

### Introduction

The objective of this brief guide is to inform promoters of civil engineering and building projects of the importance of adequate site investigation for the successful completion of their project. It indicates what a site investigation is likely to comprise, the important role of the promoter, and the risk to the project of undertaking an inappropriate or inadequate site investigation.

### Why Carry Out a Site Investigation?

The design of a structure which is economical and safe to construct, is durable and has low maintenance costs, depends upon an adequate understanding of the nature of the ground. This understanding comes from an appreciation of the distribution of the materials in the ground, and their properties and behaviour under various influences and constraints during the construction and lifetime of the structure. An adequate and properly structured site investigation is therefore an essential part of any civil engineering or building project.

Inadequate site investigation arises from the lack of awareness of the hazards associated with the ground, inadequate focus of finance, insufficient time and a lack of geotechnical (or geoenvironmental) expertise. It is concluded that a site investigation should be undertaken for every site, since without a properly procured, supervised and interpreted site investigation, hazards which lie in the ground beneath the site cannot be known.

It should be noted that the terms site investigation and ground investigation have frequently been misused. A site investigation is the overall process of discovery of information, appraisal of data, assessment and reporting. A ground investigation is the more restrictive phase of specialist intrusive investigation on a site with the associated monitoring, testing and reporting.

### What Comprises a Site Investigation?

The approach adopted for a particular site investigation, its extent and the techniques used will all depend upon the site-specific circumstances, and the experience and judgement of those involved. There is no single way to carry out an investigation, and inevitably different advisors will adopt different approaches for any particular project. However, it is usual for the site investigation to be a phased exercise:-

Phase 1 — Information gathering from available records such as maps and published documents, from studying aerial photographs, from site inspection, from utility company records and from interviews and contacts. An hypothesis about the site is developed, eg about the past and present land use, geology and the surface and groundwater environment.

Phase 2 — A limited intrusive ground investigation to gain an initial appraisal of the site and its suitability for the proposed development. This may comprise boreholes, trial pits, penetration tests, laboratory tests and geophysical methods. A factual report is usually prepared by the ground investigation contractor, and typically the advisor would prepare a report setting out the conclusions and hypotheses, including the identification of problem areas that require additional investigation and consideration. The information obtained is used to design Phase 3.

Phase 3—is the main or detailed intrusive ground investigation, which may itself be staged. This phase of the site investigation will seek to address or clarify particular technical requirements or problem areas and to provide adequate information for design and

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construction.

Usually a factual report on the ground investigation is prepared, and the advisor would prepare an interpretative report, providing information on the soil properties, and giving design and construction guidance. If the advisor is also the designer then his report may be incorporated into the design report.

Phase 4 — Collection of information, and its appraisal, should continue during the construction works, to confirm or otherwise the assumed ground model.

These four phases might run consecutively, or could have long periods between them. Several different organisations might be involved. Phases 2 and 3 are often combined for smaller projects.

Throughout the site investigation the information obtained must be continuously assessed by the advisor. Changes to the proposed investigation, or even the design and construction works themselves, might be needed in the light of unexpected findings.

An effective site investigation depends on a clear specification of the project details by the promoter/client throughout the duration of the project. As the project

progresses from feasibility study, through outline and then detailed design, and as the knowledge of the site improves, the project specification should be refined to accommodate the conditions found and the site constraints. It is now common practice to make available to all parties, including any contractors and subcontractors for the proposed development, the results of all phases of the site investigation, including interpretation.

#### ***HMRC 's 150% CL Tax Relief***

Contaminated land sites can have significant negative impacts on people and the environment. They provide a significant barrier to redevelopment of the land. HMRC offer deduction of 150% of qualifying costs on the clean-up of Contaminated Land to encourage the remediation of these sites.

#### ***How to qualify for deductions***

If land in the United Kingdom is, or has been, acquired by a company for the purposes of a trade carried on by the company and at the time of acquisition all or part of the land is or was in a contaminated state, and the company incurs qualifying capital expenditure in respect to the land.

#### ***Content of any claim***

A claim to HMRC for a land remediation tax credit for relevant land remediation directly undertaken by the company or on its behalf must specify the amount of the tax credit claimed, which must be an amount quantified at the time the claim is made.

#### ***Making a claim***

The election must be made by notice in writing to the HM Revenue and Customs (HMRC). The notice must be given before the end of the period of two years beginning with the end of the company's accounting period to which the election relates.

#### ***Important points***

A company is not entitled to the deduction if the land is in that state wholly or partly as a result of any thing done or omitted to be done at any time by the company or a person with a relevant connection to the company

***"Buy land, they're not making it anymore." Mark Twain***