



# Guidance on Contaminated Land

Assessment work  
for submission  
to Norfolk local  
authorities

Guidance  
notes for  
consultants  
on preparing  
submissions  
to the Local  
Planning  
Authority

**Norfolk Environment  
Protection Group**

## Contaminated land

# Guidance notes for consultants on preparing submissions to the Local Planning Authority

### Introduction and background

This leaflet is for consultants appointed to carry out a site investigation for a third party for submission to the Local Planning Authority (LPA) as part of a planning application. It highlights the key parts of the assessment process and the requirements of the LPA.

### What is required?

The National Planning Policy Framework (NPPF) states that a development site must be suitable for its proposed use (NPPF paragraph 121). Planning applications for brownfield sites, previously used land and applications where the proposed use is more sensitive than the existing should be accompanied by a desk study as a minimum. In some cases planning permission will be granted with a condition requiring an assessment of the ground conditions prior to the commencement of development. For a scheme to fulfil the requirements of the LPA and assess the condition of a site, it must be factual, interpretative and appropriate for the site. The investigation should provide as much detail as possible about the site and the surrounding area.

The key requirements of this process are given in BS10175:2011 + A1:2013 Investigation of Potentially Contaminated Sites - Code of Practice. This process is briefly outlined in this leaflet and the key elements include:

- A desk study.
- A detailed site investigation.
- Remediation.
- Post remediation verification testing and report.

In some cases the full assessment may not be required although under such circumstances justification will need to be provided to the LPA.

This document sets out the basic requirements for each stage with some general 'watch points' of things that will or won't be accepted.



## The desk study

A desk study should be carried out in line with best practice at the time of submitting the report. Information on producing desk studies is given in:

- BS10175: 2011+A1: 2013 'Investigation of Potentially Contaminated Sites – Code of Practice.
- CLR 11 'Model Procedures for the Management of Contaminated Land'.
- CIRIA C552 'Contaminated Land Risk Assessment a Guide to Good Practice'.
- Environment Agency/NHBC R&D 66 Guidance for the safe development of housing on land affected by contamination.

An example of some of the information that is expected to be in a desk study are:

- Details of the past, present and proposed land uses, from documented sources, historical mapping, aerial photos and photographs of the site from the ground together with any anecdotal information.
- Details of contaminative, or potentially contaminative, operations that have been carried out on the site or close to the site.
- Details of any mineral extraction and land filling that have or may have taken place on the site or close to the site.
- Environmental setting - geology, hydrogeology, hydrology, environmentally sensitive areas, pollution incidents etc.
- Details of services on the site.
- Results of a detailed site walkover survey, including an appropriately annotated plan of the site and conceptual site model.

All of this should be included in a factual and interpretative report that considers the risk on the proposed future use.

## Conceptual site model

Information on the site and surrounding area must be collated and interpreted in a Conceptual Site Model (CSM). This should include the following components:

- A list of likely contaminants.
- Hazard map showing the locations of past activities and future receptors.
- Schematic cross sectional plan to show the relative locations of potential sources and receptors.
- Identification of possible pollutant linkages based on the source – pathway – receptor principle.

A preliminary risk assessment should be included in the desk study report. This will enable the objectives of the site investigation to be identified.

### Watch points:

- A commercial home buyer's environmental report is not a desk study.
- Copies of all of the relevant information must be in the desk study report.

- The walkover survey should be clearly documented. It should include clear colour site photographs and a plan detailing where the photographs were taken.
- An annotated plan showing the locations of key features on the site should also be included.
- 'Absences' should also be noted (eg. 'no above ground fuel tanks were noted').
- Any proposed site investigation should be presented in detail, including proposed sample locations on a plan with reasons behind choosing the locations.

If further pollution linkages are identified at a later stage (eg. during development) the site assessment and investigation process may need to be repeated to consider these.

## The site investigation

A site investigation should be carried out in line with best practice. A number of publications give details of how to carry out a site investigation (see references section).

An example of some of the factual information expected in a site investigation report are:

- Details of methods of intrusive investigation, the number of sampling points, their locations including a scale plan.
- Findings of the site work. For example details of the ground conditions, location and depth of the samples taken, monitoring carried out, equipment used and the calibration details.
- Details of the laboratory used, the contaminants analysed and the laboratories accreditation (we would also encourage the use of MCERTS accredited laboratories).
- A summary table of laboratory results as well as laboratory reporting sheets.
- Borehole/trial pit logs, etc. produced in accordance with BS 5930 by an experienced person.
- For ground gas monitoring include details of the gas flow rate, gas concentration, atmospheric pressure and trend, together with details of the monitoring well construction;
- Details of any significant findings (eg. unexpected fuel tanks).
- Where a risk assessment (either generic or site specific) is carried out, the analysis must be appropriate. For example 'total' PAH or 'total' petroleum hydrocarbon results are not acceptable. The use of inappropriate parameters may result in the report being rejected;
- The limit of detection used by the laboratory should be appropriate to the risk assessment.
- Laboratory analysis should include Soil Organic Matter to enable the appropriate assessment against the relevant guideline values.

