

# OVERVIEW OF UK SPECIFICATION FOR GROUND INVESTIGATION: 3<sup>rd</sup> EDITION

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## SIGNIFICANT REVISIONS FOR:

Site surveys

Monitoring

Laboratory Testing

Reporting

## 5.0 SITE SURVEYS

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- Site surveys & inspections now given the prominence that this element of a ground investigation deserves
- Historically, for many GI's only lip service paid to this key stage in understanding a site. EC7 has recognised importance of the contribution of site surveys
- 3<sup>rd</sup> edition has tried to make sure that the appropriate people carry out and attend any site surveys
- Timing of carrying out such surveys also covered (often not programmed in at an early stage, any value added content often becomes irrelevant to the project as a whole)

# 5.0 SITE SURVEYS

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## ○ 5.1 Site Inspection

The survey shall be carried out in advance of the investigation and preferably in advance of mobilisation. The inspection shall be attended by the Contractor and the Investigation Supervisor to mutually confirm the site conditions and to identify any restrictions or additional requirements. The Investigation Supervisor shall determine if any other party or specialist should also be involved (i.e. the Client, other contractors or other specialists such as a geoenvironmental specialist, ecologist, archaeologist, land agent or highways engineer).

## ○ 5.2 Pre and Post Condition Surveys

Importance of these important recording events now covered

# 5.0 SITE SURVEYS

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## ○ 5.5 Utility Surveys

- Finally 'done away' with use of term 'services' and replaced with 'utility' throughout
- Importance and sequencing of PAS 128 surveys discussed

## ○ 5.7 UAV and Drone surveys

- This edition has brought the document up to date with the methodology that is used for many site surveys

## ○ 5.8 Cavity Survey

- Surveying of cavities via boreholes, submerged voids (via subsurface sonar), and methods for surveying manholes, shafts, and sinkholes all now covered

# SITE SURVEYS: Audience input

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Q1: In your experience are site surveys carried out before the commencement of site work?

A) Never / rarely

B) Sometimes

C) Often / always

Q2: Do the appropriate people attend such site surveys?

A) Never / rarely

B) Sometimes

C) Often / always

## 12.0 INSTALLATION MONITORING & SAMPLING

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- ❑ Monitoring (and sampling) as part of a GI, has evolved over the last ten years.
- ❑ New techniques have come on stream
- ❑ In particular remote monitoring
- ❑ Also vapour sampling often undertaken together with conventional gas sampling
- ❑ Compilation of 3<sup>rd</sup> Edition has included consultation within the industry to provide guidance on:
  - Purging & low flow purging
  - Use of multi-parameter meters
  - Continuous gas monitoring

## 12.0 INSTALLATION MONITORING & SAMPLING

Groundwater quality, ground gas and vapour monitoring and sampling are specialist activities that require input from geoenvironmental practitioners.

Geoenvironmental samples should be dispatched to the testing laboratory in appropriate containers on the day of sampling where possible, and at the latest within 24 h of the sample being taken.

Where combined installations have been installed for ground gas and groundwater, the monitoring/sampling of ground gas must precede that related to groundwater.

Similarly, where concurrent/immediately sequential groundwater level monitoring and sampling in the same installation are required, monitoring should generally precede sampling.

Return visits carried out up to the issue of the draft report are deemed to be included as part of fieldworks, and those visits after the issue of the draft report should be termed long-term monitoring and reported separately as an addendum.



## 15.0 GEOTECHNICAL LABORATORY TESTING

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- Section 15 of the Yellow Book has seen a major overhaul
- Much more emphasis on the shared responsibility of accurate test schedules (Investigation Supervisor (IS) and Contractor)
- Emphasis on an early agreement of format of test schedule
- Emphasis on what the IS has to provide the laboratory
- Several informative tables have now been included.
- Sample mass tables considered to be particularly useful as this issue tends to cause issues on many GI's
- Test standards for the common tests on soils, aggregates and rocks

# 15.0 GEOTECHNICAL LABORATORY TESTING

- Particularly pleased to have included a table on additional information required by the test scheduler!

**Table 15.3 Additional information to be provided by the scheduler of laboratory testing**

Test type	Standard reference	Additional information to be provided
Determination of liquid limit	BS EN ISO 17892-12:2018 + A1:2021	Cone penetrometer method often used on all samples. Four-point definitive method performed automatically. Specify if one-point method is to be used.
Determination of plastic limit	BS EN ISO 17892-12:2018 + A1:2021	If specimen is unsuitable for plastic limit, liquid limits will normally be performed.
Determination of particle density	BS EN ISO 17892-3:2015	Specify whether a small or large pycnometer, or the gas pycnometer for gravelly soils is required when scheduling.
Determination of	BS	

## 15.0 GEOTECHNICAL LABORATORY TESTING

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- 15.10 Specimen preparation and abortive costs
  - Issue of samples received in laboratories not matching their anticipated quality classification
  - Labs can spend many hours unwrapping samples that were carefully preserved on site, only to find them unsuitable for test
  - Could be due to discontinuities opening up, material softening, transportation / handling disturbance, time issues
  - Laboratory shouldn't be disadvantaged commercially

## 15.0 GEOTECHNICAL LABORATORY TESTING

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If, for whatever reason, a test specimen is found to be unsuitable for testing, the laboratory shall prepare a record of the unsuitable sample.

