

DEVELOPMENT ON POTENTIALLY CONTAMINATED LAND



Introduction

Local Planning Authorities are receiving an increasing number of planning applications for developments on previously used, or brownfield, sites where the potential for land contamination exists. This leaflet is designed to assist developers, agents and consultants deal with the planning issues associated with re-development of such sites. It is not intended to provide comprehensive guidance to dealing with all contaminated land issues and consideration should be given to the references enclosed.

Land may be affected by contamination as a result of historical land use, principally from industrial processes, waste disposal and accidental spillages. If land contamination is not dealt with adequately it can pose risks to human health, the environment and sustainable economic development.

Government guidance recognises land contamination as a material planning consideration and that the development phase is the most cost-effective time to deal with the problem and it is the developer's responsibility to ensure that the development is safe and suitable for its intended use. Planning Approvals given to sensitive developments on brownfield sites commonly have conditions attached requiring an assessment of land contamination. It is the Local Planning Authority's (LPA) duty to ensure that the developer undertakes this assessment and implements any remedial requirements in a responsible and effective manner. The Environment Agency and local Environmental Health Department will act as consultees regarding risks to controlled waters and human health respectively.

Failure to appropriately address risks from land affected by contamination at the time of development may result in later action being taken under Part IIA of the Environmental Protection Act 1990. All Local Authorities have a duty under this legislation to identify contaminated sites that pose a risk to health or the environment. Where such risks are identified the Local Authority has a duty to either bring about voluntary clean-up of the site or enforce the cleanup through service of notices and, possibly, prosecution.

The Building Regulations 2000 (as amended) give Building Control Surveyors the authority to address contamination and land gas issues within the curtilage of the property. The developer must demonstrate when requesting Building Control approval that hazards from contaminants or elevated ground gases have been properly assessed and measures have been put in place to address all identified risks.

In addition to the above legislation developers will also need to consider the welfare of construction workers operating in potentially contaminated sites and the management of potentially contaminated waste spoil.

It is important that confidence can be assigned to site assessments and remediation schemes. A documented assessment of land contamination and all actions taken will assist regulators and ensure that any future enquiries regarding the site can be answered effectively. This will maintain public confidence when redeveloped brownfield sites are marketed.

Investigation and Remediation

All works must be undertaken by a suitable person who can demonstrate that they possess the knowledge, skills and experience necessary to satisfy all parties.

A phased investigation allows the results of each stage to be scrutinised and used to devise the next phase of work. The developer is encouraged to submit each phase to the LPA at the earliest opportunity for approval. This may prevent avoidable delays and may indicate that full intrusive investigation and quantitative risk assessment is not required, thus avoiding unnecessary works and costs.

Where significant contamination issues are anticipated on a development developers are encouraged to undertake pre-application consultation with the Environment Agency and/or the Environmental Services department.