The factual information should be collated and interpreted with reference to the conceptual site model. The CSM and potential pollutant linkages may need to be amended as part of the risk assessment process.

## Watch points:

- Statistics should be used where appropriate. Guidance has been produced by CIEH/CL: AIRE on this subject and a statistics calculator is available to download. You should ensure that the sampling strategy and the number of samples are appropriate for the statistical methodologies to be used.
- In line with information from the Department of Communities and Local Government (DCLG) LPAs in Norfolk will accept the use of the Category 4 Screening Levels (C4SLs). It must be stressed that the parameters used to derive the C4SLs must reflect the conditions on the site. If this is not the case the values will not be accepted. Where 'in-house' values are used details of how these were produced are required. The values must have been produced by a suitably qualified person. Generic Assessment Criteria (GACs), such as Soil Guideline Values, are acceptable for an initial screening process. They must be based on the latest appropriate technical guidance at the time of submission to the LPA. The Suitable Four Use Levels (S4ULs) are also accepted provided the basis for the derivation of the figures is appropriate to the site condition.
- The LPA will not accept the use of withdrawn assessment criteria values, for example the withdrawn CLEA or ICRCL values.
- Where a DQRA is undertaken all input model parameters must be provided and referenced. Details of the reason for the selecting these parameters is also required.
- Where software is altered to suit UK conditions it must be carried out by a competent person.
- Where a risk assessment for ground gas is required it must be carried out in accordance with best practice.
- For controlled water risk assessments the EA's preferred tool is the Remedial Targets Methodology. If you want to use another model please consult the LPA and the Environment Agency stating the reason why the EA's preferred model is not appropriate. The Environment Agency will be able to advise you further on the suitability of your proposed model.



## Remediation

The proposed remediation design must be submitted to the LPA as a remediation method statement (RMS) for written approval before the work begins and must cover those areas of contamination that require attention.

The RMS should, as a minimum:

- Refer to the findings of the investigation and conceptual model.
- Be sufficiently detailed to allow it to be followed by site operatives, with no further documentation.
- Detail who is responsible for verification of each component.
- Detail how remediation will be verified.
- Cover all pollutant linkages. Separate reports for human health, ground gas and groundwater are not acceptable.
- Cover the whole site.

### Watch points:

- Give details of the removal and correct disposal of contaminated material from the site.
- Give details of the imported soils. Testing rates and test suites depend on the soil source.
- Imported soils should be sampled once it has been laid on the site to support the analysis provided by the supplier.
- Ensure that test records from the supplier apply to the soil that will be used on site.

## Verification/validation

A verification or validation report is required when the remediation is complete to prove its effectiveness. Its content will have been agreed in advance as part of the RMS (above).

Your verification/validation report should include:

- The site status at completion of the work.
- Details of any variation to the RMS details of who they were agreed with and why they were required.
- Plans, as built drawings and photographs demonstrating the work carried out.
- Laboratory test results with appropriate interpretation and analysis of the results.
- Key items of correspondence, meeting or site visit notes.

On receipt of a successful verification report, the Environmental Health Department will consider discharge of the condition with the LPA. If the report shows the remediation has not worked further work will be required. It is the developer's responsibility to ensure that the site is suitable for its actual use.

The information contained within this leaflet should not be considered as a definitive guide to contaminated land investigation and does not aim to provide a detailed statement of the law or constitute professional advice.

## Submitting the reports

All reports should be submitted to the LPA and not directly to the Environmental Health department. The LPA will need to log receipt of the report and include it on the planning file. If the report is being sent in to discharge a planning condition sending the report to the Environmental Health department may slow down the decision making process.

## Useful references

- BS 5930: 1999+A2:2010 - Code of Practice for Site Investigations (BSI).
- BS 8485: 2007 - Code of practice for the characterization and remediation from ground gas in affected developments (BSI).
- BS 10175: 2011+A1:2013 - Investigation of Contaminated land - Code of Practice (BSI).
- C552 2001 - Contaminated Land Risk Assessment a Guide to Good Practice ([www.ciria.org](http://www.ciria.org)).
- C665 2007 - Assessing risks posed by hazardous ground gases to buildings (revised) ([www.ciria.org](http://www.ciria.org)).
- CLR11 - Model Procedures for the Management of Land Contamination.
- DoE Industry Profiles - For a number of the main industrial land uses that may cause land contamination.
- Guidance on comparing soil contamination data with a critical concentration (CIEH/CL: AIRE May 2008).
- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (NHBC/RSK Group PLC, 2007).
- Guidance on Requirements for Land Contamination Reports (EA, July 2005).
- R&D 66 - Guidance for the safe development of housing on land affected by contamination. (EA/NHBC/CIEH, 2008).
- Remedial targets methodology: hydrogeological risk assessment for land contamination (EA, 2006).
- SR2 - Human health toxicological assessment of contaminants in soil: Science Report Final SC050021/SR2 [replaces CLR9] (EA, 2009).
- SR3 - Updated technical background to the CLEA model: Science Report Final SC050021/SR3 [replaces CLR10] (EA, 2009).

This publication has been produced and is endorsed by these local authorities - under the joint Local Authorities working group NEPG (Norfolk Environmental Protection Group)

