



# Statement of Capability

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Appendix 1 UKAS Certificate of Accreditation		



## Welcome to Derwentside Environmental Testing Services (DETS)

DETS offer a wide range of high quality accredited analytical services for the environmental, construction, waste, fuel and engineering industries. Combining a modern, well equipped laboratory, with highly skilled and dedicated staff, we can ensure an excellent and flexible service to meet the most demanding requirements.

Established in 1999 in Consett, DETS have expanded every year, and developed into one of the most respected analytical laboratories in the UK, by retaining their original clients, and regularly adding new companies. This achievement is due to the DETS philosophy of listening to their clients and forming honest and transparent relationships, providing quality data in agreed timescales, and going that 'extra mile' to provide added value.

Our experienced scientific and customer service teams work closely with our clients to understand their needs in terms of the technical and commercial demands they face. Timeframes and reporting deadlines are agreed at an early stage to enable clients to meet their own obligations confidently.

*“Our aim is to excel in all aspects of our business & by doing so provide the highest level of service throughout the industry”.*



## 1 Company Overview

DETS is a private limited company, set up in 1999 and independently owned. Steady expansion, involving two moves to larger premises, has allowed the company to gain a larger market share, and to increase the scope of analyses offered in order to service a wide variety of industry requirements.

These areas include:

- Environmental testing of soils, waters, gases and waste
- Geotechnical and building materials
- Asbestos
- Agricultural
- Fuel and biomass
- On-site services

Almost 100 staff are now employed in our laboratories, and many are well respected within the industry, actively serving on committees and groups such as EIC, AGS, MCERTS, Landfill Regulation, and the Standing Committee of Analysts (see the Company Personnel section for further details).

DETS are accredited to ISO 17025 and MCERTS for an extensive range of analyses, and are also accredited for sampling. Samples can be accepted from outside the UK, as a DEFRA import licence is also available.



## 2 Contact Details

### Consett Laboratory

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Co Durham  
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Twitter: @detsltd

UKAS number: 2139

UKAS schedule: [www.ukas.org](http://www.ukas.org)

Soil import number: PHSI 447/6609 (10/2012)

Company reg. number: 370 5645

VAT number: 708 678 978



### 3 Key Contacts

#### Sales & General Enquiries

Rob Brown – <i>Business Manager</i>	Email: <a href="mailto:rob.brown@dets.co.uk">rob.brown@dets.co.uk</a>	Tel: 01207 610023
Richard Collings – <i>Sales Manager</i>	Email: <a href="mailto:richard.collings@dets.co.uk">richard.collings@dets.co.uk</a>	Tel: 07595411847
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George Hawthorn – <i>Sales Manager</i>	Email: <a href="mailto:george.hawthorn@dets.co.uk">george.hawthorn@dets.co.uk</a>	Tel: 07808793183
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#### Scheduling & Reporting

Mark Hughes – <i>Contracts Manager</i>	Email: <a href="mailto:mark.hughes@dets.co.uk">mark.hughes@dets.co.uk</a>	Tel: 01207 582333
Adam Fenwick – <i>Senior Coordinator</i>	Email: <a href="mailto:adam.fenwick@dets.co.uk">adam.fenwick@dets.co.uk</a>	Tel: 01207 610028

#### Collections & Containers

Neil Dobinson – <i>Sample Reception Manager</i>	Email: <a href="mailto:neil.dobinson@dets.co.uk">neil.dobinson@dets.co.uk</a>	Tel: 01207 610027
Louise Cook – <i>Coordinator</i>	Email: <a href="mailto:louise.cook@dets.co.uk">louise.cook@dets.co.uk</a>	Tel: 01207 610033

#### Quality Assurance

Neil Benzie – <i>Quality Manager</i>	<a href="mailto:lee.morgan@dets.co.uk">lee.morgan@dets.co.uk</a>	Tel: 01207 610021
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#### Technical Enquiries

Mike Cohen – <i>Technical Development Manager</i>	<a href="mailto:mike.cohen@dets.co.uk">mike.cohen@dets.co.uk</a>	07545 641192
Hazel Davidson – <i>Technical Marketing Manager</i>	<a href="mailto:hazel.davidson@dets.co.uk">hazel.davidson@dets.co.uk</a>	07879 518818
Mike Hopgood – <i>Technical Consultant</i>	<a href="mailto:mike.hopgood@dets.co.uk">mike.hopgood@dets.co.uk</a>	01207 610025



## 4 Company Personnel

The qualified and experienced staff members at DETS bring a wealth of scientific and commercial experience and have led the company from strength to strength since its inception. They are committed to providing a friendly and accessible service that can be tailored to any of our client needs.

