

UK Specification for Ground Investigation

Third edition

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Prepared by

**The Association of Geotechnical and
Geoenvironmental Specialists**

on behalf of the AGS Procurement of Ground Investigation Steering Group and the
British Geotechnical Association

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Specification and Notes for Guidance

1. Information

1.1 General

Information and requirements specific to a particular ground investigation shall be fully detailed in the Schedules, which form part of the Specification.

Not all the Schedules will necessarily be applicable to any particular investigation; those not required shall be identified in Schedule S1.5 (Objective and scope of investigation) as 'Not required'.

Work over water or unstable ground, including mine-shafts, for example, is not extensively dealt with in the Specification. This is specialist work, which will require additional Specification and Bill of Quantity documentation. CIRIA document C758D, *Abandoned Mine Workings Manual*, Chapters 11 and 12 refer to site investigation requirements for the presence and treatment of mine workings and mine entries.

Full details of the information and requirements specific to the particular Contract are to be inserted in the Schedules: vague outline descriptions will not suffice.

Schedules S4 and S5 are provided for Specification amendments and additions, respectively, while additional Bill of Quantity items should be included in the space provided at the end of each Bill.

2. Definitions

2.1 General comments

These definitions are for the purposes of this ground investigation Specification.

Terms that are defined in most Conditions of Contract or in British standards are generally not repeated in this Specification.

2.2 Investigation Supervisor

Investigation Supervisor means the named individual having responsibility to see that the technical objectives and quality of the investigation are met within the programme and cost constraints. The Investigation Supervisor shall act in a professional and independent manner in order to achieve the technical objectives.

The Investigation Supervisor shall be an experienced ground practitioner with an appropriate level of knowledge and working experience of ground investigation and the Specification, sufficient to guide the technical direction and execution of the proposed works.

The Investigation Supervisor may be part time or full time, and may require the assistance of one or more specialists who may have defined delegated powers, dependent on the nature, size and complexity of the investigation.

2.3 Ground practitioners and other personnel

Ground practitioners include, but are not necessarily limited to, geotechnical engineers, geologists, engineering geologists, geoenvironmental scientists, environmental scientists, hydrogeologists, geochemists and geophysicists. They shall be competent to undertake the work required, and the key element of this is having relevant experience, skills, knowledge, ability and training. Levels of competency of personnel who may be required by the Contract are

- (a) registered ground engineering technician/technician
- (b) graduate geotechnical practitioner/graduate geoenvironmental practitioner
- (c) registered ground engineering practitioner/experienced geotechnical practitioner/experienced geoenvironmental practitioner
- (d) registered ground engineering professional
- (e) registered ground engineering specialist
- (f) registered ground engineering adviser
- (g) chartered practitioner (e.g. CGeol, CSci, CEng or CIWEM)
- (h) Registered Specialist in Land Condition (SiLC)
- (i) registered risk assessor (Registered as a Risk Assessor with (RSoBRA) or a Fully Accredited Member of (ASoBRA) the Society of Brownfield Risk Assessment SoBRA).

