.00 |
| | PREF_DATE | dd/mm/yyyy | Piezometer installation date | 22/03/1991 | Date | dd/mm/yyyy |
| | PREF_TYPE | | Piezometer type | PPIE (See Appendix 3) | Text | |
| | PREF_TRPS | m | Depth to top of response zone | 6.55 | Double | 0.00 |
| | PREF_BRPS | m | Depth to base of response zone | 7.55 | Double | 0.00 |
| | PREF_REM | | Details of type and depths of grouting and readout arrangements/locations | Grout (Cement,1: Bentonite,0.5:Water,4) | Text | |
| | FILE_FSET | | Associated file reference | FS6 | Text | |

Group Name: PRTD - Pressuremeter Test Data

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|-------|-----------------------------|--|--------|--------|
| | PRTD_REM | | Remarks | 6 arms used indetermination of average | Text | |
| | PRTD_PRES | kN/m2 | Total pressure in test cell | 60.10 | Double | 0.00 |
| | PRTD_VOL | cm3 | Volume change in test cell | 2.26 | Double | 0.00 |

Group Name: PRTG - Pressuremeter Test Results, General

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|---|----------------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | PRTD_TREF | | Reference number of test | 1 | Text | |
| * | PRTD_DPTH | m | Depth of test | 2.75 | Double | 0.00 |
| | PRTD_DATE | dd/mm/yyyy | Date of test | 22/12/1993 | Date | dd/mm/yyyy |
| | PRTD_TYPE | | Pressuremeter type | SBP (See Appendix 3) | Text | |
| | PRTD_DIA | mm | Uninflated diameter of pressuremeter | 82.9 | Double | 0.0 |

| | | | | | |
|-----------|-------------------|---|---------|---------|------|
| PRTG_HA1 | kN/m ² | Estimated horizontal stress, arm (pair) 1 | 700.50 | Double | 0.00 |
| PRTG_HA2 | kN/m ² | Estimated horizontal stress, arm (pair) 2 | 700.50 | Double | 0.00 |
| PRTG_HA3 | kN/m ² | Estimated horizontal stress, arm (pair) 3 | 700.50 | Double | 0.00 |
| PRTG_HAA | kN/m ² | Estimated horizontal stress, average | 700.50 | Double | 0.00 |
| PRTG_GIA1 | MN/m ² | Initial shear modulus, arm (pair) 1 | 70.50 | Double | 0.00 |
| PRTG_GIA2 | MN/m ² | Initial shear modulus, arm (pair) 2 | 70.50 | Double | 0.00 |
| PRTG_GIA3 | MN/m ² | Initial shear modulus, arm (pair) 3 | 70.50 | Double | 0.00 |
| PRTG_GIAA | MN/m ² | Initial shear modulus, average | 70.50 | Double | 0.00 |
| PRTG_REM | | Remarks | OYO-E2 | Text | 0.0 |
| PRTG_CUA1 | kN/m ² | Undrained shear strength, arm (pair) 1 | 420.30 | Double | 0.00 |
| PRTG_CUA2 | kN/m ² | Undrained shear strength, arm (pair) 2 | 420.30 | Double | 0.00 |
| PRTG_CUA3 | kN/m ² | Undrained shear strength, arm (pair) 3 | 420.30 | Double | 0.00 |
| PRTG_CUAA | kN/m ² | Undrained shear strength, average | 420.30 | Double | 0.00 |
| PRTG_PLA1 | kN/m ² | Limit pressure, arm (pair) 1 | 3400.20 | Double | 0.00 |
| PRTG_PLA2 | kN/m ² | Limit pressure, arm (pair) 2 | 3400.20 | Double | 0.00 |
| PRTG_PLA3 | kN/m ² | Limit pressure, arm (pair) 3 | 3400.20 | Double | 0.00 |
| PRTG_PLAA | kN/m ² | Limit pressure, average | 3400.20 | Double | 0.00 |
| PRTG_AFA1 | deg | Angle of friction, arm (pair) 1 | 39 | Integer | 0 |
| PRTG_AFA2 | deg | Angle of friction, arm (pair) 2 | 39 | Integer | 0 |
| PRTG_AFA3 | deg | Angle of friction, arm (pair) 3 | 39 | Integer | 0 |
| PRTG_AFAA | deg | Angle of friction, average | 39 | Integer | 0 |
| PRTG_ADA1 | deg | Angle of dilation, arm (pair) 1 | 10 | Integer | 0 |
| PRTG_ADA2 | deg | Angle of dilation, arm (pair) 2 | 10 | Integer | 0 |
| PRTG_ADA3 | deg | Angle of dilation, arm (pair) 3 | 10 | Integer | 0 |
| PRTG_ADAA | deg | Angle of dilation, average | 10 | Integer | 0 |
| PRTG_AFCV | deg | Angle of friction at constant volume (ϕ_{cv}) used | 35 | Integer | 0 |

| | | | | | | |
|--|------------|-------|-----------------------------------|----------|--------|------|
| | PRTG_REM | | Remarks | OYO-E2 | Text | |
| | FILE_FSET | | Associated file reference | FS11 | Text | |
| | ?PRTG_CRP | kN/m2 | Creep pressure | 3500.05 | Double | 0.00 |
| | ?PRTG_MPMI | kN/m2 | Menard pressure modulus (Natural) | 42835.08 | Double | 0.00 |
| | ?PRTG_MPMR | kN/m2 | Menard pressure modulus (Reload) | 83543.09 | Double | 0.00 |

Group Name: PRTL - Pressuremeter Test Results, Individual Loops

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|---|----------------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | PRTD_TREF | | Reference number of test | 1 | Text | |
| * | PRTD_DPTH | m | Depth of test | 2.70 | Double | 0.00 |
| * | PRTL_LNO | | Unload/Reload loop number | 1 | Text | |
| | PRTD_DATE | dd/mm/yyyy | Date of test | 22/12/1993 | Date | dd/mm/yyyy |
| | PRTD_TYPE | | Pressuremeter type | SBP (See Appendix 3) | Text | |
| | PRTD_DIA | mm | Uninflated diameter of pressuremeter | 82.9 | Double | 0.0 |
| | PRTL_GA1 | MN/m2 | Unload/reload shear modulus, arm (pair) 1 | 70.25 | Double | 0.00 |
| | PRTL_GA2 | MN/m2 | Unload/reload shear modulus, arm (pair) 2 | 70.25 | Double | 0.00 |
| | PRTL_GA3 | MN/m2 | Unload/reload shear modulus, arm (pair) 3 | 70.25 | Double | 0.00 |
| | PRTL_GAA | MN/m2 | Unload/reload shear modulus, average | 70.25 | Double | 0.00 |

Group Name: PTIM - Hole Progress by Time

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|---|------------|------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | PTIM_DATE | dd/mm/yyyy | Date of progress reading | 20/03/1991 | Date | dd/mm/yyyy |
| * | PTIM_TIME | hhmm | Time of progress reading | 1435 | Time | hhmm |

| | | | | | | |
|--|----------|---|------------------------------|--|--------|------|
| | PTIM_DEP | m | Hole depth at PTIM_TIME | 22.13 | Double | 0.00 |
| | PTIM_CAS | m | Depth of casing at PTIM_TIME | 20.25 | Double | 0.00 |
| | PTIM_WAT | m | Depth to water at PTIM_TIME | 16.56 | Double | 0.00 |
| | PTIM_REM | | Remarks at PTIM_TIME | Stopped drilling on client's instruction | Text | |

| Group Name: PTST - Laboratory Permeability Tests | | | | | | |
|--|-----------|-------|--|---------------------------------|--------|--------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6411/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 2 | Text | |
| * | SPEC_DPTH | m | Specimen Depth | 6.90 | Double | 0.00 |
| * | PTST_TESN | | Permeability test number | 2 | Text | |
| | PTST_REM | | Permeability test method | Constant head permeability test | Text | |
| | PTST_COND | | Sample condition | Undisturbed | Text | |
| | PTST_SZUN | mm | Size cut off of material too coarse for testing | 5.0 | Double | 0.0 |
| | PTST_UNC | % | Proportion of material too coarse for testing - BS 1377 Part5 cl 5.7 | 36.0 | Double | 0.0 |
| | PTST_DIA | mm | Diameter of test sample | 102.0 | Double | 0.0 |
| | PTST_LEN | mm | Length of test sample | 200.0 | Double | 0.0 |
| | PTST_MC | % | Initial moisture content of test sample | 20.0 | Double | 0.0 |
| | PTST_BDEN | Mg/m3 | Initial bulk density of test sample | 2.24 | Double | 0.00 |
| | PTST_DDEN | Mg/m3 | Dry density of test sample | 1.87 | Double | 0.00 |
| | PTST_VOID | | Void ratio of test sample | 0.37 | Double | 0.00 |

| | | | | | | |
|--|-----------|-------|---|----------|--------|------|
| | PTST_K | m/s | Coefficient of permeability | 4.00E-06 | Double | 0.00 |
| | PTST_TSTR | kN/m2 | Mean effective stress at which permeability measured (when measured in triaxial cell) | 112.0 | Double | 0.0 |
| | PTST_ISAT | % | Initial degree of saturation | 72.0 | Double | 0.0 |
| | PTST_FSAT | % | Final degree of saturation | 98.0 | Double | 0.0 |
| | PTST_PDEN | Mg/m3 | Particle density, measured or (#) assumed | 2.65 | Double | 0.00 |
| | FILE_FSET | | Associated file reference | FS28 | Text | |

Group Name: PUMP - Pumping Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------------|---|---------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | PUMP_DATE | dd/mm/yyyy | Date of reading | 16/03/1991 | Date | dd/mm/yyyy |
| * | PUMP_TIME | hhmmss | Time of reading | 143500 | Time | hhmmss |
| | PUMP_DPTH | m | Depth to water below ground | 12.50 | Double | 0.00 |
| | PUMP_QUAT | l/s | Pumping rate from hole | 0.8 | Double | 0.0 |
| | PUMP_REM | | Remarks | Double packer | Text | |
| | FILE_FSET | | Associated file reference | FS29 | Text | |

Group Name: ROCK - Rock Testing

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|--------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6423/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 2.54 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | C (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 2 | Text | |

| | | | | | | |
|---|-----------|-------|--|---|--------|------|
| * | SPEC_DPTH | m | Specimen depth | 2.9 | Double | 0.00 |
| | ROCK_PLS | MN/m2 | Uncorrected point load (I_s) | 2.3 | Double | 0.0 |
| | ROCK_PLSI | MN/m2 | Size corrected point load index ($I_s 50$) | 2.5 | Double | 0.0 |
| | ROCK_PLTF | | Point load test type (A, D, L or P) | A+L (See Appendix 3) | Text | |
| | ROCK_UCS | MN/m2 | Uniaxial compressive strength (size corrected) | 16.8 | Double | 0.0 |
| | ROCK_REM | | Remarks | Slightly weathered rock | Text | |
| | ROCK_PREM | | Details additional to ROCK_PLTF | Saturated specimen | Text | |
| | ROCK_UREM | | Notes on uniaxial compressive strength test, including sample dimensions | ISRM 76mm diameter 205mm high | Text | |
| | ROCK_E | MN/m2 | Elastic modulus | 220.0 | Double | 0.0 |
| | ROCK_MU | | Poisson's ratio | 0.3 | Double | 0.0 |
| | ROCK_BRAZ | MN/m2 | Tensile strength by the Brazilian method | 50.0 | Double | 0.0 |
| | ROCK_BREM | | Notes on Brazilian tensile strength test including sample dimensions | ISRM 76mm diameter 32mm thick | Text | |
| | ROCK_PORO | % | Rock porosity | 17.0 | Double | 0.0 |
| | ROCK_PORE | | Notes on type of porosity test | ISRM Calliper method | Text | |
| | ROCK_MC | % | Natural moisture content | 18.0 | Double | 0.0 |
| | ROCK_BDEN | Mg/m3 | Rock bulk density | 2.22 | Double | 0.00 |
| | ROCK_DDEN | Mg/m3 | Rock dry density | 1.88 | Double | 0.00 |
| | ROCK_PDEN | Mg/m3 | Aggregate particle density | 2.53 | Double | 0.00 |
| | ROCK_DREM | | Aggregate particle density test method and notes | BS812 Gas jar method. Saturated, surface dried 10mm aggregate | Text | |
| | ROCK_WTAB | % | Aggregate water absorption | 2.6 | Double | 0.0 |
| | ROCK_WREM | | Aggregate water absorption test method and notes | BS812 Gas jar method 10mm aggregate | Text | |
| | ROCK_SDI | % | Slake durability index | 23.2 | Double | 0.0 |
| | ROCK_SREM | | Slake durability test method and notes | ISRM 2nd cycle tap water at 20 degC | Text | |