Many of our staff are members of relevant professional institutes and trade organisations and have seats on steering committees for shaping the direction of the industry.

These include:

- Royal Society of Chemistry
- Standing Committee of Analysts
- British Standards Institute
- Environmental Industries Commission
- Contest Steering Committee
- MCERTS for Soils – Steering Board
- MCERTS for Waters – Steering Board
- North East Chamber of Commerce
- Institute of Directors
- NEPIC
- UK Trade & Investment
- Chartered Institute of Water and Environmental Management
- CIRIA asbestos Project Steering Committee
- British Measurement and Testing Association

Our most experienced staff are recognised as industry experts and are frequent speakers at conferences, workshops and seminars. We also arrange training seminars for our clients, which can be tailored to individual company needs.



## 5 Scope of Services

### 5.1 Agriculture

Derwentside Environmental recognise the need for analyses to serve the agricultural market, including farming, consultancy, compliance management, waste recycling and remediation companies.

DETS can therefore offer a range of tests to meet these requirements, including:

- Top soil to BS 3882
- Compost to PAS 100
- Digestate to land to PAS 110
- Metals
- pH
- Total nitrogen and Kjeldahl nitrogen
- Nitrate, nitrite and phosphate
- Biodegradability
- Methane potential
- Biogas potential

Further tests may be available, depending upon demand.





## 5.2 Asbestos

Derwentside Environmental is recognised as a centre of excellence and a leading laboratory for asbestos analysis, and one of the first to receive accreditation for quantification in soils.

### Accreditation

DETS holds UKAS accreditation to ISO 17025 for:

- Identification of asbestos in bulk materials and soils using stereo and Polarised Light Microscopy
- The Quantification of asbestos in soils, loose aggregates and ballast
- The 'Water Absorption Test' to determine whether an Asbestos Containing Material (ACM) is licensable

### Asbestos in Soils

Stage 1 – Identification using PLM

Stage 2 – gravimetric quantification of ACM (asbestos containing materials) with a limit of detection of 0.1%. This can only be reported separately the result is > 0.1%.

Stage 3 - Quantification of loose fibres by Phase Contrast Optical Microscopy, with a limit of detection of 0.001%

### Staff Qualifications

All analysts hold a minimum of the BOHS P401 qualification, plus designated staff qualified to BOHS 402 and 403.

### Proficiency Testing Schemes

DETS participates in the proficiency testing scheme AIMS (Asbestos in Materials Scheme) and currently has achieved a perfect score of zero errors in every round since October 2010

### Turnaround

DETS standard turnaround for asbestos identification is 5 working days, with 24 and 48 hour turnarounds available (surcharge applies), depending upon workloads.



### 5.3 Contaminated Land

DETS offer a comprehensive service covering all commonly requested soil contaminants. We were one of the first laboratories to receive MCERTs accreditation, which provides a level of validation across three soil matrices – sand, clay and loamy soil – and this certification sits over and above ISO 17025, providing greater levels of data confidence.

Associated testing includes leaching tests and landfill gas.

Common parameters include:

- Metals – As, B, Cd, Cu, Cr, Ni, Pb, Zn, Fe, Al, Be,
- Metals – Na, K, Ca, Mg
- Metals – Hg, including speciation
- Inorganics/physical – pH, EC, calorific value
- Anions (water soluble) – Cl, NO<sub>3</sub>, NO<sub>2</sub>, SO<sub>4</sub>, PO<sub>4</sub>
- Cyanides – Total, Free (easily liberatable), Thiocyanate
- Sulphur compounds – total sulphur, sulphide, sulphate
- Asbestos – screening, identification, quantification and water absorption
- TOC – total organic carbon, loss on ignition
- VOCs – volatile organic compounds
- SVOCs – semivolatile organic compounds
- TPH – GRO, EPH, speciated TPH, BTEX
- PAHs – polyaromatic hydrocarbons
- PCBs – polychlorinated biphenyls
- Pesticides & herbicides – chlorinated, phosphorylated, triazines
- Dioxins and furans
- Waste characterisation – see Waste Management

Samples are given a brief description to comply with MCERTs, mixed, then subsampled. Most analyses are performed on the wet, as received soil, but where possible, samples are dried at 30°C, then crushed. Analyses performed on the wet soils are corrected and reported on a dry weight basis, again to comply with MCERTs.

