

## Introduction

The aim is an initial assessment of ground conditions and to review the history and current use of the site. This information is used to create a conceptual ground model (CGM) for geotechnical purposes or a conceptual site model (CSM) for potentially contaminated sites. This allows appropriate management of risks **and can save you money!** This is why we recommend it.

## What is a Desk Study?

**It is the collation and review of information already available about a site.** The desk study is often described as Phase 1 of a site investigation and is carried out at an early stage of site appraisal to guide and inform the remainder of the site investigation and to form the basis of the preliminary risk assessment. Desk studies also generally include a visual inspection of the site and its surrounding area (usually called a walkover survey).

## Why get a Desk Study?

The desk study is often considered the most cost effective element of the investigation with the two primary objectives of all site investigations being:

1. to identify the geotechnical and/or geoenvironmental characteristics of the ground in sufficient detail to enable economic design of the proposed building, construction or remedial works.
2. to minimise the risk of unforeseen ground conditions which might cause increased costs and/or programme delays.

### Appropriate desk studies give many benefits:

- ⇒ provide early recognition of the characteristics of the site and potential geo-hazards;
- ⇒ facilitate appropriate scoping of the later stages of the site investigation;
- ⇒ enable formulation of the preliminary geological ground model;
- ⇒ aid the formulation of efficient designs for subsequent works (e.g.: foundations, tunnels, retaining walls, slope stabilization works, etc.);
- ⇒ provide early warning of possible delays to programme and/or budget implications;
- ⇒ are often required by authorities for planning approval (see PPS23, ODPM 2004, and the Environment Agency's Model Procedures, CLR11, 2004);
- ⇒ are part of current good practice for phased site investigations (see BS5930 & BS10175);
- ⇒ provide information on possible contaminants and anticipated areas of contamination.
- ⇒ assist health and safety and geoenvironmental management
- ⇒ are an essential tool for risk assessment and risk management.

## What about potentially contaminated sites?

Investigation of potentially contaminated sites, have little value without a desk study because:

- ⇒ the exploratory holes may be located in the wrong positions
- ⇒ the contaminants analysed are likely to be inappropriate
- ⇒ it would be impossible to comply with regulatory requirements for a risk based evaluation of the site.

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## What Does a Desk Study Cover?

A desk study examines existing information about a site from a wide variety of sources. The objective is to make an initial assessment of possible ground conditions and to review the past history and current use of the site. This information is used to create an initial conceptual ground model (CGM - geotechnical) or a conceptual site model (CSM) for potentially contaminated sites. Conceptual Site Modelling identifies pollutant linkage for the site and its environmental setting (i.e. Source-pathway-receptor models). The desk study and corresponding CSM is an essential part of the information required by the Environment Agency whenever they are consulted during the planning process.

Without a desk study the site investigation may be little more than a random search for data, so the usefulness of the investigation may be jeopardised if the desk study is omitted.

It is essential in the assessment of a site's saleability or viability that these due diligence audits are done. Environmental liabilities associated with ownership of a site can often run to significant sums, and may represent significant risk. Doing due diligence allows a full determination of the site's value and liabilities to be made.

Typically the main categories of information considered are:

• Review of information provided by the owner or vendor of the site.	⇒ Previous site investigation reports, drawings and information about current and past uses and site services (buried and overhead). This information can be used to adjust the requirements for the current investigation.
• Past history of the site.	⇒ Examined by reference to historical maps and aerial photographs, local historical records, environmental disclosure reports and anecdotal information. This knowledge can then be used to assess the potential contamination or geotechnical problems which may have been caused by, for example, particular industrial processes, mining or landfill.
• Nature of the soils, the bedrock geology and groundwater conditions.	⇒ Investigated by reference to geological and hydrogeological maps and publications together with existing borehole data on or near the site. This initial information may provide an indication of particular ground condition hazards associated with certain strata, for example past mining of Coal Measures rocks, dene holes and dissolution features in Chalk, or 'gulls' and cambering in a variety of strata.
• Consultation with regulators and authorities such as the Environment Agency .	⇒ To gain information on factors such as flooding potential or past underground mining. Service providers are consulted for details of public utilities on the site to avoid damage or danger in the course of subsequent investigation.

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

### What Comprises a Walk-Over Survey?

**A Walk-Over Survey** is a methodical examination of the site and its surroundings. It is a basic site survey that highlights potential issues or constraints to a development. It compliments the desk study and typically provides information on:

**Topography:** indications of slope instability, spoil heaps or signs of ground subsidence resulting from mining.

**Geology:** exposures of soils and rocks which can be examined and sampled.

**Surface water & groundwater:** signs of flooding; springs; waterlogging.

**Vegetation:** signs of vegetation die-back or restricted vegetation as a result of contamination of the ground; presence of invasive species such as Japanese Knotweed; trees which may cause shrinkage and swelling of clay soils.

**Ecology:** indicators of protected species, newts, badgers, bats, nesting birds.

**Contamination:** indications of spills, disturbed ground, areas of fill or spoil heaps, old fuel or oil tanks.

**Structures:** settlement of existing structures or the use of asbestos; indicators of archaeological value.

**Local Knowledge:** anecdotal information on past uses of the site or past problems in the area.

**Access & Services:** information such as access for site equipment and location of buried or overhead services.

The walk-over survey is an integral and important part of the site investigation process which should always be carried out. Used in conjunction with a good desk study (Digest 318), it provides valuable information which cannot be obtained in any other way. A desk study report would be expected to incorporate the results of the walk-over survey and to include reference to, or copies of, all the records and information obtained. The format of contaminated land desk studies usually follows guidance in BS10175 and the Environment Agency's requirements (EA, 2005).

### What is the Cost of a Desk Study?

Desk study reports, or a linked document, should include recommendations for further action. Whenever further site investigation is envisaged these recommendations should include the requirements for the next phase of the investigation.

A vital part of any desk study is the interpretation and evaluation of the data by relevant ground specialists and preparation of appropriate preliminary ground model(s):

The budget required will depend in part on the location, size and complexity of the site, but is mainly determined by the extent of document searches required. It is not possible to guarantee that all potential hazards will be identified, so the budget should reflect the level of confidence required by, or risk acceptable to, the Client. Typical amounts spent on them are about £700 - £1000.

At the desk study stage the CGM/CSM may be far from complete. The CGM/CSM should be developed progressively as more information is obtained during subsequent stages of investigation and the findings should be presented in the report.

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## Who should you instruct to carry out the Desk Study?

**Shift Soil** is principally a **remediator focussing on clean-up** (Phase III) and as we like to say, “we would not like to set the exam, take the test and then mark it ourselves.” A desk study must be undertaken and evaluated by suitably experienced geotechnical and/or geoenvironmental specialists. It is important for the geotechnical/geoenvironmental specialists to have local knowledge of the region’s geology or else significant geohazards may be overlooked. The nature of the project determines who is appropriate but Shift Soil is skilled at managing the site investigation process and will work with clients to develop a suitable scope for the desk study.

Nature of Project	Specialists Required
• Most development schemes, including buildings and civil	⇒ Geotechnical and Geoenvironmental
• Contamination remediation	⇒ Geoenvironmental only, provided that the remediation works will NOT affect the stability of the ground

The Client is responsible for ensuring that any pre-existing information which is held about the site is passed to his (or her) advisors for consideration and the results of the desk study are disseminated to all interested parties within the development team (i.e.: other consultants and contractors).

### 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

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