| | | | | | |
|------------|-------------------|--|--|--------|------|
| ROCK_SOUN | % | Aggregate soundness test | 95.0 | Double | 0.0 |
| ROCK_MREM | | Aggregate soundness test method and notes | BS812 magnesium sulphate 10-14mm aggregate 5 cycles % retained | Text | |
| ROCK_ACV | % | Aggregate crushing value | 16.5 | Double | 0.0 |
| ROCK_CREM | | Aggregate crushing value test method and notes | BS812 10-14mm aggregate | Text | |
| ROCK_AIV | % | Aggregate impact value | 15.0 | Double | 0.0 |
| ROCK_IREM | | Aggregate impact value test method and notes | BS812 10-14mm aggregate, saturated 15 blows | Text | |
| ROCK_LOSA | % | Aggregate Los Angeles abrasion | 15.0 | Double | 0.0 |
| ROCK_LREM | | Aggregate Los Angeles abrasion test method and notes | ASTM C131 9.5-19mm aggregate 500 revolutions | Text | |
| ROCK_AAV | | Aggregate abrasion value | 8.32 | Double | 0.00 |
| ROCK_PSV | | Aggregate polished stone value | 67.0 | Double | 0.0 |
| ROCK_FI | % | Aggregate flakiness index | 9.0 | Double | 0.0 |
| ROCK_EI | % | Aggregate elongation index | 12.0 | Double | 0.0 |
| ROCK_DESC | | Specimen description | Mudstone | Text | |
| ROCK_SHOR | | Shore hardness | 29.7 | Double | 0.0 |
| ROCK_PWAV | m/s | P-wave velocity | 3000.0 | Double | 0.0 |
| ROCK_SWAV | m/s | S-wave velocity | 1800.0 | Double | 0.0 |
| ROCK_EMOD | GPa | Dynamic elastic modulus | 20.0 | Double | 0.0 |
| ROCK_SG | GPa | Shear modulus derived from ROCK_SWAV | 8.0 | Double | 0.0 |
| ROCK_SWEL | kN/m ² | Rock swelling index | 50.0 | Double | 0.0 |
| FILE_FSET | | Associated file reference | FS10 | Text | |
| ?ROCK_SCT | deg | Saw cut test | 14.0 | Double | 0.0 |
| ?ROCK_GSB | | Golder shear box test | 7.0 | Double | 0.0 |
| ?ROCK_ACST | | Abrasion cutter steel test | 15.0 | Double | 0.0 |

| | | | | | |
|------------|--|--------------------------------|------|--------|-----|
| ?ROCK_CERA | | Cerchar abrasivity test | 4.0 | Double | 0.0 |
| ?ROCK_BRIV | | Brittleness value test | 52.0 | Double | 0.0 |
| ?ROCK_SJV | | Sivers' J-value test | 5.0 | Double | 0.0 |
| ?ROCK_PTRO | | Petrographic analysis (Yes/No) | Yes | Text | |

Group Name: SAMP - Sample Reference Information

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|------------|------------|---|-----------------------------|--------|------------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | SAMP_TOP | m | Depth to top of sample | 24.55 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 24 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| | SAMP_DIA | mm | Sample diameter | 100.0 | Double | 0.0 |
| | SAMP_BASE | m | Depth to base of sample | 25.50 | Double | 0.00 |
| | SAMP_DESC | | Sample description | Stiff brown very silty CLAY | Text | |
| | SAMP_UBLO | | Number of blows required to drive sampler | 35 | Text | |
| | SAMP_REM | | Sample remarks | 60% recovery | Text | |
| | SAMP_DATE | dd/mm/yyyy | Date sample taken | 16/05/2001 | Date | dd/mm/yyyy |
| | SAMP_TIME | hhmmss | Time sample taken | 092800 | Time | hhmmss |
| | SAMP_BAR | kPa | Barometric pressure at time of sampling | 99.1 | Double | 0.0 |
| | SAMP_WDEP | m | Depth to water below ground surface at time of sampling | 4.50 | Double | 0.00 |
| | SAMP_TEMP | DegC | Sample temperature at time of sampling | 8.0 | Double | 0.0 |
| | SAMP_PRES | kPa | Gas pressure (above barometric) | 0.2 | Double | 0.0 |
| | SAMP_FLOW | l/min | Gas flow | 0.2 | Double | 0.0 |
| | ?SAMP_PREP | | Details of sample preparation | Preservative added | Text | |

| | | | | | | |
|--|-----------|--|---|-----|------|--|
| | GEOL_STAT | | Stratum reference shown on trial pit or traverse sketch | 1 | Text | |
| | FILE_FSET | | Associated file reference | FS3 | Text | |

Group Name: SHBG - Shear Box Testing - General

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|-------------------|---|--------------------|---------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6331/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 2 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.90 | Double | 0.00 |
| | SHBG_TYPE | | Test type e.g. small shear box, large shear box, ring shear | Small shear box | Text | |
| | SHBG_REM | | Test notes e.g. undisturbed, pre-existing shear, recompacted, rock joint, cut plane | Undisturbed | Text | |
| | SHBG_PCOH | kN/m ² | Peak cohesion intercept | 5.00 | Double | 0.00 |
| | SHBG_PHI | deg | Peak angle of friction | 26 | Integer | 0 |
| | SHBG_RCOH | kN/m ² | Residual cohesion intercept | 1.00 | Double | 0.00 |
| | SHBG_RPHI | deg | Residual angle of friction | 13 | Integer | 0 |
| | FILE_FSET | | Associated file reference | FS18 | Text | |

Group Name: SHBT - Shear Box Testing

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|----------|------|---|---------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6331/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |

| | | | | | | |
|---|-----------|--------|---|-----------------------|--------|------|
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 2 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.90 | Double | 0.00 |
| * | SHBT_TESN | | Shear box stage number | 1 | Text | |
| | SHBT_BDEN | Mg/m3 | Bulk density | 1.96 | Double | 0.00 |
| | SHBT_DDEN | Mg/m3 | Dry density | 1.63 | Double | 0.00 |
| | SHBT_NORM | kN/m2 | Shear box normal stress | 100.00 | Double | 0.00 |
| | SHBT_DISP | mm/min | Displacement rate | 0.10 | Double | 0.00 |
| | SHBT_PEAK | kN/m2 | Shear box peak shear stress | 65.50 | Double | 0.00 |
| | SHBT_RES | kN/m2 | Shear box residual shear stress | 47.20 | Double | 0.00 |
| | SHBT_PDIS | mm | Displacement at peak shear strength | 2.35 | Double | 0.00 |
| | SHBT_RDIS | mm | Displacement at residual shear strength | 12.41 | Double | 0.00 |
| | SHBT_PDEN | Mg/m3 | Particle density - measured or, (#) assumed | 2.65 | Double | 0.00 |
| | SHBT_IVR | | Initial void ratio | 0.5 | Double | 0.0 |
| | SHBT_MCI | % | Initial moisture content | 20.00 | Double | 0.00 |
| | SHBT_MCF | % | Final moisture content | 18.00 | Double | 0.00 |
| | ?SHBT_REM | | Remarks on test stage | Reached end of travel | Text | |

Group Name: STCN - Static Cone Penetration Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | STCN_DPTH | m | Depth of result for static cone test | 12.10 | Double | 0.00 |
| | STCN_TYP | | Cone test type | PC (See Appendix 3) | Text | |

| | | | | | | |
|--|-----------|----------|-------------------------------------|-----------------|--------|--------|
| | STCN_REF | | Cone identification reference | C10CFIIP.C09012 | Text | |
| | STCN_RES | MN/m2 | Cone resistance | 20.0000 | Double | 0.0000 |
| | STCN_FRES | kN/m2 | Local unit side friction resistance | 1000.0000 | Double | 0.0000 |
| | STCN_PWP1 | kN/m2 | Porewater pressure | 15.00 | Double | 0.00 |
| | STCN_PWP2 | kN/m2 | Second porewater pressure | 15.00 | Double | 0.00 |
| | STCN_PWP3 | kN/m2 | Third porewater pressure | 15.00 | Double | 0.00 |
| | STCN_CON | uS/cm | Conductivity | 0.01 | Double | 0.00 |
| | STCN_TEMP | DegC | Temperature | 10.0 | Double | 0.0 |
| | STCN_PH | | pH reading | 7.2 | Double | 0.0 |
| | STCN_SLP1 | deg | Slope indicator no. 1 | 4.1 | Double | 0.0 |
| | STCN_SLP2 | deg | Slope indicator no. 2 | 6.3 | Double | 0.0 |
| | STCN_REDX | mV | Redox potential reading | 13.3 | Double | 0.0 |
| | STCN_FFD | % | Fluorescence intensity | 96.3 | Double | 0.0 |
| | STCN_PMT | counts/s | Photo-multiplier tube reading | 26.0 | Double | 0.0 |
| | STCN_PID | uV | Photo ionization detector reading | 3650.0 | Double | 0.0 |
| | STCN_FID | uV | Flame ionization detector reading | 151260.0 | Double | 0.0 |
| | FILE_FSET | | Associated file reference | FS12 | Text | |

| Group Name: ?TREM - Time Related Remarks | | | | | | |
|--|------------|------------|---|--|------|------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | ?HOLE_ID | | Exploratory hole or location equivalent | G12 | Text | |
| * | ?TREM_DATE | dd/mm/yyyy | Date of remark | 16/05/2001 | Date | dd/mm/yyyy |
| * | ?TREM_TIME | hhmmss | Time of remark | 120000 | Time | hhmmss |
| | ?TREM_REM | | Time related remark | Completion of concrete pour for slab G12 | Text | |
| | ?FILE_FSET | | Associated file reference | FS28 | Text | |

Group Name: TRIG - Triaxial Tests - General

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|-------------------|--|----------------------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 3 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.80 | Double | 0.00 |
| | TRIG_TYPE | | Test type | UU (See Appendix 3) | Text | |
| | TRIG_COND | | Sample condition | Undisturbed | Text | |
| | TRIG_REM | | Test method, additional information, failure criteria | Sample contained shell fragments | Text | |
| | TRIG_CU | kN/m ² | Value of undrained shear strength | 75.0 | Double | 0.0 |
| | TRIG_COH | kN/m ² | Cohesion intercept associated with TRIG_PHI | 2.0 | Double | 0.0 |
| | TRIG_PHI | deg | Angle of friction for effective shear strength triaxial test | 32.0 | Double | 0.0 |
| | FILE_FSET | | Associated file reference | FS7 | Text | |
| | ?TRIG_PBT | m/s | Coefficient of permeability at 20 degC | 4.00E-06 | Double | 0.00 |

Group Name: TRIX - Triaxial Tests

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|--------------------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6431/A | Text | |
| * | SAMP_TOP | m | Depth to top of test sample | 6.50 | Double | 0.00 |
| * | SAMP_REF | | Sample reference number | 12 | Text | |
| * | SAMP_TYPE | | Sample type | U (See Appendix 3) | Text | |
| * | SPEC_REF | | Specimen reference number | 3 | Text | |
| * | SPEC_DPTH | m | Specimen depth | 6.80 | Double | 0.00 |
| * | TRIX_TESN | | Triaxial test/stage number | 1 | Text | |

| | | | | | | |
|--|-----------|-------|--|------------------|--------|-------|
| | TRIX_SDIA | mm | Specimen diameter | 38.00 | Double | 0.00 |
| | TRIX_MC | % | Specimen initial moisture content | 15.00 | Double | 0.00 |
| | TRIX_CELL | kN/m2 | Total cell pressure | 100.00 | Double | 0.00 |
| | TRIX_DEVF | kN/m2 | Deviator stress at failure | 360.00 | Double | 0.00 |
| | TRIX_SLEN | mm | Sample length | 76.00 | Double | 0.00 |
| | TRIX_BDEN | Mg/m3 | Initial bulk density | 2.120 | Double | 0.000 |
| | TRIX_DDEN | Mg/m3 | Initial dry density | 1.840 | Double | 0.000 |
| | TRIX_PWPF | kN/m2 | Porewater pressure at failure | 60.00 | Double | 0.00 |
| | TRIX_PWPI | kN/m2 | Porewater pressure at start of shear stage | 50.00 | Double | 0.00 |
| | ?TRIX_CU | kN/m2 | Value of undrained shear strength | 180.00 | Double | 0.00 |
| | TRIX_STRN | % | Strain at failure | 9.000 | Double | 0.000 |
| | TRIX_MODE | | Mode of failure | Brittle, plastic | Text | |

Group Name: UNIT - Definition of <UNITS> and CNMT_UNIT

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|-------------|----------------|------|--------|
| * | UNIT_UNIT | | Unit Used | ohm cm | Text | |
| | UNIT_DESC | | Description | Ohm centimetre | Text | |

Group Name: WETH - Weathering Grades

| Status | Heading | Unit | Description | Example | Type | Format |
|--------|-----------|------|---|---------|--------|--------|
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | WETH_TOP | m | Depth to top of weathering subdivision | 3.50 | Double | 0.00 |
| * | WETH_BASE | m | Depth to base of weathering subdivision | 3.95 | Double | 0.00 |
| | WETH_GRAD | | Material weathering grade | IV | Text | |
| | WETH_REM | | Remarks, weathering system used | BS 5930 | Text | |

| Group Name: WSTK - Water Strike Details | | | | | | |
|---|-----------|------------|--|--------------------------------|--------|------------|
| Status | Heading | Unit | Description | Example | Type | Format |
| * | HOLE_ID | | Exploratory hole or location equivalent | 6421/A | Text | |
| * | WSTK_DEP | m | Depth to water strike | 17.20 | Double | 0.00 |
| * | WSTK_NMIN | min | Minutes after strike | 20 | Time | mm |
| | WSTK_CAS | m | Casing depth at time of water strike | 15.70 | Double | 0.00 |
| | WSTK_DATE | dd/mm/yyyy | Date of water strike | 19/03/1991 | Date | dd/mm/yyyy |
| | WSTK_TIME | hhmm | Time of water strike | 1640 | Time | hhmm |
| | WSTK_POST | m | Depth to water after WSTK_NMIN minutes | 10.23 | Double | 0.00 |
| | WSTK_FLOW | | Flow rate remarks | Steady flow of water into hole | Text | |
| | WSTK_SEAL | m | Depth at which water strike sealed by casing | 19.10 | Double | 0.00 |

APPENDIX 2

Rules for AGS Format (According to AGS 3.1)

RULES

The Rules are set to explain the overall framework which AGS data files are formulated. The data files do not replace the printed reports which they accompany. However, the layout does allow data items to be readily identified should the need arise.