Larger bulk samples, such as railway ballast or gravel, can also be analysed upon request.



## 5.4 Fuels

A recent innovation for DETS is the implementation of a fuels testing laboratory, including fossil fuels, biofuels, and biomass. The facilities for fuel analysis at Derwentside Environmental have been configured to meet the high standards demanded by this industry, whilst maintaining the flexibility that supports new innovations in this technologically demanding market.

- Moisture content
- Ash
- Volatile matter
- Oil identification and source matching
- Carbon banding
- Qualitative and quantitative analysis
- Flash point
- Density
- Specific gravity
- Additive pack ID
- Biogenic methane potential
- CHNS elemental analysis
- Calorific value
- Chlorine and sulphur following bomb digestion
- Bromine and fluorine

Traditional coke and coal analyses are performed in accordance with BS 1016 and ASTM methods, with recent developments in the analysis of Refuse Derived Fuel (RDF)/Solid Recovered Fuel (SDF) to meet the requirements of CEN/TC 343. Measurement of methane potential can take up to 65 days.

Project specific methodologies can also be developed upon request.



## 5.5 Geotechnical and Civil Engineering

DETS operate a comprehensive geotechnical laboratory to complement the contaminated land testing, and this range of tests conforms to several industry standards, including BS 1377:1990 Part 3, BRE SD1, and TRL 447. Again, most of these tests are accredited to ISO 17025, and can be performed on soils, waters, concrete and aggregates.

Commonly requested parameters include:

- Natural moisture content
- Moisture content to 105°C
- Stone content
- pH value
- Total sulphate as  $\text{SO}_4$  or  $\text{SO}_3$
- Water soluble sulphate as  $\text{SO}_4$  or  $\text{SO}_3$
- Chloride – acid soluble or water soluble
- Nitrate – water soluble
- Ammoniacal nitrogen
- TOM – total organic matter
- Lol – loss on ignition
- Total sulphur
- Total potential sulphate
- Oxidisable sulphide
- Aggressive carbon dioxide
- Carbonate content
- Mortar analysis to BS 4551
- Cement content
- Concrete analysis to BS 1881

The ability to send all samples to one laboratory, rather than having to split them into geotechnical and chemical, is a major benefit to our clients.



## 5.6 Speciated Mercury

Mercury and its compounds are highly toxic and present significant risks to human health, but different forms of mercury present different risks. Therefore, the determination of speciated mercury can help in assessing that risk on brownfield sites.

In 2009, the Environment Agency published Science Report SCO 50021, entitled Soil Guideline Values for Mercury in Soil. This document details the background, uses and toxicology of mercury, and states that analysis should be performed to provide values for three forms of mercury - elemental, organic, and inorganic, and soil guideline values (SGVs) are provided for all three:

Land Use	SGV mg/kg dry weight	SGV mg/kg dry weight	SGV mg/kg dry weight
	Elemental Hg	Inorganic Hg	Methyl (organic) Hg
<b>Residential</b>	1.0	170	11
<b>Allotment</b>	26	80	8
<b>Commercial</b>	26	3600	410

The soil matrix is assumed to be a sandy loam with a TOC value of 6%

Elemental mercury is a volatile silvery liquid at room temperature, inorganic mercury ( $\text{Hg}^{2+}$ ) is measured as mercuric compounds, and organic mercury is measured as monomethylmercury with the general formula  $\text{CH}_3\text{HgX}$ .<sup>2</sup> Elemental and organic are considered to be the most toxic due to inhalation risks.

DETS was one of the first laboratories to set up speciated mercury, and continues to be a leading laboratory in this analysis.

### Analysis of Elemental Mercury

Samples are tested on an as-received basis, as sample drying is likely to lead to loss of elemental mercury. Samples are purged with argon, the elemental mercury is collected on a silica-gold vapour trap and the collected elemental mercury analysed by atomic fluorescence spectroscopy. Quantification is performed by comparison to a generated calibration curve.

