



BS 10175:2011

Hawarden - 22 June 2011
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Key Messages

- Much improved
- Must be read

Provenance

- **GLC Bulletin (2nd series), No.98, Aug/Sept 1976**, *Some guidelines for the re-use of industrially contaminated land*
ICRCL established 1977
- **GLC, London Environmental Supplement No.12**, Summer 1985, *Guidelines for site investigation of contaminated land*
- **BS DD 175: 1988** (first draft 1982), *CoP for the identification of potentially contaminated land and its investigation.*
- **BS 10175: 2001**, *Investigation of potentially contaminated sites – Code of Practice*
- *ISO 10381 series*
- **BS 10175: 2011**

BS 10175 - Brief for Revision

- Align with International Standards (e.g. ISO 10381 series) especially those adopted as British Standards
- Update in relation to legislation and authoritative guidance
- Update technically
- Include additional guidance on sampling uncertainty
- Extend guidance on application of on-site analytical methods (align with draft BS ISO 12404)



ISO TC 190 Soil Quality: SC2 - Soil and site assessment

- **BS ISO 10381-1: 2002 Sampling programmes**
- **BS ISO 10381-2: 2002 Sampling techniques**
- **BS ISO 10381-3:2001 (2006) Safety**
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- ISO 10381-4: Investigation of natural, near natural and cultivated soils
- ISO 10381-5: Urban and industrial sites
- **BS ISO 10381-6:2009 Collection etc... for assessment of aerobic microbial processes**
- ISO 10381-7: Soil gas
- ISO 10381-8: Stockpiles

Additionally:

- Clearer separation between “Normative text” (i.e. guidance) and informative text
- Clarified some terminology, e.g. “contamination”
- Emphasised the importance of early consultation with regulators and provided information on the role of “Contaminated land officers”
- Tightened reporting requirements
- Introduced a requirement concerning the qualification of drillers etc. (parallels CP 5930 as amended 2010).



- **5.2.5 Preparing to investigate**

- Consideration should be given to the range of actions that need to be taken to enable the investigation to be carried out, including, for example, team building, assigning roles (**5.2.6**), **obtaining** permissions and preparation of documentation. These activities are integral components of the investigation but formalizing them into a preparatory stage can help to ensure that everything that needs to be done is done.
- *NOTE 1 The following lists of activities are not intended to be exhaustive, but as aids to a systematic approach.*



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Investigation of VOCs

7.7.4.3.3 Depth of monitoring (see also 7.7.4.2.3)

The geology of the area, the risk of migration and the depth of potential emissions should be taken into account when determining the depth of the gas monitoring wells.

When vapour concentrations are to be measured to inform a risk assessment, the monitoring wells should not usually be more than 1.0 m to 1.5 m deep.

NOTE: It is important to measure the vapour concentrations after any attenuation (e.g. adsorption or microbial degradation) has largely taken place as the vapour moves upwards through the soil column. If the well is deeper than 1.5 m, even for example sufficiently deep to expose contaminated groundwater, the vapour concentrations measured will not be representative of near-surface contamination.

BS EH4 Soil quality

- AGS
- BGS
- BLRS
- BSS
- CIEH
- CIWM
- CIWEM
- Environment Agency
- EIC
- Institute of Biology
- ICE
- RSC
- Scottish Water
- SCI
- The Macaulay Institute
- University of Glasgow
- Water UK
- SOBRA
- EPUK
- Prof. M Ramsey
- K Askari
- E Henshaw

BS 10175 = Code of Practice

- Good practice – not necessarily BEST practice
- Uses “should” not “shall”
- Does not absolve user from duty to make own sound professional judgements
- Not obliged to follow it unless required by Contract or Planning Condition etc. but failure to do so could be used as evidence of negligence etc.
- If not followed, should be willing to defend decision in court.