The rules as per AGS 3.1 must be used when creating an AGS data files and they are reproduced below for easy of reference.

Rule 1

The data file shall be entirely composed of ASCII characters. The extended ASCII character set must not be used.

Rule 2

Each data file shall contain one or more data GROUPs. Each data GROUP contains related data.

Rule 3

Within each GROUP, data items are contained in data FIELDs. Each data FIELD contains a single data VARIABLE. Each line of the AGS Format file can contain several data FIELDs.

Rule 4

The order of data FIELDs on each line within a GROUP is defined at the head of each GROUP by a set of data HEADINGS.

Rule 5

Data HEADINGS and GROUP names must be taken from the approved Data Dictionary for data covered by these. In cases where there is no suitable entry, a user-defined HEADING may be used in accordance with Rules 21, 22 and 23.

Rule 6

The data HEADINGS fall into one of 2 categories: KEY or COMMON

KEY fields must appear in each GROUP, but may contain null data (see Rule 15)

KEY fields are necessary to uniquely define the data.

The following sub-rules apply to KEY fields and are required to ensure Data Integrity. (See Note 3)

Rule 6a

*HOLE_ID should always be the first field except in the **PROJ GROUP, where *PROJ_ID should be the first field. *HOLE_ID is also omitted from the **ABBR, **DICT, **UNIT and **FILE GROUPs.

Rule 6b

There must not be more than one line of data in each GROUP with the same combination of KEY field entries.

Rule 6c

Within each project every data entry made in the KEY fields in any GROUP must have an equivalent entry in its PARENT GROUP.

e.g. All HOLES referenced in any GROUP must be defined in the **HOLE GROUP. See GROUP HIERARCHY in Section 5.9.

Rule 7

All data VARIABLES can contain any alphanumeric data (i.e. both text and numbers). Numerical data should be in numerals. e.g. 10 not TEN. (See also Note 2).

Note that all numerals must be presented as a text field.

Rule 8

Data GROUP names, data field HEADINGS and data VARIABLES must be enclosed in double quotes ("...").

e.g. for inches or seconds, (") must not appear as part of the data variable.

Rule 9

The data field HEADINGS and data VARIABLES on each line of the data file should be separated by a comma (,).

Rule 10

Each GROUP name shall be preceded by 2 asterisks (**).

e.g. "**HOLE"

Rule 11

HEADINGS shall be preceded by 1 asterisk (*).

e.g. "*HOLE_ID"

Rule 12

No line of data HEADINGS or data VARIABLES shall exceed 240 characters. The character count should include delimiting quotes and commas.

e.g. "*HOLE_ID","*HOLE_NATE" = 23 characters

Rule 13

A line of data HEADINGS exceeding 240 characters can be continued on immediately following lines. A data HEADING must not itself be split between lines. A comma must be placed at the end of a HEADINGS line that is to be continued.

e.g. "*HOLE_ID","*SAMP_TOP","*SAMP_REF","*SPEC_REF","*CLSS_LL","*CLSS_PL","*CLSS_BDEN"

Rule 14

A line of data VARIABLES exceeding 240 characters must be continued on immediately following lines. Data VARIABLES can be split between lines. A VARIABLE continuation line shall begin with the special name <CONT> in place of the first data VARIABLE (PROJ_ID or

HOLE_ID). The continued data is then placed in the correct field order by inserting the appropriate number of Null data VARIABLES before it. Note that each line of data in a GROUP should contain the same number of VARIABLES. (See also Note 4).

```
e.g. **GEOL, **HOLE_ID, **GEOL_TOP, **GEOL_BASE, **GEOL_DESC, **GEOL_LEG
<UNITS>, "m", "m", "", ""
501, "1.2", "2.4", "Very stiff brown CLAY with", ""
<CONT>, "", "", "extremely closely spaced fissures", "CLAY"
```

Rule 15

Null data VARIABLES must be included as 2 consecutive double quotes ("").

e.g. "",

Rule 16

Data GROUPs can be repeated within a file with different HEADINGS.

Rule 17

The number of data HEADINGS per GROUP shall not exceed 60.

Rule 18

A UNITS line must be placed immediately after the HEADINGS line in all GROUPs except ****ABBR**, ****CODE**, ****DICT** and ****UNIT**. An entry must be made for each data VARIABLE. Null entries ("") must be used for data VARIABLES that are unit-less, e.g. text. The line must begin with the special name <UNITS> in place of the first data variable (PROJ_ID or HOLE_ID). (See also Note 5)

```
e.g. **GEOL
**HOLE_ID, **GEOL_TOP, **GEOL_BASE, **GEOL_DESC
<UNITS>, "m", "m", ""
```

Rule 18a

A line of UNITS exceeding 240 characters can be continued on immediately following lines. A UNIT must not itself be split between lines. A comma must be placed at the end of a UNITS line that is to be continued.

```
e.g. **GEOL
**HOLE_ID, **GEOL_TOP, **GEOL_BASE, **GEOL_DESC
<UNITS>, "m", "m", ""
```

Rule 18b

Each data file shall contain the ****UNIT** GROUP. See Section 11 for the ****UNIT** GROUP defining the units used. This GROUP uses units defined in the 'pick' list in Appendix 3 which contains all the standard SI units used in all other AGS GROUPs, as well as some common non-SI equivalents. Every UNIT entered in a <UNITS> line of a GROUP, the CNMT UNIT field of the CNMT GROUP and the ?ICCT_UNIT field in the ?ICCT GROUP must be defined in the ****UNIT** GROUP. Both standard and non-standard UNITS must be defined in the ****UNIT** GROUP.

Rule 19

Each data file shall contain the ****PROJ** GROUP

Rule 20

Each data file shall contain the ****ABBR GROUP** to define any data abbreviations where these have been used as data entries in the data GROUPs. This applies to standard abbreviations selected from the lists of codes and abbreviations in **Appendix 3** and user defined abbreviations.

Rule 21

Each file shall contain the ****DICT GROUP** to define non-standard GROUP and HEADING names where these have been used in the data GROUPs.

Rule 22

Each non-standard GROUP name shall contain the prefix ****?**.

A GROUP name shall not be more than 4 characters long excluding the ****?** prefix and shall consist of uppercase letters only.

e.g. **"**?TESX"**

Rule 23

Each non-standard HEADING shall contain the prefix ***?**. A HEADING name shall not be more than 9 characters long excluding the ***?** prefix and shall consist of uppercase letters, numbers or the underscore character only. HEADING names shall start with the GROUP name followed by an underscore character, except for HEADINGS which duplicate a HEADING in another GROUP, in which case this HEADING shall be used instead.

e.g. **"*?ISPT_CALN"**

Rule 24

Miscellaneous computer files (e.g. digital images) may be included with a data file. Each such file should be defined in a FILE GROUP. File names shall not contain more than 8 characters in the main body and not more than 3 characters in the extension.

Correct example: FNAME.XLS

Incorrect example: A LONG NAME.XYZ

Rule 25

Every data file that contains a ****CNMT** or ****?ICCT GROUP** for chemical test results must also contain a ****CODE GROUP** that defines the codes used for each determinand given in the CNMT_TYPE field of the ****CNMT** or ****?ICCT GROUP**. This applies to standard codes selected from the 'pick' lists in Appendix 3 and user defined codes

Notes on the Rules

The following notes explain some points of detail in the Rules:

Note 1 – ASCII 'CSV' Files

The Rules define ASCII data files of a type commonly referred to as CSV (Comma Separated Value). This type of file is produced and read by some spreadsheet (and other) systems. The data items are separated by commas and are surrounded by quotes (").

Note 2 – Numeric and Character Data - Delimiters

The Rules permit any Data Field to contain text, since this allows characters in numeric fields and caters for those countries which use the comma in place of the decimal point. For these

reasons ALL Data Fields must be surrounded by quotes.

Note that most spreadsheet and database systems provide a VALUE () function (or similar) to convert text data to numeric data. This function can be used where calculations need to be carried out on data imported from AGS files.

Note 3 – Key and Common Fields

The Data Fields defined by the Format fall into one of two categories:

KEY Fields must be included every time a Data Group appears in a data file.

COMMON Fields are all other fields.

KEY Fields are important for maintaining data integrity. Without this the receiving software may not be able to use the data in a meaningful way.

For the purpose of creating AGS files this means that data entered into KEY Fields must be unique in each GROUP and that the corresponding entries are made in the PARENT GROUP. See GROUP HIERARCHY TABLE in **Appendix 1**.

Note 4 – Continuation Lines

It should be noted that some spreadsheets impose a finite limit (e.g. 240) on the number of characters within a single Data Field. The Rules define a scheme for producing continuation lines where there are long Data Fields. Although the scheme may seem complex at first sight, it is the system automatically produced by spreadsheets if the long data items are continued on additional rows IN THE SAME DATA COLUMN. Similarly, these Data Files will read into spreadsheets and preserve the long data items in their correct column order, for any length of data. The special <CONT> symbol must appear in the HOLE_ID Field, and thus <CONT> should never be used as a HOLE_ID.

Note 5 – Units

Note that a UNITS line must be included in every GROUP (except ABBR, DICT and UNIT) even where the default units are used.

Details of the default units to be used for each of the Data Fields are given in the Data Dictionary. These are the preferred units for each of the data dictionary definitions and should be used wherever possible.

They will either be the appropriate SI units or the unit defined by the particular British Standard relating to that specific item of data. It is recognised that situations will occur where neither the SI unit nor the British Standard unit are being used. All entries in the <UNITS> line must be defined in the **UNIT GROUP.

Note 6 – Associated files

Where other digital files or file sets are associated with data, the file association should be made with the relevant data type and record.

For example:

- Site location plans would be associated with the PROJ group.
- Photographs of core should be recorded against the core run records within the CORE group.

- Sample logging sheets if included with the data file would be associated with the SAMP group and against the relevant sample.
- Logging files from in situ tests should be associated with the appropriate test group.