### Analysis of Inorganic Mercury and Methyl Mercury

Extraction of samples follows the USEPA Method 3200 guidelines for “Mercury species fractionation and quantification by microwave assisted extraction”.

Samples are homogenised and taken through a two-step microwave extraction procedure to take both the extractable and non-extractable mercury (semi and non-mobile) compounds into solution. The extracted species are separated by HPLC, oxidised to break down the organic complexes followed by treatment with a reducing agent and analysis by atomic fluorescence spectroscopy. All stages are performed on a continuous ‘on-line’ setup directly linked to an atomic fluorescence detector. Quantification is performed by comparison to a generated calibration curve.



## 5.7 Waste Management

Derwentside Environmental was one of the first laboratories to offer services to meet the landfill directive. The directive's overall aim is "to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from the land-filling of waste, during the whole life-cycle of the landfill".

Waste can be initially characterised, and then categorised to determine the type of landfill which can accept it. The corresponding "Waste Acceptance Criteria™" requires waste to be categorised into three categories prior to landfill disposal.

### Waste Characterisation

Prior to deciding how waste is consigned, it is important to characterise the waste, and DETS recommend a screening suite of tests designed to cover common contaminants:

- pH
- Moisture content
- Total sulphate
- Sulphide
- Phenols
- Total Cyanide
- Metals – As, Cd, Cr, Hg, Ni, Pb, Zn
- PAHs – speciated 16 by GCMS
- TPH banded

### Waste Categorisation

This is the Waste Acceptance Criteria used to determine into which category (inert waste, stable non-reactive hazardous waste, & hazardous waste) it will be consigned, and utilises tests on both the solid waste, plus the BS EN 12457 two stage leaching test.

#### *Solid waste*

- TOC – total organic carbon
- Lol – loss on ignition
- BTEX – benzene, toluene, ethylbenzene and xylenes
- PCBs – polychlorinated biphenyls, seven congeners
- EPH – extractable petroleum hydrocarbons, C<sub>10</sub> – C<sub>40</sub>
- pH
- ANC – acid neutralisation capacity at pH 4 and pH 7

#### *Leachate*

- Metals – As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn
- Anions – Cl, F, SO<sub>4</sub>
- TDS – total dissolved solids
- Phenol – as phenol index
- DOC – Dissolved organic carbon



## 5.8 Water – groundwater, surface waters, wastewaters and effluents

Waters are sampled from a wide variety of sources, but any discharges must comply with discharge consent limits, set by the Environment Agency. DETS can provide a wide range of tests for routine monitoring, site characterisation, or contamination to water courses. This can include a range of parameters included in the JAGDAG list of potential contaminants. Again, accreditation applies across a range of matrices including:

- Trade effluent
- Landfill leachates
- Ground and surface waters
- Process waters
- Saline waters

Commonly requested parameters include:

- Metals – As, B, Cd, Cu, Cr, Ni, Pb, Zn, Fe, Al, Be,
- Metals – Na, K, Ca, Mg
- Metals – Hg, including speciation
- pH and electrical conductivity
- BOD – biochemical oxygen demand
- COD – chemical oxygen demand
- Anions – Cl, NO<sub>3</sub>, NO<sub>2</sub>, SO<sub>4</sub>, PO<sub>4</sub>
- Ammoniacal nitrogen – free ammonia, ammonium
- Cyanides – Total, Free (easily liberatable), Thiocyanate
- OFG – oils, fats and greases
- Alkalinity – carbonate and bicarbonate
- Hardness
- Solids – total suspended solids, total dissolved solids, total solids
- TOC – total organic carbon
- VOCs – volatile organic compounds
- SVOCs – semivolatile organic compounds
- TPH – GRO, EPH, speciated TPH, BTEX
- PAHs – polyaromatic hydrocarbons
- PCBs – polychlorinated biphenyls
- Pesticides & herbicides – chlorinated, phosphorylated, triazines

DETS provide suitable sample containers, including appropriate preservatives as specified in BS ISO 5667, for the sampling of all water matrices for clients to take their own samples. DETS are also accredited for sampling, including MCERTS accreditation for sampling for discharge to sewer, should this service be required, and a courier service is also available.