BS10175 - Scope

- This British Standard gives recommendations for, and guidance on the investigation of land potentially affected by contamination and land with naturally elevated concentrations of potentially harmful substances, to determine or manage any risks.
- It covers:
 - setting objectives
 - developing a strategy for investigation
 - designing the different phases of investigation
 - sampling and field testing
 - laboratory analysis [and testing]
 - reporting.

BS10175 – WHAT HASN'T CHANGED

- Structure of document

BS 10175 - Structure

- Introduction
- 1. Scope
- 2. Normative references
- 3. Terms and definitions
- 4. Setting investigation objectives
- 5. Developing an investigation strategy

BS 10175 – Structure -2

- 6: Preliminary investigation
- 7: Design and planning field investigations
- 8: Fieldwork
- 9: Off-site analysis of samples
- 10: Reports
- Informative Annexes B to I

BS10175: Annexes

- A: Examples of site investigations
- B: Example investigation objectives & applications
- C: Health and safety
- D: Sampling uncertainty
- E: Example gas monitoring well construction
- F: Rapid field measurement methods
- G: Laboratory analyses
- H: Suitability of containers
- I: Regulation of land contamination

Conceptual model (introduction)

- “The conceptual model is a description and/or representation of the site, incorporating what is known about the ground and groundwater conditions; the actual and potential contamination; the physical conditions and environmental setting; the receptors and potential pathway linkages between sources and receptors .
- Depending on the objectives of the investigation, it could be relevant to consider new future receptors associated with the construction and completion of a new development.
- The conceptual model leads to the formulation of contamination-related hypotheses, which the investigation process examines through the collection of relevant data.”
- *The investigation leads to reduced uncertainty in the conceptual model.*

3. Terms and definitions

- *BS ISO 11074 Soil Quality – Vocabulary* applies unless definition given
- CLR 11 followed only where appropriate

BS10175 - Contamination

- Presence of a substance or agent, **as a result of human activity**, in, on, or under land, which has the potential to cause harm or cause pollution.
- *NOTE: There is no assumption in this definition that harm results from the presence of contamination.*
- Aligns more closely with definition in “BS ISO 11074 Soil quality – Vocabulary” and helps to make it clear that the Part IIA definition has only a narrow application

BS10175 – What hasn't changed

- Preliminary investigation
(desk study & site reconnaissance)
- Exploratory investigation
(limited focused investigation – not a basis for DQRA except in limited circumstances)
- Main investigation
(detailed investigation – required for DQRA)
- Supplementary investigation
(e.g. fill gaps, information for remediation)

4. Setting the objectives of an investigation - 1

- General
- Setting investigation objectives
- *(see also annex B for examples)*

4. Setting the objectives of an investigation - 2

- Objectives should be set before the strategy of the investigation is established and the investigation is designed.

4. Setting the objectives of an investigation - 3

- Objectives should take into account:
 - The client's reasons for requesting the investigation
 - Decisions to be made about the site
 - Confidence required for making decisions
 - Findings of investigations already carried out
 - Findings of any risk assessments completed to date

4. Setting the objectives of an investigation - 4

- Possible contexts include:
 - Support of a planning proposal on behalf of the client (who may or may not be the owner)
 - In connection with sale or purchase to enable its value to be estimated
 - In connection with the potential determination under the Part IIA regime
 - To “benchmark” conditions for future reference

4. Setting the objectives of an investigation - 5

- **Objectives depend on the stage in the overall process and intentions for the land but may, for example, be to:**
 - Provide information on contamination of the ground and groundwater
 - Provide information of natural concentrations of potentially hazardous substances
 - Gather information for conceptual model development
 - Support risk assessment
 - Provide data for design of remedial works
 - Provide data for re-use or disposal of soils as waste
 - *Table 1 & Annex B provide examples of possible detailed objectives.*