APPENDIX 3

Lists of Abbreviations, Codes and Units

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|--------------|--------------------------------|----------|
| BKFL_LEG | 901 | Sand backfill | |
| BKFL_LEG | 902 | Gravel backfill | |
| BKFL_LEG | 903 | Bentonite | |
| BKFL_LEG | 904 | Grout | |
| BKFL_LEG | 905 | Arisings | |
| BKFL_LEG | 906 | Concrete | |
| CNMT_TTYP | GAS | Gas | |
| CNMT_TTYP | LIQUID | Liquid | |
| CNMT_TTYP | SOLID | Solid | |
| CNMT_TTYP | SOLID_11WAT | Solid (1:1 Soil/Water extract) | |
| CNMT_TTYP | SOLID_21WAT | Solid (2:1 Soil/Water extract) | |
| CNMT_TTYP | SOLID_ACID | Solid (Acid extract) | |
| CNMT_TTYP | SOLID_AVAIL | Solid (Available) | |
| CNMT_TTYP | SOLID_DRY | Solid (Dry weight) | |
| CNMT_TTYP | SOLID_EDTA | Solid (EDTA extract) | |
| CNMT_TTYP | SOLID_FREE | Solid (Free) | |
| CNMT_TTYP | SOLID_PRES | Solid (Presence of) | |
| CNMT_TTYP | SOLID_TOT | Solid(Total) | |
| CNMT_TTYP | SOLID_WAT | Solid (Water extract) | |
| CNMT_TTYP | WATER | Water | |
| CNMT_TTYP | WATER_ACIDHY | Water (Acid hydrolysable) | |
| CNMT_TTYP | WATER DISS | Water (Dissolved) | |
| CNMT_TTYP | WATER_ELEM | Water(Elemental) | |
| CNMT_TTYP | WATER_FREE | Water (Free) | |
| CNMT_TTYP | WATER_ORG | Water (Organic) | |
| CNMT_TTYP | WATER_PRES | Water (Presence of) | |
| CNMT_TTYP | WATER_TOT | Water (Total) | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|---------------|--|------------|
| CNMT_TTYP | LEACHATE | Leachate | |
| CNMT_TTYP | LEACHATE_TOT | Leachate (Total) | |
| CNMT_TTYP | LEACHATE_FREE | Leachate (Free) | |
| CNMT_TTYP | LEACHATE DISS | Leachate (Dissolved) | |
| DISC_TERM | X | Extends beyond exposure | |
| DISC_TERM | D | Terminates against another discontinuity | |
| DISC_TERM | R | Terminates within rock | |
| FILE_DOCT | CR | Construction record | |
| FILE_DOCT | CAL | Calibration data | |
| FILE_DOCT | DRAW | Drawing | |
| FILE_DOCT | GEN | General | |
| FILE_DOCT | PH | Photograph | |
| FILE_DOCT | RAW | Raw data | |
| FILE_DOCT | REP | Report | |
| FILE_DOCT | TECH | Technical paper | |
| FILE_DOCT | VI | Video clip | |
| FILE_DOCT | MS | Method statement | |
| GEOL_GEO2 | AGGLOM | AGGLOMERATE (VOLCANIC BRECCIA) | |
| GEOL_GEO2 | AK | ARKOSE (FELDSPATHIC-ARENITE) | |
| GEOL_GEO2 | ANDE | ANDESITE | |
| GEOL_GEO2 | ANTS | ANORTHOSITE | Rev |
| GEOL_GEO2 | AS | Asphalt | |
| GEOL_GEO2 | BA | BASALT | |
| GEOL_GEO2 | BE | Bedrock | |
| GEOL_GEO2 | FILL | BACKFILL/MADE GROUND | |
| GEOL_GEO2 | BO | BOULDER | |
| GEOL_GEO2 | BR | Brick | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---------------------------|------------|
| GEOL_GEO2 | BREC | BRECCIA | |
| GEOL_GEO2 | Cl | CLAY | <i>Rev</i> |
| GEOL_GEO2 | CADLM | CALCITIC DOLOMITE | <i>Rev</i> |
| GEOL_GEO2 | CAMU | CALCAREOUS MUDSTONE | |
| GEOL_GEO2 | CASA | CALCAREOUS SANDSTONE | |
| GEOL_GEO2 | CASH | CALCAREOUS SHALE/MARL | |
| GEOL_GEO2 | CASI | CALCAREOUS SILTSTONE | |
| GEOL_GEO2 | CAST | CLAYSTONE | <i>Rev</i> |
| GEOL_GEO2 | CATA | CATACLASITE | |
| GEOL_GEO2 | grCl | GRAVELLY CLAY | <i>Rev</i> |
| GEOL_GEO2 | CH | CHERT | |
| GEOL_GEO2 | CHALK | CHALK | |
| GEOL_GEO2 | CNG | CONGLOMERATE | |
| GEOL_GEO2 | CNGSA | CONGLOMERATIC SANDSTONE | |
| GEOL_GEO2 | orCl | ORGANIC CLAY | <i>Rev</i> |
| GEOL_GEO2 | COAL | COAL | |
| GEOL_GEO2 | CON | CONCRETE | |
| GEOL_GEO2 | ptCl | PEATY CLAY | <i>Rev</i> |
| GEOL_GEO2 | saCl | SANDY CLAY | <i>Rev</i> |
| GEOL_GEO2 | CSTUFF | CRYSTAL TUFF | |
| GEOL_GEO2 | DAC | DACITE | <i>Rev</i> |
| GEOL_GEO2 | DI | DIORITE | |
| GEOL_GEO2 | DIM | DIAMICTITE | <i>Rev</i> |
| GEOL_GEO2 | DLM | DOLOMITE | |
| GEOL_GEO2 | DLMLI | DOLOMITIC LIMESTONE | <i>Rev</i> |
| GEOL_GEO2 | DLR | DOLERITE (DIABASE in UK) | |
| GEOL_GEO2 | DOMB | DOLOMITIC MARBLE | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|-------------------------------|----------|
| GEOL_GEO2 | FARE | FELDSPATHIC-ARENITE | Rev |
| GEOL_GEO2 | FBREC | FAULT BRECCIA | |
| GEOL_GEO2 | FGOU | FAULT-GOUGE | Rev |
| GEOL_GEO2 | FLSI | FELSITE | Rev |
| GEOL_GEO2 | FWK | FELDSPATHIC-WACKE | Rev |
| GEOL_GEO2 | Gr | GRAVEL | Rev |
| GEOL_GEO2 | GB | GABBRO | |
| GEOL_GEO2 | GBNR | GABBRO-NORITE | Rev |
| GEOL_GEO2 | clGr | CLAYEY GRAVEL | Rev |
| GEOL_GEO2 | siGr | SILTY GRAVEL | Rev |
| GEOL_GEO2 | GND | GRANODIORITE | |
| GEOL_GEO2 | orGr | ORGANIC GRAVEL | Rev |
| GEOL_GEO2 | ptGr | PEATY GRAVEL | Rev |
| GEOL_GEO2 | GR | GRANITE | Rev |
| GEOL_GEO2 | GRPOR | GRANITE PORPHYRY | |
| GEOL_GEO2 | saGr | SANDY GRAVEL | Rev |
| GEOL_GEO2 | GWK | GREYWACKE | |
| GEOL_GEO2 | LAPIL | LAPILLISTONE | |
| GEOL_GEO2 | LARE | LITHIC-ARENITE | Rev |
| GEOL_GEO2 | LATUFF | LAPILLI TUFF | Rev |
| GEOL_GEO2 | LI | LIMESTONE (MICRITC LIMESTONE) | |
| GEOL_GEO2 | LIBOS | LIME-BOUNDSTONE | Rev |
| GEOL_GEO2 | LICA | CARBONACEOUS LIMESTONE | |
| GEOL_GEO2 | LIDIM | LIMESTONE-DIAMICTITE | Rev |
| GEOL_GEO2 | LIFRS | LIME-FRAMESTONE | Rev |
| GEOL_GEO2 | LIGRS | LIME-GRAINSTONE | Rev |
| GEOL_GEO2 | LIMCSP | LIME-MICROSPARSTONE | Rev |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|------------|
| GEOL_GEO2 | LIMIC | LIME-MICROSTONE | Rev |
| GEOL_GEO2 | LIMU | LIME-MUDSTONE (ARGILLACEOUS MICRITIC LIMESTONE) | |
| GEOL_GEO2 | LIMUDIM | LIMESTONE AND MUDSTONE DIAMICTITE | Rev |
| GEOL_GEO2 | LIPA | LIME-PACKSTONE | |
| GEOL_GEO2 | LIPSS | LIME-PSEUDOSPARSTONE | Rev |
| GEOL_GEO2 | LISA | SANDY LIMESTONE (ARENACEOUS MICRITIC LIMESTONE) | |
| GEOL_GEO2 | LISPS | LIME-SPARSTONE | Rev |
| GEOL_GEO2 | LITUFF | LITHIC TUFF | |
| GEOL_GEO2 | LIWA | LIME-WACKESTONE | |
| GEOL_GEO2 | LTTE | LATITE | Rev |
| GEOL_GEO2 | LWK | LITHIC-WACKE | Rev |
| GEOL_GEO2 | Si | SILT | Rev |
| GEOL_GEO2 | MAFI | MAFITE | Rev |
| GEOL_GEO2 | MARBLE | MARBLE | |
| GEOL_GEO2 | MEMU | METAMUDSTONE | |
| GEOL_GEO2 | MESA | METASANDSTONE | |
| GEOL_GEO2 | MESI | METASILTSTONE | |
| GEOL_GEO2 | grSi | GRAVELLY SILT | Rev |
| GEOL_GEO2 | MGR | MICROGRANITE | |
| GEOL_GEO2 | orSi | ORGANIC SILT | Rev |
| GEOL_GEO2 | MON | MONZONITE | Rev |
| GEOL_GEO2 | MONDI | MONZODIORITE | Rev |
| GEOL_GEO2 | MONGB | MONZOGABBRO | Rev |
| GEOL_GEO2 | MONGR | MONZOGRANITE | Rev |
| GEOL_GEO2 | ptSi | PEATY SILT | Rev |
| GEOL_GEO2 | saSi | SANDY SILT | Rev |
| GEOL_GEO2 | MU | MUDSTONE | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|------------------------------------|------------|
| GEOL_GEO2 | MUCNG | MUDDY CONGLOMERATE | <i>Rev</i> |
| GEOL_GEO2 | MUSA | MUDDY SANDSTONE | |
| GEOL_GEO2 | MY | MYLONITE | |
| GEOL_GEO2 | NR | NORITE | |
| GEOL_GEO2 | NRGAB | NORITIC GABBRO | |
| GEOL_GEO2 | OODLI | OOID-LIMESTONE (OOLITIC LIMESTONE) | |
| GEOL_GEO2 | PEMU | PEBBLY MUDSTONE | <i>Rev</i> |
| GEOL_GEO2 | PESA | PEBBLY SANDSTONE | <i>Rev</i> |
| GEOL_GEO2 | Pt | PEAT | <i>Rev</i> |
| GEOL_GEO2 | clPt | CLAYEY PEAT | <i>Rev</i> |
| GEOL_GEO2 | grPt | GRAVELLY PEAT | <i>Rev</i> |
| GEOL_GEO2 | siPt | SILTY PEAT | <i>Rev</i> |
| GEOL_GEO2 | saPt | SANDY PEAT | <i>Rev</i> |
| GEOL_GEO2 | QANTS | QUARTZ-ANORTHOSITE | <i>Rev</i> |
| GEOL_GEO2 | QARE | QUARTZ ARENITE | <i>Rev</i> |
| GEOL_GEO2 | QDI | QUARTZ DIORITE | <i>Rev</i> |
| GEOL_GEO2 | QGBR | QUARTZ-GABBRO | <i>Rev</i> |
| GEOL_GEO2 | QMONDI | QUARTZ MONZODIORITE | <i>Rev</i> |
| GEOL_GEO2 | QMONGB | QUARTZ-MONZOGABBRO | <i>Rev</i> |
| GEOL_GEO2 | QSYN | QUARTZ SYENITE | <i>Rev</i> |
| GEOL_GEO2 | QTZMON | QUARTZ MONZONITE (ADAMELLITE) | |
| GEOL_GEO2 | QUART | QUARTZITE | |
| GEOL_GEO2 | QWK | QUARTZ WACKE | <i>Rev</i> |
| GEOL_GEO2 | REEF | REEF | <i>Rev</i> |
| GEOL_GEO2 | RH | RHYOLITE | |
| GEOL_GEO2 | Sa | SAND | <i>Rev</i> |
| GEOL_GEO2 | SA | SANDSTONE (ARENITE) | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|-----------------------------|------------|
| GEOL_GEO2 | SACNG | SANDY CONGLOMERATE | <i>Rev</i> |
| GEOL_GEO2 | SAMU | SANDY MUDSTONE | <i>Rev</i> |
| GEOL_GEO2 | clSa | CLAYEY SAND | <i>Rev</i> |
| GEOL_GEO2 | SCH | SCHIST | |
| GEOL_GEO2 | SFARE | SUBFELDSPATHIC-ARENITE | <i>Rev</i> |
| GEOL_GEO2 | grSa | GRAVELLY SAND | <i>Rev</i> |
| GEOL_GEO2 | SH | SHALE | |
| GEOL_GEO2 | SI | SILTSTONE | |
| GEOL_GEO2 | SL | SLATE | |
| GEOL_GEO2 | SLARE | SUBLITHIC-ARENITE | <i>Rev</i> |
| GEOL_GEO2 | siSa | SILTY SAND | <i>Rev</i> |
| GEOL_GEO2 | orSa | ORGANIC SAND | <i>Rev</i> |
| GEOL_GEO2 | SPI | SPIRITE | |
| GEOL_GEO2 | ptSa | PEATY SAND | <i>Rev</i> |
| GEOL_GEO2 | SYN | SYENITE | <i>Rev</i> |
| GEOL_GEO2 | SYNGR | SYENOGANITE | <i>Rev</i> |
| GEOL_GEO2 | TB | TIMBER | |
| GEOL_GEO2 | TSOL | TOP SOIL | <i>New</i> |
| GEOL_GEO2 | TONL | TONALITE | <i>Rev</i> |
| GEOL_GEO2 | TUFF | TUFF (VITRIC TUFF) | |
| GEOL_GEO2 | TUFFBRE | TUFF-BRECCIA | <i>Rev</i> |
| GEOL_GEO2 | TUFFCONG | TUFFACEOUS CONGLOMERATE | |
| GEOL_GEO2 | TUFFMU | TUFFACEOUS MUDSTONE | |
| GEOL_GEO2 | TUFFSA | TUFFACEOUS SANDSTONE | |
| GEOL_GEO2 | TUFFSI | TUFFISITE | <i>Rev</i> |
| GEOL_GEO2 | VOID | VOID | |
| GEOL_GEO2 | VOLCONG | VOLCANICLASTIC-CONGLOMERATE | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|------------|
| GEOL_GEO2 | VOLMUD | VOLCANICLASTIC-MUDSTONE | |
| GEOL_GEO2 | VOLSA | VOLCANICLASTIC-SANDSTONE | |
| GEOL_GEO3 | Ksf | Semakau Formation | Rev |
| GEOL_GEO3 | Kkf | Kranji Formation | Rev |
| GEOL_GEO3 | Ktf | Tekong Formation | Rev |
| GEOL_GEO3 | Kjbf | Jalan Besar Formation | Rev |
| GEOL_GEO3 | Krf | Rochor Clay Formation (Upper MC) | Rev |
| GEOL_GEO3 | Kmsm | Marina South Member (desiccated stiff clay layer) | Rev |
| GEOL_GEO3 | Ktrf | Tanjong Rhu Clay Formation (Lower MC) | Rev |
| GEOL_GEO3 | KG | Kallang Group (undifferentiated) | Rev |
| GEOL_GEO3 | Bdf | Bedok Formation | Rev |
| GEOL_GEO3 | Fcf | Fort Canning Formation | Rev |
| GEOL_GEO3 | Bbf | Bukit Batok Formation | Rev |
| GEOL_GEO3 | Kusf | Kusu Formation | Rev |
| GEOL_GEO3 | Bvf | Buona Vista Formation | Rev |
| GEOL_GEO3 | STsf | Fort Siloso Formation | Rev |
| GEOL_GEO3 | STrf | Tanjong Rimau Formation | Rev |
| GEOL_GEO3 | STG | Sentosa Group (undifferentiated) | Rev |
| GEOL_GEO3 | Pgf | Pengerang Formation | Rev |
| GEOL_GEO3 | Jcm | Clementi Member | Rev |
| GEOL_GEO3 | Jblf | Boon Lay Formation | Rev |
| GEOL_GEO3 | Jkrm | Kent Ridge Member | Rev |
| GEOL_GEO3 | Jpf | Pandan Formation | Rev |
| GEOL_GEO3 | Jnm | Nanyang Member | Rev |
| GEOL_GEO3 | Jacf | Pulau Ayer Chawan Formation | Rev |
| GEOL_GEO3 | Jtf | Tuas Formation | Rev |
| GEOL_GEO3 | JG | Jurong Group (undifferentiated) | Rev |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|------------|
| GEOL_GEO3 | Sjf | Sajahat Formation | Rev |
| GEOL_GEO3 | Sqmp | Pulau Sekudu Quartz-monzonite Pluton | Rev |
| GEOL_GEO3 | Sbad | Singapore Basalt-andesite Dyke-swarm | Rev |
| GEOL_GEO3 | BTsp | Simpang Granite Pluton | Rev |
| GEOL_GEO3 | BTup | Pulau Ubin Granite Pluton | Rev |
| GEOL_GEO3 | BTdpm | Dairy Farm Granite-microgranite Pluton (microgranite) | Rev |
| GEOL_GEO3 | BTdpg | Dairy Farm Granite-microgranite Pluton (granite) | Rev |
| GEOL_GEO3 | BTCum | Mafic intrusive rock, undifferentiated | Rev |
| GEOL_GEO3 | BTgp | Gombak Gabbro-granite Pluton | Rev |
| GEOL_GEO3 | BTcp | Choa Chu Kang Granodiorite-tonalite Pluton | Rev |
| GEOL_GEO3 | BTC | Bukit Timah Centre (undifferentiated) | Rev |
| GEOL_GEO3 | Ug | Granitic rocks of unknown affinity | Rev |
| GEOL_GEO3 | FILL | BACKFILL/MADE GROUND | Rev |
| GEOL_GEOL | B | Beach (Littoral) | Rev |
| GEOL_GEOL | E | Estuarine(Transitional) | |
| GEOL_GEOL | F | Fluvial or Alluvial soil part of Kallang or Tekong | |
| GEOL_GEOL | F1 | Alluvial soil (Granular) | |
| GEOL_GEOL | F2 | Alluvial soil (Non-granular) | |
| GEOL_GEOL | O(A) | Old Alluvium (Unweathered) | |
| GEOL_GEOL | O(B) | Old Alluvium (Partially weathered) | |
| GEOL_GEOL | O(C) | Old Alluvium (Distinctly weathered) | |
| GEOL_GEOL | O(D) | Old Alluvium (Destructured) | |
| GEOL_GEOL | O(E) | Old Alluvium (Residual soil) | |
| GEOL_GEOL | S(VI) | Sedimentaries (rocks & associated soils) Residual soil | |
| GEOL_GEOL | S(V) | Sedimentaries (rocks & associated soils) Completely weathered | |
| GEOL_GEOL | S(IV) | Sedimentaries (rocks & associated soils) Highly weathered | |
| GEOL_GEOL | S(III) | Sedimentaries (rocks & associated soils) Moderately weathered | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|------------|
| GEOL_GEOL | S(II) | Sedimentaries (rocks & associated soils) Slightly weathered | |
| GEOL_GEOL | S(I) | Sedimentaries (rocks & associated soils) Fresh | |
| GEOL_GEOL | G(VI) | Granite (rocks & associated soils) Residual soil | |
| GEOL_GEOL | G(V) | Granite (rocks & associated soils) Completely weathered | |
| GEOL_GEOL | G(IV) | Granite (rocks & associated soils) Highly weathered | |
| GEOL_GEOL | G(III) | Granite (rocks & associated soils) Moderately weathered | |
| GEOL_GEOL | G(II) | Granite (rocks & associated soils) Slightly weathered | |
| GEOL_GEOL | G(I) | Granite (rocks & associated soils) Fresh | |
| GEOL_GEOL | RF | REEF | Rev |
| GEOL_GEOL | M | Marine Clay | Rev |
| GEOL_LEG | 101 | TOP SOIL | |
| GEOL_LEG | 102 | MADE GROUND | |
| GEOL_LEG | 103 | Asphalt, Tar, Bituminous Material | |
| GEOL_LEG | 104 | CONCRETE | |
| GEOL_LEG | 105 | BACKFILL | |
| GEOL_LEG | 106 | BRICK | |
| GEOL_LEG | 107 | TIMBER | |
| GEOL_LEG | 201 | CLAY | |
| GEOL_LEG | 202 | Silty CLAY | |
| GEOL_LEG | 203 | Sandy CLAY | |
| GEOL_LEG | 204 | Gravelly CLAY | |
| GEOL_LEG | 205 | Cobbly CLAY | |
| GEOL_LEG | 206 | Bouldery CLAY | |
| GEOL_LEG | 207 | Silty sandy CLAY | |
| GEOL_LEG | 208 | Silty gravelly CLAY | |
| GEOL_LEG | 209 | Silty cobbly CLAY | |
| GEOL_LEG | 210 | Silty bouldery CLAY | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|----------|
| GEOL_LEG | 211 | Silty sandy gravelly CLAY | |
| GEOL_LEG | 212 | Silty sandy cobbly CLAY | |
| GEOL_LEG | 213 | Silty sandy bouldery CLAY | |
| GEOL_LEG | 214 | Silty sandy gravelly cobbly CLAY | |
| GEOL_LEG | 215 | Silty sandy gravelly bouldery CLAY | |
| GEOL_LEG | 216 | Silty sandy gravelly cobbly bouldery CLAY | |
| GEOL_LEG | 217 | Silty sandy organic CLAY | |
| GEOL_LEG | 218 | Silty sandy gravelly organic CLAY | |
| GEOL_LEG | 219 | Silty organic CLAY | |
| GEOL_LEG | 220 | Sandy gravelly CLAY | |
| GEOL_LEG | 222 | Sandy cobbly CLAY | |
| GEOL_LEG | 223 | Sandy bouldery CLAY | |
| GEOL_LEG | 224 | Sandy gravelly cobbly CLAY | |
| GEOL_LEG | 225 | Sandy gravelly bouldery CLAY | |
| GEOL_LEG | 226 | Sandy gravelly cobbly bouldery CLAY | |
| GEOL_LEG | 227 | Sandy organic CLAY | |
| GEOL_LEG | 228 | Sandy gravelly organic CLAY | |
| GEOL_LEG | 229 | Organic CLAY | |
| GEOL_LEG | 230 | PEATY CLAY | |
| GEOL_LEG | 301 | SILT | |
| GEOL_LEG | 302 | CLAY/SILT | |
| GEOL_LEG | 303 | Sandy SILT | |
| GEOL_LEG | 304 | Gravelly SILT | |
| GEOL_LEG | 305 | Organic SILT | |
| GEOL_LEG | 310 | Sandy gravelly SILT | |
| GEOL_LEG | 314 | Clayey sandy gravelly organic cobbly SILT | |
| GEOL_LEG | 316 | Sandy cobbly SILT | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|-------------------------------------|----------|
| GEOL_LEG | 317 | Sandy bouldery SILT | |
| GEOL_LEG | 318 | Sandy organic SILT | |