## 6 Accreditation

Quality underpins all we do at Derwentside Environmental, and UKAS accreditation is the keystone to this. With the majority of our methods currently accredited, DETS are one of the most comprehensively accredited laboratories in the UK, and we are constantly working on new methods to add to our scope.

UKAS audit our laboratories annually, and also review any new methods submitted for accreditation (either by post or by a site visit), and they audit against ISO 17025, the international standard for testing laboratories. In addition, they will also audit against MCERTs, the Environment Agency's Monitoring Certification Scheme, which sits over and above ISO 17025.

ISO 17025 is the international standard for testing and calibration laboratories, and this covers all aspects of the complex and comprehensive requirements a laboratory must meet to successfully gain accreditation, including:

- A quality manual, detailing all aspects of the organisation and responsible personnel
- Standard Operating Procedures covering all methods and processes
- Staff training and competency checks
- Quality control, including proficiency testing
- Continuous improvement
- Contract review
- Procedures for full traceability and accountability

**MCERTS** is the Environment Agency's Monitoring Certification Scheme, and sits over and above ISO 17025, so a laboratory must be accredited to ISO 17025 for a method before it can apply for MCERTS. The standard places particular emphasis on validation of methods across a range of matrices, in order to prove the method is robust and meaningful with real samples. DETS are accredited for both soils and waters.

### Validation

All new or updated methods must undergo a stringent validation process to prove the method is fit for purpose, and that the precision and bias conform to the MCERTS requirements. This will generally involve running standards and known samples every day in duplicate on at least three matrices for up to 15 consecutive days.

Understandably, this is very time consuming and utilises significant resources in the laboratory, so extending our scope of accreditation is a high cost and must be built into our pricing structure.

See the News tab on our website for recent developments and accreditation changes.





## 7 Quality Control

We all want confidence in the goods and services we use, and trust is essential, whether in the high street, supermarket or business supply chain. For analytical services, there is a means of building trust in the market place by ensuring your laboratory is accredited.

Accreditation by the United Kingdom Accreditation Service (UKAS) is the key to ensuring that consumers, suppliers, and end users of data can have confidence in the quality of goods and in the provision of services throughout the supply chain.

DETS employ 2 full time staff, assisted by 8 trained internal auditors, to continuously update and monitor our system, and with over 80% of our methods accredited, DETS are one of the most comprehensively accredited laboratories in the UK .

The ISO 17025 standard is complex and comprehensive, covering all aspects of quality and service provision. Some examples include:

### **QC monitoring**

Our Quality team of two full time staff, assisted by the laboratory supervisors and analysts (8 are qualified internal auditors) to maintain and update all documentation, to monitor daily QC checks. AQC (Analytical Quality Control) is an essential part of the modern laboratory to check instrument calibration & performance as well as method robustness, and an AQC is run with every batch.

### **Proficiency testing data**

DETS belong to PT schemes such as Aquacheck, Contest, AIMS and BiMEP (an international fuel testing PT scheme) – blind samples are sent monthly to the laboratory and the results we achieve must fall within acceptable limits for UKAS accreditation to be maintained. A summary of recent data is available to clients on request.

### **Uncertainty data**

When methods are validated for accreditation, we calculate the precision and bias, which then provides an average uncertainty value for the method. For MCERTS, these are derived on a matrix basis – clay, sand or loam for soil, and sewage, saline or trade effluent for waters. These uncertainty values are available to clients on request.

### **Contract review**

UKAS place a high level of importance on contract review, ensuring that the communication between the laboratory and client is transparent and easily understood. This involves everything from quotations, bottle supply, turnaround times, detection limits, and reporting formats. DETS consider this to be one of the most important aspects of our business, and significant resources are in place to provide a smooth and helpful service.



## 8 Resources

One management problem encountered by all laboratories is how to deal with the peaks and troughs of daily sample numbers, as this can vary greatly, and yet all samples must be dealt with quickly. Meeting turnaround time is one of our most important KPIs (Key Performance Indicators), and our success in managing over 95% met for 95% of the time is one of our most significant achievements.