A photographic record of the unsuitable sample shall be taken and presented alongside a geological description of the material on the relevant laboratory test result sheet. The reason why the test sample is unsuitable and a suggested resolution shall be immediately notified to the Investigation Supervisor so that an alternative test or sample may be scheduled.

The preparation costs form part of the overall test costs, however, if the reasons for unsuitability could not reasonably have been foreseen prior to the sample preparation process and are a function of the material properties, the laboratory Contractor should be compensated proportionally for the costs incurred. In these circumstances, the Investigation Supervisor should confirm if they would like the laboratory to complete a non-compliant test. Where the Investigation Supervisor agrees to abort the test or where the specimen is untestable, the Contractor should recover costs through the appropriate items in the Bill of Quantities. In all circumstances, the laboratory should provide details of the outcome in their reports.

# LABORATORY TESTING: Audience input

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- Q1: In your experience do test schedules give the testing laboratory all the information they need?
  - A) Never / rarely
  - B) Sometimes
  - C) Often / always
  
- Q2: Do issues with sample quality affect the testing undertaken by laboratories?
  - A) Never / rarely
  - B) Sometimes
  - C) Often / always

## 17.0 REPORTING & DATA MANAGEMENT

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- Section 17 on reporting and data management has been completely revised and updated to take account of:
  - Reporting compliance with EC7.
  - Recognise GIR and GDR as the two main report types.
  - No factual report perse, but wording to allow the ‘factual element’ of the GIR
  - Use of the ‘old style’ interpretative report now mainly abandoned
- Because EC7 doesn’t deal with contamination, we have kept the linkage to BS10175: 2011 +A2 2017, which together with the EA’s LCRM 2020 set out appropriate reporting

## 17.0 REPORTING & DATA MANAGEMENT

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- We have tried throughout the third edition to stress the importance of continuous data gathering

The reporting of a ground investigation is generally a progressive procedure. During the field-works, reporting generally comprises preliminary data from all phases of the ground investigation (Desk Study, site inspection, non-intrusive investigation, intrusive investigation, laboratory testing and monitoring, etc.) and also derivations from other data. At draft report stage, fully checked information comprising data in a readable format, such as borehole logs, graphs, tables and figures, shall be presented.

## 17.0 REPORTING & DATA MANAGEMENT

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- Key stages during the compilation of the report have been presented sequentially
- 17.2.2 Raw Data

Where raw data, including in situ test field sheets, laboratory work sheets or geophysical survey data, is obtained, it shall be made available to the Investigation Supervisor upon request.

If raw data is to be provided, this shall be detailed in Schedule S1.24.1 and include the time-scales for issue. Raw data shall be provided in the form it is collected in.

Raw data is the original unprocessed source measurement or record prior to application of any corrections or calibrations or any other data manipulation.

Raw data is provided in its original form, which might include proprietary formats.



# 17.0 REPORTING & DATA MANAGEMENT

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## □ Guidance on:

- 17.2.3 Preliminary Exploratory Hole Logs
- 17.2.4 Exploratory Hole Logs
- 17.2.5 Field Test Results
- 17.2.6 Laboratory Test Results
- 17.3 Types of Report: GIR, GDR and use of the ‘factual account’ in relation to GIR
- 17.4 Digital Data: bringing the document up to date with industry requirements and best practice

## 17.0 REPORTING & DATA MANAGEMENT

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- Recognition that in second edition information on digital data was muddled
- ‘Hangover’ from days when printed copy of data / report was main deliverable and digital data was an ‘add on’
- Current edition recognises industry requirements and that the ‘norm’ is for all reporting to be in digital format
  - Digital data format
  - Preliminary digital data
  - Digital data submissions
  - Timing of file submissions (early agreement)
  - File transfer (security etc)
  - Digital data security & file back up

## 17.0 REPORTING & DATA MANAGEMENT

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- Haven't been able to make total break with paper records however (section 17.4.1)

The digital copy of the report shall consist of two parts.

- Part 1. The digital data shall be provided in accordance with the AGS publication *Electronic Transfer of Geotechnical and Geoenvironmental Data*.
- Part 2. The digital information shall be in a PDF format or other form specified in Schedule S1.24.13.

THANK YOU FOR YOUR ATTENTION

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# QUESTIONS ON

UK Specification for  
Ground Investigation  
Third edition