











# Analytical and Consultancy Services







**Macaulay Scientific  
Consultancy Limited (MSC),  
offers a range of consultancy  
and analytical services for  
research and commercial  
purposes**



## Analytical and Consultancy Services

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# Analytical and Consultancy Services

Macaulay Scientific Consulting Limited (MSC) is a leading analytical services and environmental consultancy centre offering unparalleled experience in soil and water consultancy, land evaluation and the analysis of a wide range of industrial materials.



## Consultancy

A wide range of research, data and consultancy services are available to public and private sector customers involved in land and environmental management both within the UK and internationally.

Our aim is to provide expert advice and information for land managers, scientists and policy makers, based on a wide range of advanced analytical techniques, laboratory and field studies, computer modelling, and expertise in the understanding of science, government policy and the regulation of industry.

Our team of highly experienced staff are able to provide comprehensive technical expertise and knowledge of a range of environmental issues providing high quality, knowledge based service fulfilling a broad spectrum of industry requirements. We are able to offer services ranging from full scale Environmental Impact Assessments to individual technical studies.

**For further information visit**  
**[www.macaulayscientific.com](http://www.macaulayscientific.com)**





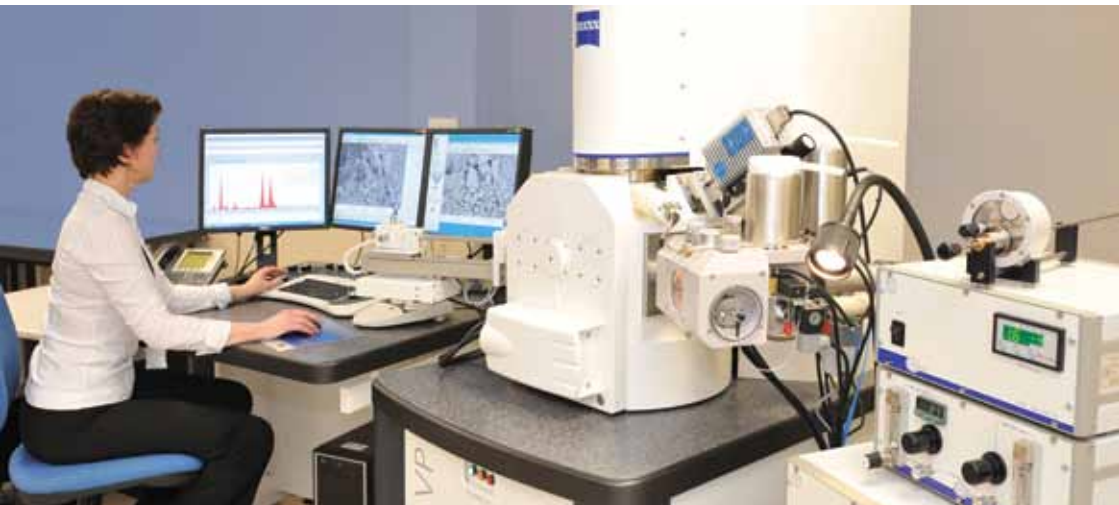
## Analytical Services

With over 80 years of accumulated knowledge dedicated to the study of soils, land use and the environment we are able to offer exceptional multi-disciplinary consultancy and analytical capabilities and the flexibility to tackle a wide range of sample types.

As well as supporting the scientific research of The James Hutton Institute, we provide a comprehensive range of advanced analytical services for the oil and gas, environmental, food sectors and general industry. Facilities are available to undertake a wide range of analyses related to soils, sediments, waters, plants, crude and refined oils, food additives,

waste materials, minerals and industrial chemicals using advanced techniques such as electron microscopy, infrared spectroscopy, mass spectroscopy, x-ray diffraction and gas chromatography.

**For further information visit**  
**[www.macaulayanalytical.com](http://www.macaulayanalytical.com)**



# Contaminated Land & Waste Management

MSC provides research and consultancy services related to the assessment and remediation of contaminated land, on-land waste utilisation and in the assessment of soil health.

We have a proven track record of providing independent and impartial data, consultancy services and applications to a wide range of clients, including government agencies, local authorities and the private sector.