It is critical for the laboratory to have the flexibility and capacity to cope with a large number of samples arriving within a short period of time. Meeting turnaround is vital to our clients, and DETS have considered the issues associated with this problem, and a number of safeguards are now in place:

### **Staff cross training**

Many staff are trained in multiple methods/instruments, so if a backlog starts to build in one area, then staff can be redeployed to whichever analysis is suffering. Capacity is monitored on a daily basis, and as soon as an analysis is nearing a critical point, it can be managed accordingly

### **Duplicate instruments**

Most equipment is duplicated, so if one instrument breaks down or requires maintenance, then a back up system will usually be available. An equipment list of major items includes the following:

- 1 x ICPMS
- 3 x ICPOES
- 6 x GCMS liquid injection
- 5 x GCMS headspace
- 5 x GCFID liquid injection
- 4 x GCFID headspace
- 2 x Kone spectrophotometers (for anions)
- 1 x Mercury analyser
- 6 x HPLC systems
- 1 CHNS elemental analyser
- 4 x Ion chromatography systems

### **Shifts/overtime**

Staff are aware of the unpredictable patterns of sample receipt, and accept the need to sometimes work additional hours. This may be using a temporary shift system, staggering existing staff cover to include weekends, or straightforward overtime. Whenever these issues may arise, our staff at DETS are able to cope with the changing work requirements.

### **Cold Storage**

An awareness of the issues surrounding holding times at suitable temperatures has caused DETS to provide four separate cold stores in the laboratories, with a total area of over 3000 sq ft. This ensures sufficient space for large projects to be stored at 4°C both before and after analysis.



## 9 Analytical Methods

Our methods are based on international standards, although some modifications may be implemented. The majority of our methods are UKAS accredited, either to ISO 17025 or MCERTS, but we follow the same validation and QC protocols even if the method is not accredited. Unless there are reasonable numbers of samples for a particular test, it is not economically viable to seek accreditation, as this process is very expensive.

All methods are derived from International Standards & national recognised bodies, including:

- ISO - International Standards Organisation
- BSI - British Standards Institute
- Blue Books Methods for the Examination of Waters and Associated Materials (MEWAM)
- CEN/ASTM/TS
- DEFRA (MAFF - The Analysis of Agricultural Materials)
- EPA
- USEPA
- TRL

Method statements (SOPs) are controlled documents with issue numbers, and are regularly reviewed by our Quality Team. Because of their controlled status, we do not usually issue full documents to our clients, but we do have brief method statements or information sheets which are available upon request.

Each method is allocated a separate method reference code, and listed in our LIMS – these method codes will then appear on each report, therefore allowing traceability and a check on consistency for ongoing projects.

Should a client require more information with respect to an individual method, then our Technical team will be happy to discuss any details.



## 10 Sampling and Sample Integrity (Deviating Samples)

Good sampling protocols are critical to the integrity and meaningfulness of the data provided by laboratories. If samples are not taken in suitable containers, stored incorrectly, and handled inappropriately, then no laboratory can provide reliable data.

UKAS, in compliance with the European Accreditation system, have instructed laboratories to highlight and report any samples which are considered to be deviating (non-conforming). They issued a Policy Statement in 2010, and a section of this document is included below:

- *Upon receipt of each sample, a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)*
- *When the sample is deviating, a competent laboratory shall contact the client for further instructions*
- *When the customer wants the deviating sample to be analysed, a competent laboratory shall include a disclaimer in the report, clearly stating that the sample was deviating and that, as a result, the test results may be invalid*

Deviating (or non-conforming samples) are defined as those which may have been compromised in some way during sampling, transportation, storage or analysis, and which may cause the integrity of the data to be questioned. Examples of deviating samples include:

- No separate volatile container supplied
- Headspace present in volatile container
- No preserved bottles supplied
- Holding time exceeded
- Temperature exceeded
- No sampling date supplied (mandatory for MCERTS)
- AQC failed during run and sample cannot be repeated
- Deviation from method, e.g. limited sample size or matrix

DETS have a container guideline document included with this Capability Statement, or available electronically on request.

Samples should never be stockpiled on site, but always sent to the laboratory on the same day as they are sampled, in coolboxes with frozen icepacks.



## 11 Container Guide

The use of correct sampling containers is crucial for preserving the integrity of the samples and complying with UKAS requirements regarding deviating (or non-conforming samples).

