



# Land contamination investigations

Updated **January 2019**

Borough Council of  
**King's Lynn &  
West Norfolk**



## Introduction and background

You have been asked to carry out a contaminated land site investigation as part of a planning application. This leaflet highlights the key parts of the assessment process and explains what you will need to submit to the Local Planning Authority (LPA). You can find technical guidance in a separate document<sup>1</sup>.

## What is required?

The National Planning Policy Framework (NPPF) states that a development site must be suitable for its proposed use (NPPF paragraph 178). Planning applications for brownfield sites, previously used land and applications where the proposed use is more sensitive than the existing use should be accompanied by a desk study as a minimum. In some cases planning permission will be granted with a condition requiring further assessment prior to the commencement of development.

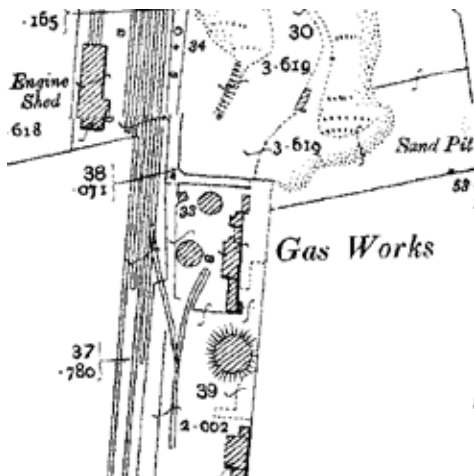
The investigation and assessment should be carried out in line with best practice at the time of submitting the report. NPPF requires that assessment of a site should include 'adequate site investigation information, prepared by a competent person'. This process is briefly outlined in this leaflet and the key elements include:

- Phase 1 Desk study, screening assessment, preliminary risk assessment;
- Phase 2 Detailed site investigation and risk assessment;
- Phase 3 Remediation;
- Phase 4 Post remediation verification testing and report.

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

## Phase 1 - The desk study and preliminary risk assessment

On some small developments a short screening assessment may be accepted but you will need to discuss this with the Contaminated Land Officer to see check if this is acceptable. In most cases a desk study and preliminary risk assessment report are required.



## Desk Study

Information on the site and surrounding area must be collated and interpreted in a desk study report. Some of the information that is expected to be in a desk study is:

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

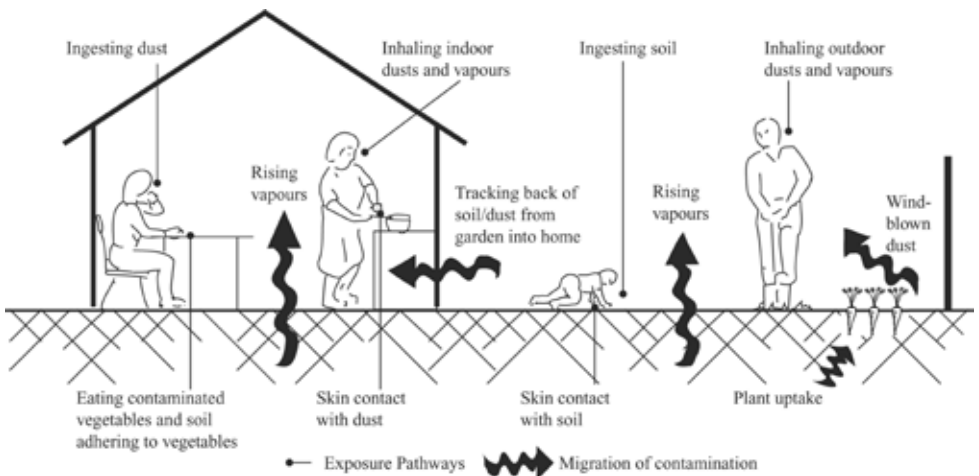
of the relevant information must be in the desk study report or links provided to web sources;

- Details of any previous reports or remediation works.

## Conceptual site model

All of the desk study information should be included in a factual and interpretative report that considers the risk to the proposed future use. Information must be 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 and potential exposure pathways;
- Identification of possible pollutant linkages based on the source – pathway – receptor principle and a preliminary risk assessment.