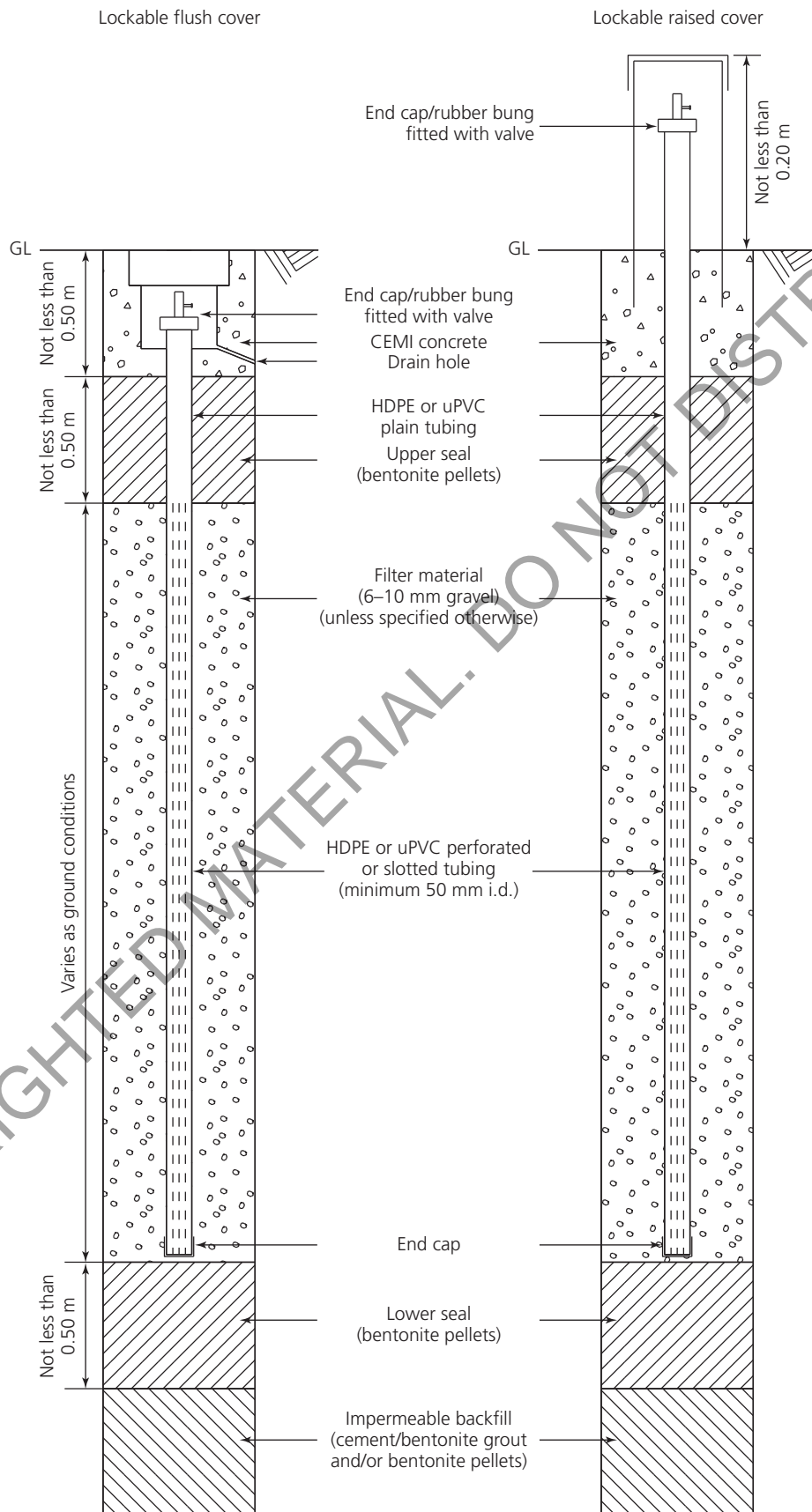
Other personnel include, but are not necessarily limited to, qualified operators or technicians, data manager, health and safety adviser, drilling supervisor, highway traffic safety officer, marine supervisor, instrumentation and monitoring specialist, ecologist, archaeologist and railway trained staff.

The definitions for registered ground engineering professionals (categories (a), (c), (d), (e) and (f)) are those set out in ICE 3009, *UK Register of Ground Engineering Professionals (RoGEP)*. Category (h) is defined by the Specialist in Land Condition Register (SiLC) and (i) is defined by the Society of Brownfield Risk Assessment (SoBRA).

The definitions of a Qualified Operator and Responsible Expert are provided in BS EN ISO 22475-2:2011.

An experienced ground practitioner (category (c)) would typically be one with at least 3 years of relevant experience since graduation with an appropriate degree, or, alternatively, with at least 5 years of experience if not a graduate.