Examples of deviating samples include:

- Headspace in VOC vials or BOD bottles
- Incorrect or no separate containers for volatiles
- Plastic containers used for organic parameters
- No preservatives used for time critical inorganics
- No sampling date supplied
- Inappropriate storage temperature
- Analysis performed outside of holding times

The standards covering this aspect of sampling are ISO 18512 for soils and BS EN ISO 5667 for waters, and include details of containers, temperature conditions and preservatives, where applicable.

### Soil Containers



**PlasticTub**

(TUB1000)  
Inorganics and  
leach tests



**250ml Amber Jar**

(GB 250)  
No headspace  
Organics – EPH, PAHs  
SVOCs, pesticides



**60ml Amber Jar**

(GB60)  
No headspace  
Volatiles, GRO,  
VFAs, alcohols

### Water Containers



**1 Litre Plastic Bottle**

(PB1000)  
Inorganics – metals,  
anions, physicals  
(pH, EC, TSS, TDS etc)



**1 Litre Amber Jar**

(GB1000)  
No headspace  
Organics – EPH, PAHs,  
SVOCs, pesticides



**Amber Vial**

(GV40)  
No headspace  
Volatiles, GRO,  
dissolved methane, alcohols

Samples requiring the following analyses should be taken in separate 150 ml plastic bottles containing the appropriate preservative (supplied by DETS):

**Sulphuric acid**

Sample stability trials underway

COD, Ammoniacal nitrogen, Kjeldahl nitrogen, ferrous iron, TOC

**Sodium hydroxide**

Cyanide, monohydric phenols

**Nitric acid**

Sample stability trials underway

Dissolved metals – samples must be filtered

**Dichromate in nitric acid**

Sample stability trials underway

Mercury

**Alkaline zinc acetate**

Sulphide

Failure to use the correct container could result in the sample being registered as 'deviating' or non-conforming, and a statement on the report will indicate a possible compromise of the integrity of the data.

DETS have a full range of correct sampling containers that can be dispatched within 24 hours of being ordered. For more information and to order your bottles please contact your account manager.



## 12 Sample Storage

Since the implementation of MCERTS, the emphasis on correct sample storage has become increasingly important, and part of the protocol is to ensure the samples are chilled, preferably to below 8°C (as specified in the MCERTS water standard).

DETS assist their clients to manage this issue by providing cool boxes for sample transportation and ice packs (at least 3 per cool box). However, as these are delivered overnight, it is essential for clients to have some means of freezing ice packs, either at their offices or on site. A freezer is preferable to the icebox of a fridge, as the ice packs will stay frozen for much longer. In addition, it is helpful to pre-chill samples if at all possible, and also to fill the cool boxes to ensure minimal headspace, using bubble wrap, newspaper or plastic bags.

Once the samples are received at the laboratory, DETS have four cold stores, amounting to over 3,000 sq ft of floor space (and far more than this of storage space, due to multiple shelving units). The cold stores are monitored by in-liquid thermometers and the logs audited by UKAS.



Soil samples are retained for one month and water samples for two weeks, unless we are instructed otherwise by our clients. Long term storage may incur an additional charge.



### 13 Site Services

In our aim to provide the highest possible level of service, Derwentside Environmental offer a number of site services to provide a more complete solution to our customers. We were one of the first laboratories to gain UKAS accreditation for sampling, and this is now a regulatory requirement for water sampling under MCERTS, with respect to water utilities and wastewater discharges.

#### Services include:

- Gas monitoring parameters, including methane, carbon dioxide, carbon monoxide, oxygen, hydrogen sulphide and nitrogen,
- Screening for VOCs using a PID
- In situ testing for pH, conductivity, temperature and dissolved oxygen
- Redox potential
- Dust monitoring – supply of Frisbee gauges, dust quantification and compositional analysis
- Sampling of soils & gases
- Sampling of trade effluents to sewers
- Sampling of surface waters from ponds, rivers and streams
- Sampling of groundwater from boreholes and trial pits
- Provision of Site Chemist or Technician

Rates can be charged on an hourly or daily basis, and will include travelling time and expenses.

DETS provide suitable sample containers, including appropriate preservatives as specified in BS ISO 5667, for the sampling of all water matrices, and a courier service is also available.