| GEOL_LEG | 319 | Sandy gravelly organic SILT | |
| GEOL_LEG | 320 | Sandy gravelly cobbly SILT | |
| GEOL_LEG | 321 | Sandy gravelly organic cobbly SILT | |
| GEOL_LEG | 322 | Gravelly cobbly SILT | |
| GEOL_LEG | 323 | Gravelly bouldery SILT | |
| GEOL_LEG | 324 | Gravelly organic SILT | |
| GEOL_LEG | 325 | Gravelly organic cobbly SILT | |
| GEOL_LEG | 326 | Cobbly SILT | |
| GEOL_LEG | 327 | Cobbly bouldery SILT | |
| GEOL_LEG | 328 | Organic cobbly SILT | |
| GEOL_LEG | 331 | Bouldery SILT | |
| GEOL_LEG | 332 | PEATY SILT | |
| GEOL_LEG | 401 | SAND | |
| GEOL_LEG | 402 | Clayey SAND | |
| GEOL_LEG | 403 | Silty SAND | |
| GEOL_LEG | 404 | Gravelly SAND | |
| GEOL_LEG | 405 | Cobbly SAND | |
| GEOL_LEG | 406 | Bouldery SAND | |
| GEOL_LEG | 410 | Clayey gravelly SAND | |
| GEOL_LEG | 411 | Clayey gravelly cobbly SAND | |
| GEOL_LEG | 412 | Silty gravelly SAND | |
| GEOL_LEG | 413 | Silty gravelly cobbly SAND | |
| GEOL_LEG | 414 | Silty gravelly cobbly bouldery SAND | |
| GEOL_LEG | 415 | Gravelly cobbly SAND | |
| GEOL_LEG | 416 | Gravelly cobbly bouldery SAND | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|-----------------------------|----------|
| GEOL_LEG | 417 | Gravelly bouldery SAND | |
| GEOL_LEG | 418 | Cobbly bouldery SAND | |
| GEOL_LEG | 430 | SAND and GRAVEL | |
| GEOL_LEG | 431 | Organic SAND | |
| GEOL_LEG | 433 | Silty organic SAND | |
| GEOL_LEG | 434 | Gravelly organic SAND | |
| GEOL_LEG | 435 | Cobbly organic SAND | |
| GEOL_LEG | 436 | Bouldery organic SAND | |
| GEOL_LEG | 437 | PEATY SAND | |
| GEOL_LEG | 501 | GRAVEL | |
| GEOL_LEG | 502 | Clayey GRAVEL | |
| GEOL_LEG | 503 | Silty GRAVEL | |
| GEOL_LEG | 504 | Sandy GRAVEL | |
| GEOL_LEG | 505 | Organic GRAVEL | |
| GEOL_LEG | 506 | Cobbly GRAVEL | |
| GEOL_LEG | 507 | Bouldery GRAVEL | |
| GEOL_LEG | 509 | Clayey sandy GRAVEL | |
| GEOL_LEG | 510 | Clayey cobbly GRAVEL | |
| GEOL_LEG | 511 | Clayey bouldery GRAVEL | |
| GEOL_LEG | 512 | Clayey organic GRAVEL | |
| GEOL_LEG | 517 | Clayey sandy organic GRAVEL | |
| GEOL_LEG | 520 | Silty sandy GRAVEL | |
| GEOL_LEG | 521 | Silty cobbly GRAVEL | |
| GEOL_LEG | 522 | Silty bouldery GRAVEL | |
| GEOL_LEG | 523 | Silty organic GRAVEL | |
| GEOL_LEG | 524 | Silty organic sandy GRAVEL | |
| GEOL_LEG | 525 | Sandy cobbly GRAVEL | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|------------------------------|----------|
| GEOL_LEG | 526 | Sandy bouldery GRAVEL | |
| GEOL_LEG | 527 | Sandy organic GRAVEL | |
| GEOL_LEG | 528 | Silty sandy cobbly GRAVEL | |
| GEOL_LEG | 529 | PEATY GRAVEL | |
| GEOL_LEG | 601 | PEAT | |
| GEOL_LEG | 602 | Clayey PEAT | |
| GEOL_LEG | 603 | Silty PEAT | |
| GEOL_LEG | 604 | Sandy PEAT | |
| GEOL_LEG | 605 | Gravelly PEAT | |
| GEOL_LEG | 606 | Cobbly PEAT | |
| GEOL_LEG | 608 | Clayey sandy PEAT | |
| GEOL_LEG | 609 | Clayey gravelly PEAT | |
| GEOL_LEG | 612 | Silty sandy PEAT | |
| GEOL_LEG | 613 | Silty sandy gravelly PEAT | |
| GEOL_LEG | 614 | Sandy gravelly PEAT | |
| GEOL_LEG | 701 | COBBLES | |
| GEOL_LEG | 702 | Clayey COBBLES | |
| GEOL_LEG | 703 | Silty COBBLES | |
| GEOL_LEG | 704 | Sandy COBBLES | |
| GEOL_LEG | 705 | Gravelly COBBLES | |
| GEOL_LEG | 706 | Organic COBBLES | |
| GEOL_LEG | 708 | Clayey sandy COBBLES | |
| GEOL_LEG | 709 | Clayey gravelly COBBLES | |
| GEOL_LEG | 713 | Silty sandy COBBLES | |
| GEOL_LEG | 714 | Silty gravelly COBBLES | |
| GEOL_LEG | 715 | Silty organic COBBLES | |
| GEOL_LEG | 716 | Silty gravelly sandy COBBLES | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|--------------------------------------|----------|
| GEOL_LEG | 717 | Silty sandy organic COBBLES | |
| GEOL_LEG | 718 | Silty sandy gravelly organic COBBLES | |
| GEOL_LEG | 719 | Sandy gravelly COBBLES | |
| GEOL_LEG | 720 | Sandy organic COBBLES | |
| GEOL_LEG | 721 | Gravelly organic COBBLES | |
| GEOL_LEG | 725 | COBBLES and BOULDERS | |
| GEOL_LEG | 730 | BOULDERS | |
| GEOL_LEG | 731 | Gravelly cobbly BOULDERS | |
| GEOL_LEG | 801 | MUDSTONE | |
| GEOL_LEG | 802 | SILTSTONE | |
| GEOL_LEG | 803 | SANDSTONE | |
| GEOL_LEG | 804 | LIMESTONE | |
| GEOL_LEG | 805 | CHALK | |
| GEOL_LEG | 806 | COAL | |
| GEOL_LEG | 807 | BRECCIA | |
| GEOL_LEG | 808 | CONGLOMERATE | |
| GEOL_LEG | 809 | Fine grained IGNEOUS | |
| GEOL_LEG | 810 | Medium grained IGNEOUS | |
| GEOL_LEG | 811 | Coarse grained IGNEOUS | |
| GEOL_LEG | 812 | Fine grained METAMORPHIC | |
| GEOL_LEG | 813 | Medium grained METAMORPHIC | |
| GEOL_LEG | 814 | Coarse grained METAMORPHIC | |
| GEOL_LEG | 815 | Pyroclastic (volcanic ash) | |
| GEOL_LEG | 816 | Gypsum, Rocksalt | |
| GEOL_LEG | 817 | SHALE | |
| GEOL_LEG | 818 | ARKOSE | |
| GEOL_LEG | 819 | GREYWACKE | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|----------|
| GEOL_LEG | 820 | MUDDY SANDSTONE | |
| GEOL_LEG | 821 | CONGLOMERATIC SANDSTONE | |
| GEOL_LEG | 822 | CHERT | |
| GEOL_LEG | 823 | CALCAREOUS SANDSTONE | |
| GEOL_LEG | 824 | CALCAREOUS SILTSTONE | |
| GEOL_LEG | 825 | CALCAREOUS MUDSTONE | |
| GEOL_LEG | 826 | CALCAREOUS SHALE/MARL | |
| GEOL_LEG | 827 | METASANDSTONE | |
| GEOL_LEG | 828 | METASILTSTONE | |
| GEOL_LEG | 829 | METAMUDSTONE | |
| GEOL_LEG | 830 | DOLOMITE | |
| GEOL_LEG | 831 | OOID_LIMESTONE (OOLITIC LIMESTONE) | |
| GEOL_LEG | 832 | LIME-WACKESTONE | |
| GEOL_LEG | 833 | LIME-PACKSTONE | |
| GEOL_LEG | 834 | SANDY LIMESTONE (ARENACEOUS MICRITIC LIMESTONE) | |
| GEOL_LEG | 835 | LIME_MUDSTONE (ARGILLACEOUS MICRITIC LIMESTONE) | |
| GEOL_LEG | 836 | CARBONACEOUS LIMESTONE | |
| GEOL_LEG | 840 | GRANITE | |
| GEOL_LEG | 841 | QUARTZ MONZONITE (ADAMELLITE) | |
| GEOL_LEG | 842 | GRANODIORITE | |
| GEOL_LEG | 843 | DIORITE | |
| GEOL_LEG | 844 | GABBRO | |
| GEOL_LEG | 845 | NORITIC GABBRO | |
| GEOL_LEG | 846 | NORITE | |
| GEOL_LEG | 847 | RHYOLITE | |
| GEOL_LEG | 848 | ANDESITE | |
| GEOL_LEG | 849 | BASALT | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|--------------------------------|------------|
| GEOL_LEG | 850 | SPIRITE | |
| GEOL_LEG | 851 | AGGLOMERATE (VOLCANIC BRECCIA) | |
| GEOL_LEG | 853 | LITHIC TUFF | |
| GEOL_LEG | 854 | CRYSTAL TUFF | |
| GEOL_LEG | 856 | VITRIC TUFF | |
| GEOL_LEG | 857 | LAPILLISTONE | |
| GEOL_LEG | 858 | TUFFACEOUS CONGLOMERATE | |
| GEOL_LEG | 859 | TUFFACEOUS SANDSTONE | |
| GEOL_LEG | 860 | TUFFACEOUS MUDSTONE | |
| GEOL_LEG | 861 | VOLCANICLASTIC CONGLOMERATE | |
| GEOL_LEG | 862 | VOLCANICLASTIC SANDSTONE | |
| GEOL_LEG | 863 | VOLCANICLASTIC MUDSTONE | |
| GEOL_LEG | 870 | MARBLE | |
| GEOL_LEG | 871 | DOLOMITIC MARBLE | |
| GEOL_LEG | 872 | SLATE | |
| GEOL_LEG | 873 | SCHIST | |
| GEOL_LEG | 874 | QUARTZITE | |
| GEOL_LEG | 880 | FAULT BRECCIA | |
| GEOL_LEG | 881 | CATACLASITE | |
| GEOL_LEG | 882 | MYLONITE | |
| GEOL_LEG | 890 | MICROGRANITE | |
| GEOL_LEG | 891 | GRANITE PORPHYRY | |
| GEOL_LEG | 892 | DOLERITE (DIABASE in UK) | |
| GEOL_LEG | 999 | Void | |
| GEOL_LEG | 852 | DACITE | Rev |
| GEOL_LEG | 864 | LAPILLI TUFF | Rev |
| GEOL_LEG | 865 | TUFF-BRECCIA | Rev |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|----------------------|----------|
| GEOL_LEG | 883 | FAULT-GOUGE | Rev |
| GEOL_LEG | 884 | TUFFISITE | Rev |
| GEOL_LEG | 893 | SYENOGANITE | Rev |
| GEOL_LEG | 894 | QUARTZ SYENITE | Rev |
| GEOL_LEG | 895 | SYENITE | Rev |
| GEOL_LEG | 896 | MONZOGRANITE | Rev |
| GEOL_LEG | 897 | MONZONITE | Rev |
| GEOL_LEG | 898 | TONALITE | Rev |
| GEOL_LEG | 899 | QUARTZ MONZODIORITE | Rev |
| GEOL_LEG | 900 | QUARTZ DIORITE | Rev |
| GEOL_LEG | 901 | QUARTZ-MONZOGABBRO | Rev |
| GEOL_LEG | 902 | QUARTZ-GABBRO | Rev |
| GEOL_LEG | 903 | QUARTZ-ANORTHOSITE | Rev |
| GEOL_LEG | 904 | MONZODIORITE | Rev |
| GEOL_LEG | 905 | MONZOGABBRO | Rev |
| GEOL_LEG | 906 | ANORTHOSITE | Rev |
| GEOL_LEG | 907 | GABBRO-NORITE | Rev |
| GEOL_LEG | 920 | FELSITE | Rev |
| GEOL_LEG | 921 | MAFITE | Rev |
| GEOL_LEG | 922 | LATITE | Rev |
| GEOL_LEG | 940 | DOLOMITIC LIMESTONE | Rev |
| GEOL_LEG | 941 | CALCITIC DOLOMITE | Rev |
| GEOL_LEG | 942 | LIME-GRAINSTONE | Rev |
| GEOL_LEG | 943 | LIME-BOUNDSTONE | Rev |
| GEOL_LEG | 944 | LIME-FRAMESTONE | Rev |
| GEOL_LEG | 945 | LIME-PSEUDOSPARSTONE | Rev |
| GEOL_LEG | 946 | LIME-SPARSTONE | Rev |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|------------------------------------|----------|
| GEOL_LEG | 947 | LIME-MICROSPARSTONE | Rev |
| GEOL_LEG | 948 | LIME-MICROSTONE | Rev |
| GEOL_LEG | 949 | LIMESTONE-DIAMICTITE | Rev |
| GEOL_LEG | 950 | LIMESTONE AND MUDSTONE DIAMICTITE | Rev |
| GEOL_LEG | 951 | DIAMICTITE | Rev |
| GEOL_LEG | 952 | REEF | Rev |
| GEOL_LEG | 960 | QUARTZ ARENITE | Rev |
| GEOL_LEG | 961 | LITHIC-ARENITE | Rev |
| GEOL_LEG | 962 | SUBLITHIC-ARENITE | Rev |
| GEOL_LEG | 963 | FELDSPATHIC-ARENITE | Rev |
| GEOL_LEG | 964 | SUBFELDSPATHIC-ARENITE | Rev |
| GEOL_LEG | 965 | LITHIC-WACKE | Rev |
| GEOL_LEG | 966 | FELDSPATHIC-WACKE | Rev |
| GEOL_LEG | 967 | QUARTZ WACKE | Rev |
| GEOL_LEG | 968 | CLAYSTONE | Rev |
| GEOL_LEG | 969 | SANDY MUDSTONE | Rev |
| GEOL_LEG | 970 | SANDY CONGLOMERATE | Rev |
| GEOL_LEG | 971 | MUDDY CONGLOMERATE | Rev |
| GEOL_LEG | 972 | PEBBLY SANDSTONE | Rev |
| GEOL_LEG | 973 | PEBBLY MUDSTONE | Rev |
| GRAD_TYPE | DS | Dry sieve | |
| GRAD_TYPE | HY | Hydrometer | |
| GRAD_TYPE | PP | Pipette | |
| GRAD_TYPE | WS | Wet sieve | |
| HOLE_TYPE | CH | Slope surface protection stripping | |
| HOLE_TYPE | ABS | Automatic Ballast Sampler | |
| HOLE_TYPE | CP | Cable percussion (shell and auger) | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|--|----------|
| HOLE_TYPE | DCP | Dynamic cone penetrometer | |
| HOLE_TYPE | DP | Dynamic probe sampling | |
| HOLE_TYPE | EXP | Logged exposure | |
| HOLE_TYPE | GCOP | GCO probe | |
| HOLE_TYPE | HA | Hand Auger | |
| HOLE_TYPE | INST | instrument | |
| HOLE_TYPE | IVAN | in-situ penetration vane test | |
| HOLE_TYPE | IRES | in-situ resistivity | |
| HOLE_TYPE | OP | Observation pit/trench | |
| HOLE_TYPE | PM | Pressuremeter test hole | |
| HOLE_TYPE | RC | Rotary cored | |
| HOLE_TYPE | RCG | Rotary drilling in common ground | |
| HOLE_TYPE | RO | Rotary open hole | |
| HOLE_TYPE | SCP | Static cone penetrometer | |
| HOLE_TYPE | TRAV | Linear logging traverse or scanline survey | |
| HOLE_TYPE | VC | Vibrocore | |
| HOLE_TYPE | WLS | Dynamic (windowless) sampler | |
| HOLE_TYPE | SREL | Seismic Reflection Line survey | |
| HOLE_TYPE | SRAL | Seismic Refraction Line survey | |
| HOLE_TYPE | GRAL | Gravity Line survey | |
| HOLE_TYPE | RESL | Resistivity Line survey | |
| HOLE_TYPE | MAGL | Magnetic Line survey | |
| HOLE_TYPE | BGP | Borehole Geophysics survey | |
| HOLE_TYPE | S | Shaft | |
| HOLE_TYPE | TP | Trial pit/trench | |
| HOLE_TYPE | W | Wash boring | |
| HOLE_TYPE | WS | Window Sampler | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|--------------------------------------|----------|
| ISPT_TYPE | C | Cone | |
| ISPT_TYPE | S | Split spoon | |
| LEMC_LEMC | Class 1 | Emerson Class 1 | |
| LEMC_LEMC | Class 2 | Emerson Class 2 | |
| LEMC_LEMC | Class 3 | Emerson Class 3 | |
| LEMC_LEMC | Class 4 | Emerson Class 4 | |
| LEMC_LEMC | Class 5 | Emerson Class 5 | |
| LEMC_LEMC | Class 6 | Emerson Class 6 | |
| LEMC_LEMC | Class 7 | Emerson Class 7 | |
| LEMC_LEMC | Class 8 | Emerson Class 8 | |
| MONP_TYPE | DM | Discontinuity monitoring | |
| MONP_TYPE | TMU | Tiltmeter - Uniaxial | |
| MONP_TYPE | TMB | Tiltmeter - Biaxial | |
| MONP_TYPE | ICM | Inclinometer - Manual | |
| MONP_TYPE | ICE | Inclinometer - Electronic | |
| MONP_TYPE | LC | Load cell | |
| MONP_TYPE | ETR | Rod Extensometer | |
| MONP_TYPE | ETM | Magnetic Extensometer | |
| MONP_TYPE | ETT | Tape Extensometer | |
| MONP_TYPE | EPCE | Embedment pressure cell - electronic | |
| MONP_TYPE | EPCH | Embedment pressure cell - hydraulic | |
| MONP_TYPE | EPCP | Embedment pressure cell - pneumatic | |
| MONP_TYPE | IPCE | Interface pressure cell - electronic | |
| MONP_TYPE | IPCH | Interface pressure cell - hydraulic | |
| MONP_TYPE | IPCP | Interface pressure cell - pneumatic | |
| MONP_TYPE | PPCE | Push in pressure cell - electronic | |
| MONP_TYPE | PPCH | Push in pressure cell - hydraulic | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|-------------------------------------|------------|
| MONP_TYPE | PPCP | Push in pressure cell - pneumatic | |
| MONP_TYPE | MSET | Levelling point or plate | |
| MONP_TYPE | TS | Total station point | |
| MONP_TYPE | ESET | Electronic settlement cell/gauges | |
| MONP_TYPE | HSET | Hydraulic settlement cell/gauges | |
| MONP_TYPE | PSET | Pneumatic settlement cell/gauges | |
| MONP_TYPE | GWMP | Groundwater monitoring point | |
| MONP_TYPE | GMP | Gas monitoring point | |
| MONP_TYPE | SLIP | Slip indicator | |
| MONP_TYPE | SG | Strain gauge | |
| MONP_TYPE | SP | Standpipe | |
| MONP_TYPE | TP | Temperature measuring point | |
| PREF_TYPE | EPIE | Electronic piezometer | |
| PREF_TYPE | HPIE | Hydraulic piezometer | |
| PREF_TYPE | PPIE | Pneumatic piezometer | |
| PREF_TYPE | SPIE | Standpipe piezometer | |
| PRTD_TYPE | PBP | Pre-bored pressuremeter | Rev |
| PRTD_TYPE | SBP | Self boring pressuremeter | |
| PRTD_TYPE | HPD | High pressure dilatometer | |
| PRTD_TYPE | WRSBP | Weak rock self boring pressuremeter | |
| PRTD_TYPE | MPM | Menard type pressuremeter | |
| PRTD_TYPE | PIP | Push-in pressuremeter | |
| ROCK_PLTF | B | Block | |
| ROCK_PLTF | D | Diametral | |
| ROCK_PLTF | P | Perpendicular to planes of weakness | |
| ROCK_PLTF | A | Axial | |
| ROCK_PLTF | L | Parallel to planes of weakness | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|----------|
| ROCK_PLTF | I | Irregular lump | |
| SAMP_TYPE | B | Bulk disturbed sample | |
| SAMP_TYPE | C | Core sample | |
| SAMP_TYPE | D | Small disturbed sample | |
| SAMP_TYPE | G | Gas sample | |
| SAMP_TYPE | M | Mazier type sample | |
| SAMP_TYPE | P | Piston sample | |
| SAMP_TYPE | W | Water sample | |
| SAMP_TYPE | AMAL | Amalgamated sample (see note 3) | |
| SAMP_TYPE | BLK | Block sample | |
| SAMP_TYPE | CBR | CBR mould sample | |
| SAMP_TYPE | LB | Large bulk disturbed sample (for earthworks testing) | |
| SAMP_TYPE | SPTLS | Standard penetration test liner sample | |
| SAMP_TYPE | TW | Thin walled push in sample | |
| SAMP_TYPE | U | Undisturbed sample - open drive | |
| SAMP_TYPE | ES | Soil sample for environmental testing | |
| SAMP_TYPE | EW | Water sample for environmental testing | |
| STCN_TYP | CC | Conductivity cone | |
| STCN_TYP | EC | Electric cone | |
| STCN_TYP | FFD | Fuel fluorescence cone | |
| STCN_TYP | MC | Mechanical cone | |
| STCN_TYP | PC | Piezo cone | |
| STCN_TYP | TC | Temperature cone | |
| TRIG_TYPE | CADC | Anisotropically consolidated drained compression with pwp measurement | |
| TRIG_TYPE | CADE | Anisotropically consolidated drained extension with pwp measurement | |
| TRIG_TYPE | CAUC | Anisotropically consolidated undrained compression with pwp measurement | |
| TRIG_TYPE | CAUE | Anisotropically consolidated undrained extension with pwp measurement | |