With expert knowledge in soil and site surveys and statistically robust sampling designs we are able to offer:

- Improved understanding of variability across sites
- State of the art analysis – e.g. multi-attribute indicators and fingerprints, molecular techniques
- Soil fingerprint libraries for contaminated and urban soils
- Bespoke risk assessment optional

## Services

- Site investigation, characterisation and speciation of contaminants
- Ecological impact assessment and risk modelling
- Microbiological analysis and characterisation using physiological and molecular methods
- Site-specific strategies for recovery from contamination



# Spatial Planning and GIS

MSC offers expertise and experience in the development, production and implementation of spatial plans and planning tools.

These include renewable energy, woodlands, greenspace, biodiversity, plus the use of participatory techniques for facilitating the development of strategic and development plans.



## Services

- Decision support tools for strategic spatial planning, using Geographic Information Systems
  - Supplementary Planning Guidelines – renewable energy
  - Rule-based models for national plans for renewable energy (e.g. Scotland and Wales), or local authorities (e.g. Aberdeenshire)
  - Accessibility modelling for green and open space
  - Forestry strategies
  - Capacity of landscapes to accommodate change
  - Land capability mapping
- Visioning exercises for public input to the development of strategic or local plans

# Ecology

MSC offers expertise spanning a wide range of ecological disciplines, including population and community ecology, spatial and landscape ecology, animal health and welfare, taxonomic specialisations in many areas of flora and fauna, modelling, data manipulation, GIS and statistical analyses.

The range of skills reflects the complexity and cross cutting nature of modern ecology, enabling us to tackle a broad range of ecology-related research and consultancy projects.

## Services

- Flora and fauna surveying, monitoring and assessment
- Evaluation of land management practice
- Animal behaviour and welfare
- Land Evaluation
- Modelling and data manipulation using GIS

## Decision support tools

- DeerMap and HillDeer
- Hill Grazing Management Model and HillPlan
- Native Woodland Model
- Land Cover of Scotland 1988



MSC provides expertise and experience in a range of consultancy and products relating to renewable energy. This exploits the Institute's unique combination of understanding of the policy and strategic needs for renewable energy, requirements for planning and regulators, and the tools and expertise for assessing specific proposals for renewable energy developments.

## Services

- Strategic and tactical planning for wind energy developments for local authorities
- Site suitability for renewable energy developments
  - Environmental Impact Assessments
  - Visualisations and 3D modelling
  - Shadow flicker, photomontage and wireframe modelling for visual impact assessments
  - Hydrological assessments
  - Peat slide risks
  - Ecological assessments
  - Social impact assessments
- Raising public awareness and public consultations for renewable developments
- Reviewing Environmental Statements for windfarm developers and government
- Modelling and decision support tools
- Maps and environmental data for sites in Scotland

# Laboratory Services – Assured Analytical Excellence

MSC provides a comprehensive range of advanced analytical services for the oil and gas, environmental, food sectors and general industry.

Our extensive state-of-the-art laboratory facilities and our team of highly experienced staff offer a specialist commercial analytical service and an extensive range of analysis options.



## Analytical Solutions: Industry, Manufacturing and Processing

**We provide analysis for industry sectors as diverse as:**

- Food & Drink
- Building and Construction
- Natural Resources
- Metallurgy
- Materials
- Pharmaceutical
- Manufacturing
- Engineering
- Cosmetics



## Analytical Solutions: Oil and Gas Sector

**We provide analytical solutions to enhance oil and gas exploration and production processes from the reservoir to the refinery:**

- Exploration and Reservoir Appraisal
- Production Start-Up/Commissioning Analysis
- Production Control/Enhancement/Compliance Analysis
- Environmental Compliance Analysis
- Pipelines System Integrity/Flow Assurance Analysis
- Decommissioning Analysis



## Analytical Solutions: Environmental Analysis

As a leading environmental research centre, with unparalleled experience in the analysis of soils and water, and land evaluation we provide the following services:

### Soils: Chemical analysis

- pH and electrical conductivity
- available nutrients
- trace and major elemental analysis
- cation exchange capacity
- microbial ecology
- carbon and nitrogen isotope content

### Soil Mineralogy

- qualitative and quantitative analysis of minerals
- visual and chemical analysis
- elemental analysis

### Geological Materials

- quantitative and qualitative mineralogical analysis
- visual analysis
- characterisations of clays
- radiogenic isotope analysis