#### Equipment hire

As part of the site services we offer, DETS can provide items of monitoring equipment for hire. These include:

- Gas monitors
- Photo-ionisation detectors (PID)

Hanna HI 9828 Multiprobe meter for:

- Dissolved oxygen
- pH
- Electrical conductivity
- Redox
- Temperature

Rates can be charged on a daily or weekly basis, and we can also supply site chemists or technicians if further assistance is required.





## 14 Reporting

Reports will be emailed either in pdf or Excel formats as soon as the data is completed. However, if you require interim data, then DETS Live! Is a better option – see below. We can also supply data in AGS or Equis format, but please contact us if you require either of these options. Hard copy reports are not supplied unless specifically requested.

### e-Reporting

In addition to conventional reporting formats, Derwentside Environmental have recently introduced direct electronic access to their Laboratory Information Management System (LIMS), which is the large database holding all data and reports. This means all clients can view their data at any time of the day, from any location (as long as there is internet access).

Clients are provided with a log in and password, to ensure all data is confidential and can only be viewed by the designated recipient. Data is presented in a standard Excel spreadsheet format, either as cross tab or csv, and further recognised industry formats such as AGS or Equis are currently in development.

The authorised pdf version of the complete report is also available for downloading, and multiple batch numbers can be integrated into one report. Data is refreshed on an hourly basis, so reports are almost real time. Many clients are now using the system as an archive, and this is particularly useful for routine borehole monitoring, allowing trend analysis to be performed more easily.

Please contact your Account manager for a demonstration of the system.



## 15 Training Services

Derwentside Environmental are well aware of the difficulties faced by many consultants and contractors when procuring the services of laboratories, and then attempting to interpret the data once the report is received. This is a highly technical and complex field, and DETS understand the need to support and inform their clients on all aspects of environmental chemistry.

To assist our clients, DETS frequently run seminars, either at individual client offices, or at a more generic venue, open to all clients. These seminars can take the form of brief events, just concentrating one or two topics of particular interest, or can involve most of the day, with a wide ranging spread of topics to ensure most areas of analysis are covered.

Examples of topics include:

- Sampling best practice – containers, preservatives, temperature issues, holding times, deviating samples and how to avoid them
- Inorganic analysis – a review of metals testing, speciated mercury, sulphur compounds, nitrogen compounds and cyanide compounds
- Asbestos in soil – H & S, sampling, presence/identification, quantification, UKAS requirements, industry update
- Waste – characterisation of solids, leaching tests, WAC, Landfill directive
- Biomethane potential – anaerobic digestion and how biomethane is measured

Organic analysis

- Volatile organic compounds (VOCs) – methods, interpretation
- Total petroleum hydrocarbons (TPH) – composition, methods, interpreting chromatograms
- Polyaromatic hydrocarbons (PAHs) – methods, interpretation, carcinogenicity
- Semi volatile organic compounds (SVOCs) – PCBs, pesticides, full scans

For more information on seminars, please contact Mike Cohen ([mike.cohen@dets.co.uk](mailto:mike.cohen@dets.co.uk)) or Hazel Davidson ([hazel.davidson@dets.co.uk](mailto:hazel.davidson@dets.co.uk))

## United Kingdom Accreditation Service

### ACCREDITATION CERTIFICATE



**TESTING LABORATORY**  
**No. 2139**

### **Derwentside Environmental Testing Services Ltd**

is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005  
*General Requirements for the competence of testing and calibration laboratories.*

This accreditation demonstrates technical competence for a defined scope as detailed in and at the locations specified in the schedule to this certificate, and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated 18 June 2005).

The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued by the United Kingdom Accreditation Service. The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from the UKAS website [www.ukas.org](http://www.ukas.org).

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements. The absence of a schedule on the UKAS website indicates that the accreditation is no longer in force.



*Accreditation Manager, United Kingdom Accreditation Service*

**Initial Accreditation date**  
**06 September 1999**

**This certificate issued on**  
**08 April 2007**

The Department of Trade and Industry (DTI) has entered into a memorandum of understanding with the United Kingdom Accreditation Service (UKAS) through which UKAS is recognised as the national body responsible for assessing and accrediting the competence of organisations in the fields of calibration, testing, inspection and certification of systems, products and persons