| ABBR_HDNG | ABBR_CODE | ABBR_DESC | Revision |
|-----------|-----------|---|----------|
| TRIG_TYPE | CD | Consolidated drained (single stage) | |
| TRIG_TYPE | CDM | Consolidated drained (multi-stage) | |
| TRIG_TYPE | CIDC | Isotropically consolidated drained compression with pwp measurement | |
| TRIG_TYPE | CIDE | Isotropically consolidated drained extension with pwp measurement | |
| TRIG_TYPE | CU | Consolidated undrained with pwp measurement (single stage) | |
| TRIG_TYPE | CUM | Consolidated undrained with pwp measurement (multi-stage) | |
| TRIG_TYPE | CKoU | Ko-consolidated undrained triaxial test | |
| TRIG_TYPE | UNC | Unconfined Compressive test | |
| TRIG_TYPE | UU | Unconsolidated quick undrained (single stage) | |
| TRIG_TYPE | UUM | Unconsolidated quick undrained (multi-stage) | |
| TRIG_TYPE | UUP | Unconsolidated undrained with porewater measurement | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--|------------|
| 1112TCE | 1,1,1,2- Tetrachloroethane | |
| 111TCE | 1,1,1- Trichloroethane | |
| 1122TCE | 1,1,2,2- Tetrachloroethane | |
| 112T122T | 1,1,2- Trichloro-1,2,2-Trifluoroethane | |
| 112TCE | 1,1,2- Trichloroethane | |
| 11BIP | 1,1- Biphenyl | |
| 11BP2FL | 1,1-biphenyl,2-fluoro | Rev |
| 11DCP | 1,1- Dichloropropene | |
| 11DEA | 1,1- Dichloroethane | |
| 11DEE | 1,1- Dichloroethene | |
| 123TCB | 1,2,3- Trichlorobenzene | |
| 123TCP | 1,2,3- Trichloropropane | |
| 124TCB | 1,2,4- Trichlorobenzene | |
| 124TMB | 1,2,4- Trimethylbenzene | |
| 12BIP | 1,2- Biphenyl | |
| 12D3C | 1,2- Dibromo-3-Chloropropane | |
| 12DB | 1,2- Dichlorobenzene | |
| 12DEA | 1,2- Dichloroethane | |
| 12DEE | cis 1,2 -Dichloroethene | Rev |
| 12DIB | 1,2- Dibromoethane | |
| 12DP | 1,2- Dichloropropane | |
| 135TCB | 1,3,5- Trichlorobenzene | |
| 135TMB | 1,3,5- Trimethylbenzene | |
| 13DB | 1,3- Dichlorobenzene | |
| 13DCPE | cis 1,3 -Dichloropropene | |
| 13DP | 1,3- Dichloropropane | |
| 14DB | 1,4- Dichlorobenzene | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|----------------------------|------------|
| 22DP | 2,2- Dichloropropane | |
| 2346TCP | 2,3,4,6- Tetrachlorophenol | |
| 245TCP | 2,4,5- Trichlorophenol | |
| 246TBP | 2,4,6-Tribromophenol | Rev |
| 246TCP | 2,4,6- Trichlorophenol | |
| 24DCP | 2,4- Dichlorophenol | |
| 24DMP | 2,4- Dimethylphenol | |
| 24DNP | 2,4- Dinitrophenol | |
| 24DNT | 2,4- Dinitrotoluene | |
| 26DCP | 2,6- Dichlorophenol | |
| 26DNT | 2,6- Dinitrotoluene | |
| 2BUT | 2- Butanone | |
| 2CNAP | 2- Chloronaphthalene | |
| 2CP | 2- Chlorophenol | |
| 2CT | 2- Chlorotoluene | |
| 2MNAP | 2- Methylnaphthalene | |
| 2MP | 2- Methylphenol | |
| 2NA | 2- Nitroaniline | |
| 2NP | 2- Nitrophenol | |
| 33DCBZDNE | 3,3'-Dichlorobenzidine | |
| 34MP | 3,4- Methylphenol | |
| 3NA | 3- Nitroaniline | |
| 44DDD | 4,4- DDD | Rev |
| 44DDE | 4,4- DDE | Rev |
| 44DDT | 4,4- DDT | Rev |
| 46DN2MP | 4,6-Dinitro-2-methylphenol | |
| 4BPPE | 4- Bromophenylphenyl ether | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|------------------------------|----------|
| 4C3MP | 4- Chloro-3-Methylphenol | |
| 4CA | 4- Chloroaniline | |
| 4CB | Tetrachlorobenzene(Total) | |
| 4CP | 4- Chlorophenol | |
| 4CPPE | 4- Chlorophenyl phenyl ether | |
| 4CT | 4- Chlorotoluene | |
| 4IPT | 4- Isopropyltoluene | |
| 4MP | 4- Methylphenol | |
| 4NA | 4- Nitroaniline | |
| 4NP | 4- Nitrophenol | |
| 4TCP | Tetrachlorophenol(Total) | |
| A1016 | Aroclor1016 | |
| A1221 | Aroclor1221 | |
| A1232 | Aroclor1232 | |
| A1242 | Aroclor1242 | |
| A1248 | Aroclor1248 | |
| A1254 | Aroclor1254 | |
| A1260 | Aroclor1260 | |
| A1262 | Aroclor1262 | |
| ABC | Anaerobic bacteria count | |
| ABHC | alpha- BHC | |
| ACALW | Acidity/Alkalinity | |
| ACET | Acetaldehyde | |
| ACIDW | Acidity as Calcium carbonate | |
| ACNAP | Acenaphthylene | |
| ACNEN | Acenaphthene | |
| ADSC | Aerobic dip slide colonies | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--|------------|
| AG | Silver | |
| AHCH | alpha- HCH | |
| AIDW | Anionic detergents | |
| AIMS | Acid insoluble matter | |
| AL | Aluminium | |
| ALCO | Alcohols | |
| ALD | Aldrin | Rev |
| ALKBW | Alkalinity- Bicarbonate as CaCO ₃ | |
| ALKCW | Alkalinity- Carbonate as CaCO ₃ | |
| AMET | Ametryn | |
| AMMNS | Ammoniacal nitrogen | |
| AMMOW | Ammonia | |
| ANTHN | Anthracene | |
| ANTHNN | Anthanthrene | |
| ANTHS | Anthrax (Presence of) | |
| AS | Arsenic | |
| ASB | Asbestos | |
| ATZ | Atrazine | |
| AVF | Aviation fuel | |
| AZB | Azobenzene | |
| AZPE | Azinphos-ethyl | |
| AZPM | Azinphos-methyl | |
| B | Boron | |
| B2CEE | bis (2 - chloroethoxy) ether | |
| B2CEM | bis (2 - chloroethoxy) methane | |
| B2CEYE | bis (2 - chloroethyl) ether | |
| B2CIPE | bis (2 - chloroisopropyl) ether | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|------------------------------------|------------|
| B2EHP | bis (2 - ethylhexyl) phthalate | |
| BA | Barium | |
| BBHC | beta- BHC | |
| BBP | Butyl benzyl phthalate | |
| BE | Beryllium | |
| BENA | Benzo(a) anthracene | |
| BENAP | Benzo(a) pyrene | |
| BENB | Benzo(b) fluoranthene | |
| BENEP | Benzo(e) pyrene | |
| BENGI | Benzo(ghi) perylene | |
| BENK | Benzo(k) fluoranthene | |
| BENZ | Benzene | |
| BENZACID | Benzoic Acid | |
| BENZALC | Benzylalcohol | |
| BHCH | beta- HCH | |
| BICAW | Bicarbonate | |
| BICPB | Bichlorobiphenyl | |
| BICS | Bicarbonate | |
| BOD | Biochemical oxygen demand | Rev |
| BPHENYL | Biphenyl | |
| BROMBE | Bromobenzene | |
| BROMCM | Bromochloromethane | |
| BROMF | Bromoform | |
| BROMM | Bromomethane | |
| BROMO | Bromodichloromethane | |
| BROMW | Bromide | |
| BUTA | Butanoic acid, 1-methyloctyl ester | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--------------------------|----------|
| BUTP | butylphenol | |
| C13DP | cis- 1,3-Dichloropropane | |
| CA | Calcium | |
| CACOS | Calcium carbonate | |
| CALOS | Calorific value | |
| CARB | Carbaryl | |
| CARBON | Carbon | |
| CARF | Carbofuran | |
| CATE | Catechol | |
| CATIS | Cation exchange capacity | |
| CATW | Cationic detergents | |
| CBENZ | Chlorobenzene | |
| CBZ | Carbazole | |
| CD | Cadmium | |
| CDS | Carbon Disulphide | |
| CETH | Chloroethane | |
| CFM | Chloroform | |
| CFP | Chlorfenvinphos | |
| CHDW | Chlorine demand | |
| CHETH | Chloroethene | |
| CHLOW | Chlorine | |
| CL | Chloride | |
| CLHYS | Chlorinated hydrocarbons | |
| CMN | Chloromethane | |
| CN | Cyanide | |
| CNA | Chloronitroaniline | |
| CNAP | Chloronaphthalene | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|-------------------------|------------|
| CNCOMP | Complex Cyanide | |
| CO | Cobalt | |
| COALS | Coal tar derivatives | |
| COD | Chemical oxygen demand | Rev |
| COLO | Coliform organisms | |
| COMBS | Combustibility | |
| CONDW | Electrical conductivity | |
| COS | Carbonate | |
| CPERF | C.Perfringens | |
| CPHE | Chlorophenols(Total) | |
| CPYR | Chlorpyrifos | |
| CR | Chromium | |
| CRES | Cresols | |
| CRVI | Hexavalent Chromium | |
| CRYN | Chrysene | |
| CTET | Carbon tetrachloride | |
| CU | Copper | |
| CYPYRN | Cyclopenta (cd) pyrene | |
| DBE | Dibromoethane | |
| DBF | Dibenzofuran | |
| DBHC | delta- BHC | |
| DBT | Dibutyl tin | |
| DCFM | Dichlorodifluoromethane | |
| DCHLB | Dichlorobenzene(Total) | |
| DCPHE | Dichlorophenol(Total) | |
| DCV | Dichlorvos | |
| DECA | Decane | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|-------------------------|------------|
| DECPB | Decachlorobiphenyl | |
| DEMS | Demeton- S | |
| DEP | Diethyl phthalate | |
| DHCH | D-HCH | Rev |
| DIABN | Dibenzo (ah) anthracene | |
| DIAZ | Diazinon | |
| DIBM | Dibromochloromethane | |
| DIBROM | Dibromomethane | |
| DICM | Dichloromethane | |
| DIEL | Dieldrin | Rev |
| DIMP | Dimethyl phthalate | |
| DIMPH | Dimethylphenols | |
| DISS | Total dissolved solids | |
| DMETH | Dimethoate | |
| DNBP | Di-n-butyl phthalate | |
| DNOP | Di- n- octyl phthalate | |
| DO | Dissolved oxygen | |
| DOCS | Docosane | |
| DOD | Dodecane | |
| DOTC | Dotriacontane | |
| DP | Dichloropropanes | Rev |
| DPE | Diphenyl ether | |
| DRO | Diesel range organics | |
| DST | Disulfoton | |
| EGLW | Ethylene glycol | |
| EHW | Electrolytic potential | |
| EICO | Eicosane | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|-----------------------------|------------|
| ENDALD | Endrin aldehyde | |
| ENDO | Endosulfan | Rev |
| ENDOI | Endosulfan I | |
| ENDOII | Endosulfan II | |
| ENDR | Endrin | Rev |
| ENDSUL | Endosulfan sulphate | |
| EPAR | Ethyl parathion | |
| ESCC | Escherichia Coli | |
| ETHYL | Ethylbenzene | |
| ETRP | Etrimphos | |
| FCAM | Furancarboxaldehyde methyl- | |
| FCOL | Faecal Coliforms | |
| FE | Iron | |
| FENT | Fenthion | |
| FERCS | Ferricyanide | |
| FERFS | Ferro-ferricyanide | |
| FLN | Fluorene | |
| FLNN | Fluoranthene | |
| FLS | Fluoride | |
| FORMA | Formaldehyde | |
| FSTP | Faecal Streptococci | |
| FTT | Fenothrothion | |
| FTU | Formazin Turbidity Units | |
| GBHC | gamma- BHC | |
| GBUT | Butane | |
| GCARD | Carbon dioxide | |
| GCARM | Carbon monoxide | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|---------------------------------------|------------|
| GDIES | Diethyl sulphide | |
| GETHA | Ethane | |
| GETHE | Ethene | |
| GHCH | gamma- HCH | |
| GHEL | Helium | |
| GHYD | Hydrogen | |
| GHYDC | Hydrogen cyanide | |
| GHYDS | Hydrogen sulphide | |
| GMETH | Methane | |
| GNIT | Nitrogen | |
| GOX | Oxygen | |
| GPROP | Propane | |
| GPS | Gram Positive Spore | |
| GSATH | Saturated hydrocarbons | |
| HALO | Halogenated compounds | |
| HARDW | Calcium hardness as Calcium carbonate | |
| HCCP | Hexachlorocyclopentadiene | |
| HCE | Hexachloroethane | |
| HCH | Hexachlorocyclohexane | Rev |
| HCHLB | Hexachlorobenzene | |
| HDTs | Hydrocarbons(Total) | |
| HEPC | Heptachlor | |
| HEPD | Heptadecane | |
| HEPEPO | Heptachlor epoxide | |
| HEPP | Heptenophos | |
| HEPPB | Heptachlorobiphenyl | |
| HEPTE | Heptene | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--------------------------|----------|
| HEXAC | Hexacosane | |
| HEXBUT | Hexachlorobutadiene | |
| HEXD | Hexadecane | |
| HEXPB | Hexachlorobiphenyl | |
| HG | Mercury | |
| HYDRS | Aromatic hydrocarbons | |
| IGNIS | Loss on ignition | |
| INDP | Indeno(1,2,3 -cd) pyrene | |
| IODP | Iodofenphos | |
| IOW | Iodide | |
| IPB | iso- Propylbenzene | |
| IPP | Isopropyl phenol | |
| ISOD | Isodrin | |
| ISOP | Isophorone | |
| K | Potassium | |
| LANGW | Langelier Index | |
| LEG | Legionella bacterium | |
| LI | Lithium | |
| LIND | Lindane | |
| MALTH | Malathion | |
| MANE | Maneb(ACN) | |
| MCHLB | Monochlorobenzene(Total) | |
| MCPHE | Monochlorophenol(Total) | |
| METC | Methacriphos | |
| METHP | Methylphenols | |
| METP | Methyl parathion | |
| METXC | Methoxychlor | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|----------------------------|----------|
| MEVP | Mevinphos | |
| MG | Magnesium | |
| MN | Manganese | |
| MO | Molybdenum | |
| MOILS | Mineral oils | |
| MOIST | Moisture content | |
| MONPB | Monochlorobiphenyl | |
| MTBE | MTBE | |
| MXYL | m & p-Xylene | |
| NA | Sodium | |
| NAP12D | Naphthalene1,2 -dimethyl- | |
| NAP1M | Naphthalene1 -methyl- | |
| NAPHOLS | Naphthols | |
| NAPTHH | Naphthalene | |
| NBUT | n- Butylbenzene | |
| NI | Nickel | |
| NIDW | Nonionic detergents | |
| NIIS | Nitrite | |
| NIRS | Nitrate | |
| NITB | Nitrobenzene | |
| NITRS | Kjeldahl nitrogen (Total) | |
| NNDPA | N- Nitrosodiphenylamine | |
| NNNP | n- Nitrosodi-n-Propylamine | |
| NONP | Nonylphenol | |
| NONPB | Nonachlorobiphenyl | |
| NPB | n- Propylbenzene | |
| NSOS | NSO/Resins | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--|------------|
| OCP | o- Cresol | |
| OCTC | Octacosane | |
| OCTD | Octadecane | |
| OCTPB | Octachlorobiphenyl | |
| OMS | Organic matter | |
| ORGS | Organosulphur compounds | |
| ORTHS | Orthophosphate | |
| OXYL | o- Xylene | |
| PAHS | Polynuclear aromatic hydrocarbons(Total) | |
| PARTH | Parathion | |
| PB | Lead | |
| PBFLB | p-Bromofluorobenzene | Rev |
| PBLS | Organo lead | |
| PCB101S | PCB101 | |
| PCB118S | PCB118 | |
| PCB138S | PCB138 | |
| PCB153S | PCB153 | |
| PCB156S | PCB156 | |
| PCB180S | PCB180 | |
| PCB28S | PCB28 | |
| PCB31S | PCB31 | |
| PCB52S | PCB52 | |
| PCBS | Polychlorinated biphenyls | |
| PCHLB | Pentachlorobenzene(Total) | |
| PCP | p- Cresol | |
| PENPB | Pentachlorobiphenyl | |
| PGLW | Propylene glycol | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|-------------------------|------------|
| PH2FL | Phenol,2-fluoro | <i>Rev</i> |
| PHD5 | Phenol-d5 | <i>Rev</i> |
| PHE | Phenol | |
| PHEIDX | Phenol Index | |
| PHEMS | Phenol(Monohydric) | |
| PHETS | Phenol(Total) | |
| PHOR | Phorate | |
| PHOS | Phosphate | |
| PHOTS | Phosphorous | |
| PHS | pH | |
| PHTH | Phthalates(Total) | |
| PIRIM | Pirimiphos | |
| PNCP | Pentachlorophenol | |
| PNEU | L Pneumophila bacterium | |
| POSPM | Phosphamidon | |
| PPENN | Phenanthrene | |
| PPTDE | ppTDE | |
| PRO | Petrol range organics | |
| PROM | Prometryn | |
| PROPP | Propetamphos | |
| PROPZ | Propazine | |
| PT | Platinum | |
| PTPD14 | p-Terphenyl-d14 | <i>Rev</i> |
| PYR | Pyridine | <i>Rev</i> |
| PYRN | Pyrene | |
| RDN | Radon | |
| REPTW | Redox potential | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|-------------------------------|------------|
| RESO | Resorcinol | |
| SALM | Salmonellae excluding S typhi | |
| SB | Antimony | |
| SE | Selenium | |
| SECB | sec- Butylbenzene | |
| SI | Silicon | |
| SILS | Silica | |
| SIMT | Simetryne | |
| SIMZ | Simazine | |
| SN | Tin | |
| SO3 | Sulphate as SO3 | |
| SO4 | Sulphate as SO4 | |
| SOLVS | Solvent extractable matter | |
| SR | Strontium | |
| STONE | Stone content | |
| STY | Styrene | |
| SULES | Sulphur | |
| SULIS | Sulphide | |
| SUSP | Total suspended solids | |
| T12DE | Trans- 1,2-Dichloroethene | |
| T13DP | Trans- 1,3-Dichloropropene | |
| TAMN | Total Ammoniacal nitrogen | Rev |
| TBM | Tribromomethane | |
| TBT | Tributyl tin | |
| TCC | Total Coliform count | |
| TCE | Tetrachloroethane | |
| TCFE | Trichlorofluoromethane | |