Figure 11.3 Schematic drawing of ground gas observation well installations



Number	Item description	Unit	Quantity	Rate	Amount: £
A20.3	Site Agent (specify grade required)	p.day			
A20.4	Site Health and Safety Coordinator	p.day			
A20.5	Technical Lead (specify grade required)	p.day			
A20.6	Data Coordinator	p.day			
A20.7	Logging and/or Sampling Supervisor (specify grade required)	p.day			
A20.8	Technical Drilling Supervisor (specify grade required)	p.day			
A20.9	Drilling Supervisor (Level 3 Vocational Qualification)	p.day			
A20.10	Site Logger (specify grade required)	p.day			
A20.11	Geoenvironmental specialist (specify grade required)	p.day			
A20.12	Other specialists (e.g. unexploded ordnance/contaminated waste/ environmental specialist, traffic safety control officer or geophysicist)	p.day			
A21	Establish the location and elevation of the ground at each exploratory hole	nr			
A22	Preparation of health and safety documentation, including risk assessments	sum			
A23	Facilities for the Investigation Supervisor	sum			
A24	Vehicle(s) for the Investigation Supervisor	v.wk			
A25	Fuel for the vehicle for the Investigation Supervisor	provisional sum			
A26	Investigation Supervisor's telecommunication charges	provisional sum			
A27	Deliver selected cores and samples to the specified address	provisional sum			
A28	Special testing and sampling required by Investigation Supervisor	provisional sum			
A29	Traffic safety and management	provisional sum			
	Reporting				
A30	Digital copy of the draft Desk Study Report	sum			
A31	Digital copy of the final Desk Study Report	sum			
A32	Digital copy of the PAS 128 utilities survey report	sum			
A33	Digital copy of a Pre-condition Survey Report	sum			
A34	Digital copy of a Post-condition Survey Report	sum			
A35	Digital copy of the draft Ground Investigation Report (or specified part thereof)	sum			
A36	Digital copy of the interim Ground Investigation Report (or specified part thereof)	sum			
A37	Digital copy of an final Ground Investigation Report (or specified part thereof)	sum			
A38	Digital copy of the draft Geotechnical Design Report (or specified part thereof)	sum			

Schedule S1.22.6 (Derived from BRE SD1)

Geoenvironmental tests on potentially aggressive ground/groundwater

Suite A – Greenfield site (pyrite absent)			
Sample type	Determinand	Recommended test methods	Test method specified/offered^a
Soil	pH in 2.5 : 1 water/soil extract	BR 279 – Electrometric	
		BS 1377-3:2018 + A1:2021	
	SO ₄ in 2 : 1 water/soil extract	BR 279 – Gravimetric method, cation exchange or ion chromatography	
		BS 1377-3:2018 + A1:2021	
		TRL 447 – Test 1	
	Groundwater	pH	BR 279 – Electrometric
BS 1377-3:2018 + A1:2021			
SO ₄		BR 279 – Gravimetric method, cation exchange or ion chromatography	
		BS 1377-3:2018 + A1:2021	
		Commercial laboratory in-house procedure – determination of sulfur by ICP-AES	
Suite B – Greenfield site (pyrite present)			
Sample type	Determinand	Recommended test methods	Test method specified/offered
Soil	pH in 2.5 : 1 water/soil extract	BR 279 – Electrometric	
		BS 1377-3:2018 + A1:2021	
	SO ₄ in 2 : 1 water/soil extract	BR 279 – Gravimetric method, cation exchange or ion chromatography	
		BS 1377-3:2018 + A1:2021	
		TRL 447 – Test 1	
	Acid-soluble SO ₄	BR 279 – Gravimetric method	
		BS 1377-3:2018 + A1:2021	
		TRL 447 – Test 2	
	Total sulfur	BR 279 – Ignition in oxygen	
		TRL 447 – Test 4A	
TRL 447 – Test 4B			
Groundwater	pH	BR 279 – Electrometric	
		BS 1377-3:2018 + A1:2021	
	SO ₄	BR 279 – Gravimetric method, cation exchange or ion chromatography	
		BS 1377-3:2018 + A1:2021	
		Commercial laboratory in-house procedure – determination of sulfur by ICP-AES	

ICP-AES, inductively coupled plasma atomic emission spectroscopy.

^a **Either** Investigation Supervisor to specify method required, **or** Contractor to detail method(s) offered.