



# Module Descriptor Form

## Civil and Environmental Engineering

### CL906 - Site Investigation And Risk Assessment

Module Code	CL906	Module Title	Site Investigation And Risk Assessment				
Module Registrar	Sentenac, Dr Phillippe						
Other Staff Involved							
Credit Weighting	10	Semester	1	Elective	No	Academic Level	5
Pre-requisites							
Required for							

### Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
24	8	30	0	60	122

### Educational Aim

*This module aims to:*

To provide an insight into the site investigation and risk assessment of obstructed , derelict and contaminated land, including the complete sequence of a site investigation (desk study, sampling, data collection and detection techniques).

**Syllabus**

*This module will teach the following:*

Site Investigation

Desk study, Previous field data, geology maps and archives

Case study from company ERS

Sampling techniques

sample size, methodology for soil/groundwater/gas sampling

Geotechnical sampling (techniques used, cost, location, organisation)

Cone penetrometer presentation from company FUGRO

Invasive detections techniques for site investigation

Non Invasive detection techniques for site investigation

Eurocodes for SI

Risk Assessment Models (CLEA, REBECCA.CONSIM), Over ARup table example

CLEA software tutorial applied to contaminated site.

Case studies and tutorials from Companies (ERS, Donaldson, Keller)

**Learning Outcomes**

*On Completion of the module, the student is expected to be able to:*

LO: 1	Understand the role of site investigation in geotechnical design, considering in particular urban development for derelict or contaminated land
LO: 2	Possess knowledge of the relevant planning advice and legislation
LO: 3	Undertake a site investigation & identify significant hazards
LO: 4	Carry out a complete sequence of a site investigation on site (Desk study, Site sampling organisation and techniques, sampling strategy, sampling techniques implementation, zoning and monitoring)
LO: 5	Determine Appropriate Geophysical detection technologies & strategies
LO: 6	Make decisions on sampling survey based on technical solutions, risk management, planning & financial constraints
LO: 7	Data modelling and interpretation of current risk assessment model CLEA for sustainable redevelopment of construction sites and contaminated sites

*(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)*

**Assessment of Learning Outcomes - Criteria**

Learning Outcome: 1

	Criteria
1	C1 Engineering Analysis Derelict land Site Visit Exercise (Mount Vernon Glasgow), Hazards and risks. Site assessment and treatment selection. Desk study methods, site reconnaissance, historical maps, previous field data, geology maps and archives. Zoning of the site and sampling strategy. Non intrusive investigation planning. Choice of different techniques by student group leaders.

Learning Outcome: 2

	Criteria
1	C1 Engineering Analysis Derelict land Site Visit Exercise (Mount Vernon Glasgow), Hazards and risks. Site assessment and treatment selection. Desk study methods, site reconnaissance, historical maps, previous field data, geology maps and archives. Zoning of the site and sampling strategy. Non intrusive investigation planning. Choice of different techniques by student group leaders.

Learning Outcome: 3

	Criteria
1	C1 Engineering Analysis Derelict land Site Visit Exercise (Mount Vernon Glasgow), Hazards and risks. Site assessment and treatment selection. Desk study methods, site reconnaissance, historical maps, previous field data, geology maps and archives. Zoning of the site and sampling strategy. Non intrusive investigation planning. Choice of different techniques by student group leaders.

Learning Outcome: 4

	Criteria
1	C1 Engineering Analysis Derelict land Site Visit Exercise (Mount Vernon Glasgow), Hazards and risks. Site assessment and treatment selection. Desk study methods, site reconnaissance, historical maps, previous field data, geology maps and archives. Zoning of the site and sampling strategy. Non intrusive investigation planning. Choice of different techniques by student group leaders.

Learning Outcome: 5

	Criteria
1	C1 Engineering Analysis Derelict land Site Visit Exercise (Mount Vernon Glasgow), Hazards and risks. Site assessment and treatment selection. Desk study methods, site reconnaissance, historical maps, previous field data, geology maps and archives. Zoning of the site and sampling strategy. Non intrusive investigation planning. Choice of different techniques by student group leaders.