| CODE_CODE | CODE_DESC | Revision |
|-----------|--------------------------|------------|
| TCHLB | Trichlorobenzene(Total) | |
| TCOL | Thermotolerant Coliforms | |
| TCONT | Triacontane | |
| TCPHE | Trichlorophenol(Total) | |
| TE | Tellurium | |
| TECZ | Tecnazene | |
| TERB | Terbutryn | |
| TERTB | tert- Butylbenzene | |
| TETC | Tetrachloroethene | |
| TETPB | Tetrachlorobiphenyl | |
| TETRC | Tetracosane | |
| TETRD | Tetradecane | |
| THF | Tetrahydrofuran | |
| THIOS | Thiocyanate | |
| THT | Tetrahydrothiophene | |
| THW | Total hardness | |
| TI | Titanium | |
| TIC | Total inorganic carbon | |
| TIOS | Organo tin | |
| TL | Thallium | |
| TMPHE | Trimethylphenols | |
| TN | Total Nitrogen | <i>Rev</i> |
| TOC | Total Organic Carbon | <i>Rev</i> |
| TOD8 | Toluene-d8 | <i>Rev</i> |
| TOL | Toluene | |
| TONIW | Total oxidised nitrogen | |
| TP | Total Phosporous | <i>Rev</i> |