An illustration of potential human exposure pathways to contamination (from R&D PUBLICATION CLR 10, Environment Agency 2002)



### Phase 1 watch points:

- The desk study report and conceptual site model must be sufficient to explain why further investigation is or is not required.
- A commercial home buyer's environmental report is not a desk study.
- 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 is identified at a later stage, for example during site clearance or groundworks, the site assessment and investigation process may need to be repeated to consider this.

## Phase 2 - The site investigation

A number of publications give details of how to carry out a site investigation (see technical guidance document). Some of the factual information expected in a site investigation report includes:

- Sampling and analysis strategy. 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. Borehole and trial pit logs and description of ground conditions;
- Details of in situ testing and the laboratory used for off-site analysis, the contaminants analysed and laboratories' accreditation (We would also encourage the use of MCERTS accredited methods);



- A summary table of laboratory results as well as laboratory reporting sheets;
- For water and ground gas monitoring include details of the monitoring well construction and full details of monitoring visits;
- Details of any significant findings or visual observations (e.g. soil staining or unexpected fuel tanks).

The factual information should be collated and the results interpreted with reference to the conceptual site model (CSM). The site investigation report should set out what exposure pathways may be active, justification for the risk assessment model used and the nature of any risks from contamination. The report should set out if further work is required and make recommendations for remediation if necessary.

#### Phase 2 Watch points:

- Where generic assessment criteria or 'in-house' screening values are used for interpretation of laboratory analysis, we will require an explanation of how these were produced. The values must have been produced by a suitably qualified person.
- The Environment Agency may have further requirements re controlled waters.

#### Phase 3 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 and set out the remediation methods, timescale and

- remediation target criteria;
- Cover all pollutant linkages, including those affecting human health, ground gas and groundwater;
- Cover the whole site, be sufficiently detailed to allow it to be followed by site operatives and include site management procedures;
- Include contingency measures for unexpected contamination;
- Details of how remediation will be verified. Include details of who is responsible for verification of each component and how verification will be reported.

#### Phase 3 Watch points:

- Obtain and keep details of the removal and correct disposal of contaminated material from the site.
- Obtain details of the imported soils. Ensure that test records from the supplier apply to the soil physically intended for importation.
- Imported soil should be sampled once it has been laid on the site to support the analysis provided by the supplier.



## Phase 4 - Verification and Validation

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

Your verification/validation report should include:

- Evidence that all of the agreed remediation actions are complete and details of who carried out the work;
- Details of any changes made to the RMS and why they were required;
- Verification data including in situ testing and laboratory test results with appropriate interpretation and analysis of the results;
- Plans, as built drawings and photographs demonstrating the work carried out;
- Key items of correspondence, meeting or site visit notes. Waste transfer notes and certificates for topsoil;
- Details of any ongoing verification or long term management;
- Confirmation that remediation objectives have been met and the site's status at completion of the work.



## Submitting the Reports

All reports should be submitted to the LPA (and not directly to the Environmental Health department.) This will ensure that the report can be considered and conditions on planning consent can be discharged.

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.

## Useful References

1. Technical Guidance - Development on Land Affected by Contamination (YALPAG, 2019)
2. Verification Requirements for Cover Systems (YALPAG, 2017)
3. Verification Requirements for Gas Protection Systems (YALPAG, 2016)
4. BS 10175:2011+A2:2017- Investigation of Contaminated land - Code of Practice (BSI, 2017)
5. CLR11 - Model Procedures for the Management of Land Contamination. (Environment Agency, 2004)
6. DoE Industry Profiles - For a number of the main industrial land uses that may cause land contamination (Department of Environment, 1995)
7. Planning Practise Guidance [www.gov.uk/guidance/land-affected-by-contamination](http://www.gov.uk/guidance/land-affected-by-contamination)
8. R&D 66 - Guidance for the safe development of housing on land affected by contamination. (EA/NHBC/CIEH, 2008)
9. A guide to small brownfield sites and land contamination - C773 (CIRIA, 2018)

Borough Council of  
**King's Lynn &  
West Norfolk**



[www.west-norfolk.gov.uk](http://www.west-norfolk.gov.uk)

**Environmental Health and Housing**

Borough Council of King's Lynn & West Norfolk,  
King's Court, Chapel Street, King's Lynn, Norfolk  
PE30 1EX 01553 616200