### Land Evaluation and Survey Site sampling

- Soil maps
- Soils database
- Land classification

### Waters: Chemical Analysis

- pH and chemical oxygen demand
- Major and trace elemental content
- Cations/anions
- Total organic carbon
- Total nitrogen
- <sup>18</sup>O content

### Environmental Contamination/ Waste Assessment Criteria

- Site survey
- Elemental characterisation
- Persistent organic pollutants  
e.g. PAHs, PCB, PDBE
- Hydrocarbons diesel/petroleum, oil spills
- Asbestos
- Chemical profiling

### Soil Physical Analysis

- Particle size distribution
- Particle shape analysis

### Advice on Legislation

- Environment Act (1995)
- SEPA Regulations

## Contact:

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Commercial Manager

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# Water

MSC offers expertise and experience covering all aspects of water and its management including water quality and quantity of surface and ground water, ecology, geomorphology and socio-economic aspects at the local, catchment and national scale within the UK and abroad.

## Services:

- Surveying, monitoring and assessment
- Management review and planning
- Impact assessment
- Modelling and decision support tools
- Training courses and material
- Analysis
- Stakeholder consultation and socio-economic assessment
- Maps and data



MSC provides research and consultancy on soil survey and land evaluation with expertise in the application of soil and environmental data to a wide range of survey, assessment, monitoring and land management issues.

In particular, we can provide soil surveys for site characterisation and Environmental Impact Assessments (EIAs), Land Capability for Agriculture Classification, and interpretation of soil databases for a range of purposes.

## Services

- Soil resource assessment and site characterisation
- Grid surveys for soil carbon, chemistry and trace elements
- Guidance on managing soils for habitat restoration projects
- Land Capability for Agriculture Classification
- Environmental Impact Assessment and soil erosion studies
- Soil database interpretation and development
- Training courses and educational material
- Analysis
- Stakeholder consultation and socio-economic assessment
- Maps and data



# Socio-Economics

Land use has significant consequences for environmental conditions and economic development opportunities in rural areas.

MSC focuses on the physical, environmental and social consequences of land use, and the economics of land-based industries to help achieve sustainable land use for the good of both society and the environment.

## Services:

- Assessment of quality of life, the public good and wealth creation
- Impact of land use on the quality of our environment
- Evaluation of the trade-offs between the environmental, economic and social objectives of land use
- Policy evaluation
- Public attitudes, values and preferences



# Coastal and Marine Management

New legislation provides a focus for coastal and marine management in Scotland and a requirement for innovative research and adaptive management. This will bring new responsibilities for us all as we strive to optimise economic growth whilst enhancing the delivery of ecosystem services.

Our research and consultancy services aim to protect resources and propose mitigation measures against impacts. Much of this is in collaboration with partners across the UK and internationally and we place great emphasis on working closely with communities; harnessing local knowledge, and facilitating local people to become involved in decision making and managing their environment.

## Services:

- Stakeholder engagement
- Landscape and development visualisation
- Site Evaluation
- Policy Implications
- Water quality assessment
- Habitat and species surveys
- Coastal governance
- Coastal planning
- Spatial mapping



# Products and Services – MicroResp™

MicroResp™ is a novel microplate system used to measure respiration using spectrophotometry. It was developed to reduce time, cost, waste and space in the laboratory as well as provide flexibility and ease of use for the researcher.

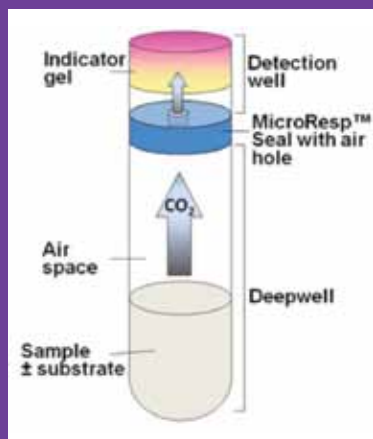
## Proven Applications:

- Soil Health
- Toxicity testing
- Pesticide degradation profiles
- Community Level Physiological Profiles (CLPP)
- Pollution Induced Community Tolerance (PICT)
- Bioremediation evaluation



**The Starter Kit (Order Code 001) contains the essential components you need to get started with MicroResp™.** It has one of each component – MicroResp™ Seal, Filling Device, Clamp, Technical Manual, and includes 4 Deepwell plates, 5 microplates and 1 MicroStrip plate.