| CODE_CODE | CODE_DESC | Revision |
|-----------|------------------------------|------------|
| TPC | Total plate count | |
| TPH | Total petroleum hydrocarbons | |
| TPT | Triphenyl tin | |
| TR3MS | Trichloromethane | |
| TR4MS | Tetrachloromethane | |
| TRCE | Trichloroethene | |
| TRICPB | Trichlorobiphenyl | |
| TRIF | Trifluralin | |
| TRIZ | Trietazine | |
| TRIZP | Triazophos | |
| TTC | Tetratriacontane | |
| TURBW | Turbidity N T U | |
| TVC | Total viable count | |
| UREA | Urea | |
| V | Vanadium | |
| VCHL | Vinyl chloride | |
| VFATW | Volatile fatty acids | |
| VOLS | Volatiles | |
| VSOLW | Volatile suspended solids | |
| XEP | Xylenols & Ethylphenols | |
| XYL | Xylene | Rev |
| ZN | Zinc | |

| UNIT_UNIT | UNIT_DESC | Revision |
|--------------------|---------------------------------|----------|
| mm | millimetre | |
| cm | centimetre | |
| m | metre | |
| km | kilometre | |
| cm ² | square centimetre | |
| m ² | square metre | |
| km ² | square kilometre | |
| cm ³ | cubic centimetre | |
| m ³ | cubic metre | |
| l | litre | |
| N | Newton | |
| kN | kiloNewton | |
| MN | megaNewton | |
| g | gram | |
| kg | kilogram | |
| Mg | megagram | |
| kN/m ² | kiloNewtons per square metre | |
| kPa | kiloPascal | |
| MN/m ² | megaNewtons per square metre | |
| MPa | megaPascal | |
| GPa | gigaPascal | |
| kg/cm ² | kilograms per square centimetre | |
| bar | bar | |
| kN/m ³ | kiloNewtons per cubic metre | |
| Mg/m ³ | megagrams per cubic metre | |
| g/cm ³ | grams per cubic centimetre | |
| kg/m ³ | kilograms per cubic metre | |

| UNIT_UNIT | UNIT_DESC | Revision |
|-------------------|--------------------------|----------|
| kg/m | kilograms per metre run | |
| s | second | |
| min | minute | |
| hr | hour | |
| day | day | |
| month | month | |
| yr | year | |
| hhmm | hours minutes | |
| hhmmss | hours minutes seconds | |
| dd/mm/yy | day month year | |
| mm/s | millimetres per second | |
| mm/min | millimetres per minute | |
| cm/s | centimetre per second | |
| m/s | metres per second | |
| km/hr | kilometres per hour | |
| l/s | litres per second | |
| l/min | litres per minute | |
| m ³ /s | cubic metres per second | |
| ug/l | micrograms per litre | |
| mg/l | milligrams per litre | |
| g/l | grams per litre | |
| ug/kg | micrograms per kilogram | |
| mg/kg | milligrams per kilogram | |
| ppb | parts per billion | |
| ppm | parts per million | |
| ppmv | Parts per million volume | |
| % | percentage | |

| UNIT_UNIT | UNIT_DESC | Revision |
|--------------------|-------------------------------------|------------|
| % dry weight | percentage of dry weight | |
| % vol | percentage volume | |
| m ² /MN | square metres per megaNewton | |
| m ² /yr | square metres per year | |
| Nm | Newton metre | |
| deg | degree (angle) | |
| DegC | degree Celsius | |
| uV | microVolt | |
| mV | milliVolt | |
| ohm | Ohm | |
| ohm cm | Ohm centimetre | |
| ohm m | Ohm metre | |
| uS/cm | microSiemens per centimetre | |
| kJ/kg | kiloJoules per kilogram | |
| counts/s | counts per second | |
| Yes | Yes | |
| No | No | |
| CFU/ml | colony forming units per millilitre | Rev |
| CFU/g | colony forming units per gram | Rev |