Learning Outcome: 6

	Criteria
1	RISK ASSESSMENT MODELS EXPERTISE C1 2 Tutorials practice with CLEA software. 1 of the tutorials is given by an industrial (ERS) on a practical case study. Groups of 5 students are undertaking a live desk study with a real contaminated site.

Learning Outcome: 7

	Criteria
1	RISK ASSESSMENT MODELS EXPERTISE C1 2 Tutorials practice with CLEA software. 1 of the tutorials is given by an industrial (ERS) on a practical case study. Groups of 5 students are undertaking a live desk study with a real contaminated site.

**Assessment Method(s) Including Percentage Breakdown and Duration of Exams**

To Pass the module, students need to gain a summative mark of: 50%

Description	Semester	Start Week	Duration	Weight	Submission Week	Linked Criteria
Site visit exercise + desk study report	1	6		30%	8	
Group poster	1	9		20%	11	
main exam. Closed Book	1		2.00	50%	E	

**Principles of Assessment Feedback**

Feedback and results given 2 weeks after submission of assignments with solutions online.

Tutorials feedback and solutions given during the exercise .

1. Site visit exercise + desk study report (30%) Week 6
  - (a) Desk Study, site reconnaissance of old mining site in Mount Vernon Galsgow , zoning, sampling strategy,
  - (b) Intrusive techniques, Non-intrusive techniques
  - (c) Redevelopment feasibility
2. Group project poster (20%). Week 10.

Site investigation + risk assessment + risk management of contaminated or derelict site
3. Exam (2h, 50%)

**Additional Information****Resit Procedure**

Coursework resit in August consisting of 2 coursework:  
Coursework1: Redo the past exam with correct answers  
Coursework2: Report on a site investigation case study - 2000 words.

**Recommended Reading**

[www.defra.gov.uk](http://www.defra.gov.uk)

[www.environmentagency.gov.uk](http://www.environmentagency.gov.uk)

[www.contaminatedland.co.uk](http://www.contaminatedland.co.uk)

Porteous, A. 2001. Dictionary of Environmental Science and Technology. John Wiley and Sons.

CLR contaminated land reports from the Environment Agency

CLR 7. Department for Environment, Food and Rural Affairs and The Environment Agency, 2002. Assessment of risk to human health from land contamination: An overview of the development of soil guideline values and related research. The Environment Agency.

CLR 8. Department for Environment, Food and Rural Affairs and The Environment Agency, 2002. Potential contaminants for the assessment of land. The Environment Agency.

CLR 9. Department for Environment, Food and Rural Affairs and The Environment Agency, 2002. Contaminants in Soil: Collation of Toxicological data and intake values for humans. The Environment Agency.

CLR 10. Department for Environment, Food and Rural Affairs and The Environment Agency, 2002. The Contaminated Land Exposure Assessment (CLEA) Model: Technical Basis and Algorithms. The Environment Agency.

CIRIA C700CD Construction over abandoned mine workings R Healy and JM Head

ISBN: 0860177009

CIRIA C573 A guide to ground treatment. (J Mitchell and FM Jardine) 2002. ISBN 0860175731

CIRIA C578. Brownfields ? managing the development of previously developed land. A clients guide. (DW Laidler, AJ Bryce, P Wilbourn). 2002. ISBN:0860175782

CIRIA C557 Remedial engineering for closed landfill sites D L Barry, I M Summersgill, R G Gregory et al 2001 ISBN: 086017557X

Additional recommended reading for MSc in Geotechnics:

EC7 ? extracts related to site investigation & BS5930

C.R.I. Clayton, M.C. Matthews and N.E. Simons, see <http://www.geotechnique.info/>

Module Timetable

Week	Semester 1	Semester 2
0		
1		
2		
3		
4		
5		
6		
7		
8	Submission 30%	
9		
10		
11	Submission 20%	
E	Examination 50%	

Date of Last Modification

06-11-2025