4. Setting the objectives of an investigation - 6

- “Before entering into a contract, the prospective investigator should endeavour to make sure the client or the client’s adviser understands the likely regulatory requirements and that it has been set down whether the investigator is or is not to be responsible for meeting these requirements.”
- *Also Note on the role of local authority regulators – see also Annex I*
- *Clause 10 requires reports to refer to any planning conditions*

5. Developing an investigation strategy - 1

- General (5.1)
- Overall Strategy (5.2)
 - Phases of investigation (5.2.2)
 - Zoning (5.2.3)
 - Consultation with regulators (5.2.4)
 - Preparing to investigate (5.2.5)
 - Personnel (5.2.6)
 - Scope and application of investigations (5.2.7)
- Specific strategies for field investigations (5.3)

5. Developing an investigation strategy - 2

- The overall strategy should address:
 - What to do
 - How it is to be done
 - When it is to be done (including sequencing of works)
 - Who is to do it
 - What needs to be done to enable the works to be done

5. Developing an investigation strategy - 3

- The overall strategy should take into account amongst other things:
 - The objectives of the work
 - The site constraints
 - The suitability of the investigation techniques
 - The availability of suitable analytical and other test methods

5. Developing an investigation strategy - 4

- Decisions should be made early in the project about:
 - What additional expertise (if any) is needed to develop the investigation strategy
 - Whether a formal project team is to be formed for example to help develop the strategy [and manage the project]
 - Whether to assign specific tasks to specific individuals or organizations
 - [relationship to other investigations, e.g. geotechnical, ecological, archaeological]

5. Developing an investigation strategy - 5

- Where logical and appropriate , the site should be divided into zones and separate strategies developed for each zone based, for example, on:
 - Near –surface geology (natural and man-made)
 - Deeper geology
 - Topography
 - Probable presence of absence of contamination
 - Previous and current land uses
 - Nature of probable contaminants
 - Intended future use
- *Separate conceptual models for each zone. Zoning reviewed as overall investigation proceeds*

5.2.5 Preparing to investigate - 1

- Consider:
 - Whether to set up formal project team
 - Additional expertise (on- & off-site)
 - Whom to consult
 - Welfare facilities
 - Access
 - Legal access arrangements (licences, permits etc.)
 - Who should do particular aspects of the investigation
 - How to carry out and if necessary procure the investigation
 - What interim reports are to be prepared
 - What to tell the public

5.2.5 Preparing to investigate - 2

- Determine:
 - What regulatory permits are required
 - Whether there are any formal requirements to consult (e.g. Planning Conditions)
 - Whether any intrusive investigation requires planning permission
 - *[Whether the investigation is covered by CDM Regulations]*

5.2.5 Preparing to investigate - 3

- Prepare, as appropriate:
 - Sampling plan
 - Health and safety risk assessments
 - Safety-related documents
 - Environmental risk assessments
 - Specifications for fieldwork , analysis and testing
 - Contract documentation
 - Method statements for particular activities

BS101075 – Clause 5.2.6 Personnel - 1

- There are various roles to be performed by one or number of people
- Roles include project leader, field manager, field investigator and skilled operatives
- Tasks include direction, planning and execution, supervision in the field, formation of exploratory holes, [sampling], logging of excavations and boreholes

BS101075 – Clause 5.2.6 Personnel - 2

- Whoever performs these roles [and carries out these tasks] should be:
 - Appropriately knowledgeable, qualified, trained, and experienced.
- The prescription of qualifications etc. is outside of the scope of this standard except for lead drillers, support operative drillers and the operators of excavating plant for whom the corresponding provisions of BS 5930 apply.

BS101075 – Clause 5.2.6 Personnel - 3

- **5.2.6.2 Operatives**

-all boring and drilling operatives, including lead drillers employed on the contract should hold a valid and current audit card of competence applicable to the work and the specific drilling operation on which they are engaged such as that issued by the British Drilling Association Ltd. under its BDA Audit [scheme], or an equivalent body.....
- *The provisions in this clause are the same as those in BS5930:1999+A2:2010, 17.8*