Up to 96 samples (soil, sediment, water, etc.) are transferred into a deepwell plate and connected to a detection plate with a two-way rubber seal. The detection plate containing agar with indicator dye and bicarbonate changes colour with a change in pH when CO<sub>2</sub> reacts with bicarbonate. This change is measured on a spectrophotometer plate reader and can detect up to 5% CO<sub>2</sub>.



Code	Product Description
001	Starter Kit
002	MicroResp™ Seal
003	Filling Device
004	Clamp
005	Technical Manual

For further information and ordering visit:  
[www.microresp.com](http://www.microresp.com)

# Products and Services – Maps

A range of soil maps, computer models and other products are available to provide guidance on sustainable soil management.

## Coloured Soil Maps

Soil maps are available at either 1:50,000, or 1:63,560 (“inch to mile”) scale. These are coloured for easy reading of soil types. They are suitable for small scale applications, e.g. farm plans, building work.

## Uncoloured Soil Maps

Uncoloured soil maps are available at either 1:25,000 or 1:50,000 scale. These are suitable for applications where colour would be a distraction. The 1:25,000 scale is suitable for small areas where maximum detail is required.

## Land Capability for Agriculture Maps

These maps cover the principal agricultural areas of Scotland. The sheet lines conform to the Ordnance Survey Landranger series.

## Soil and Land Capability for Agriculture Maps

Small scale soil maps are available at 1:250,000 scale. These cover large areas and are suitable for education, strategic planning or study. Similar maps are available for forestry.

## Soil Series Description Sheets

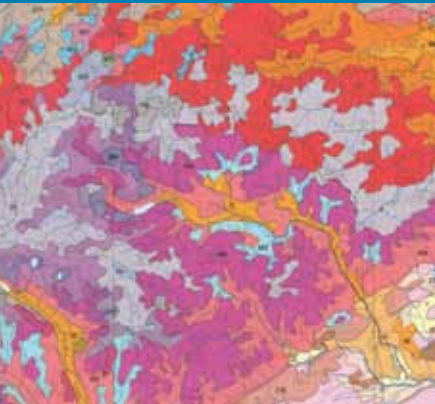
Soil series description sheets provide summaries of the soil properties and related environmental factors for many of the more extensive or locally important soil series shown on the 1:50,000 (coloured), 1:63,360 (coloured) and 1:25,000 (uncoloured) soil maps.



For further information and ordering visit:  
[www.hutton.ac.uk/maps](http://www.hutton.ac.uk/maps)

# Products and Services – Digital Data

We have a number of comprehensive environmental datasets that are available for lease on an annual basis.



## Soils Data

1:250,000 Scale National Soil Data

1:25,000 Scale Soils Data

1 x 1 km Soils Data

5 km Grid Data

10 km Grid Data

## Other Soils Derived Datasets

HOST: The Hydrology of Soil Types

## Climate Data

Climate 2 The Climate Conditions of Scotland Based on Exposure and Accumulated Frost

## Land Cover Data

Land Cover of Scotland 1988 (LCS88)

The first ever national census of land cover in Scotland

## Land Capability Data

Land Capability Classification for Agriculture (LCA)

Land Capability Classification for Forestry (LCF)

Native Woodland Potential

**Please note all dataleases are subject to a delivery fee.**

**Please e-mail [products@hutton.ac.uk](mailto:products@hutton.ac.uk) for details**



# Products and Services – Soil Analysis

Our service lets you decide when and where to sample your soil. We supply you with all you need to take a sample and return it to our laboratories for testing. Your comprehensive report – including liming and fertiliser recommendations if required – will be provided within 10 days.

## **Our Service is:**

- Independent – Quality Assured (ISO 17025)
- Fast – efficient analysis and reporting within 3 to 10 days
- Convenient – you decide when and where to sample and your result reports can be e-mailed and/or posted
- Comprehensive- the kit includes everything required (you just supply the spade!)

Request a kit online by visiting  
[www.macaulaysoils.com/orderform](http://www.macaulaysoils.com/orderform)

Alternatively, telephone 01224 395115  
We will then send you a sampling kit by return post. Follow the instructions in the kit and post your sample(s) back in the pre-paid packaging specifying the analysis you want.

For more information visit  
[www.macaulaysoils.com](http://www.macaulaysoils.com)



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