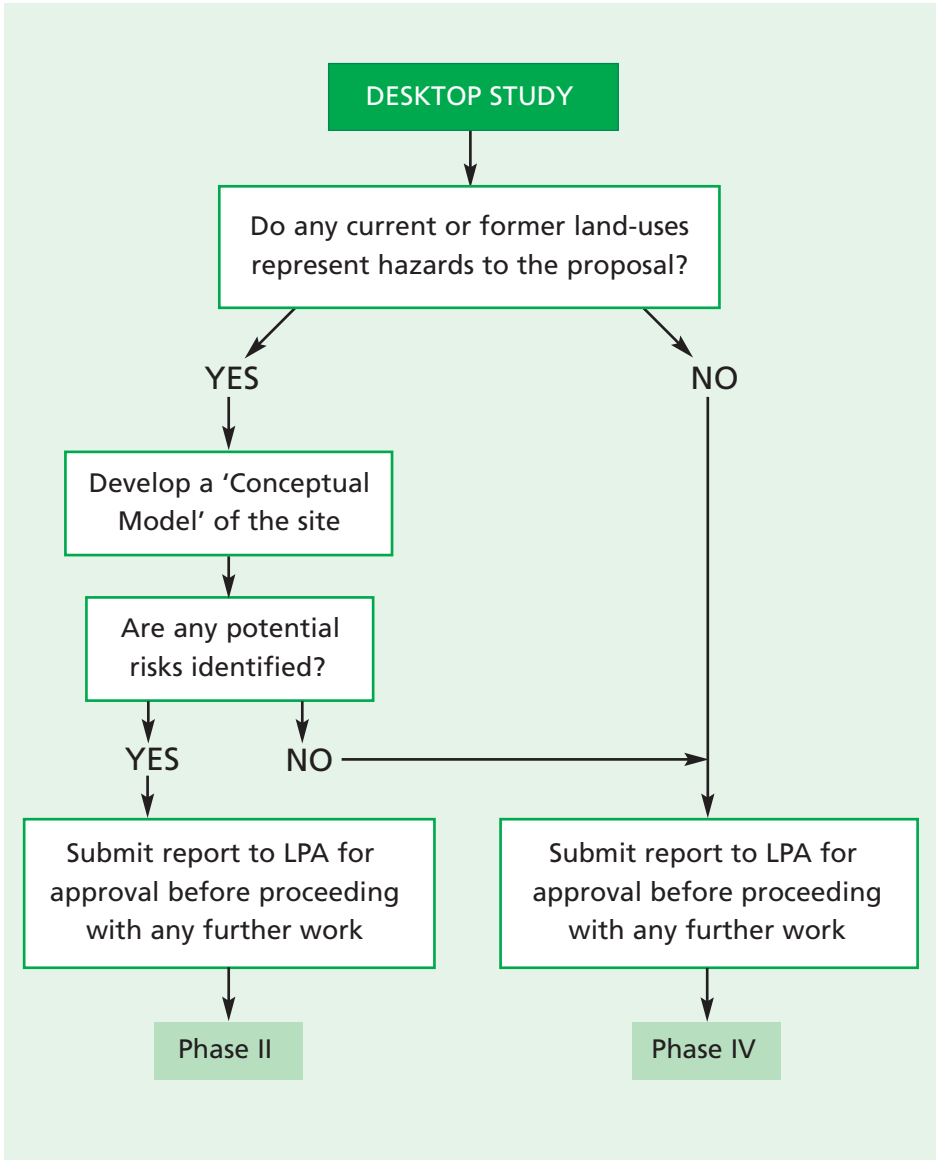
Submission of a desk-study or other supporting information with the application may assist the decision making process.

The process to assess and manage ground conditions can be divided into four key steps (or phases), each step is outlined in the following pages with a procedural flowchart summarising the key elements and decision points within each stage.

Desktop Study - Phase I Assessment

Desktop study, site walkover and qualitative risk assessment

A desktop study is used to identify the potential risks that may affect a development and must recognise the influence of surrounding land and receptors.



It is strongly recommended that a Desktop Study Report is submitted as a minimum with your planning application should the land be suspected of being contaminated and/or if the proposed land use is considered sensitive to contamination.

Land uses considered sensitive to contamination include:

- Residential
- Schools
- Nurseries
- allotments

As a minimum the Desktop Study Report should include:

- A walkover survey including photographs (date stamped) - see checklist
- Location and site plan
- Extracts and/or analysis of current and historical maps identifying potential contaminating features
- Description of ground conditions: hydrology, geology, soil classifications
- Details of any sensitive receptors such as controlled waters, water abstractions, sites of archaeological or ecological interest
- Details of services on site
- Details of former industrial/commercial uses such as processes and their locations, nature of raw materials, products and wastes
- Any existing documented records relating to the site's condition, including previous site investigation reports and any details obtained from the LA Planning Department archives

Land contamination is not exclusively associated with major industrial processes or waste disposal. Careful consideration must be given to a site's potential to be contaminated. Naturally occurring substances, informal uses and minor ancillary activities may all impact on soil quality.

Conceptual Model

Where potential contaminants might exist the potential risk needs to be identified by means of a 'conceptual model'. This should identify all the likely 'source pathway receptor' routes applicable to the proposal, also any potential pollutant linkages and their level of significance. It should list all unknowns and assumptions which have been made and which should then act as a guide for the sampling strategy in the site investigation.

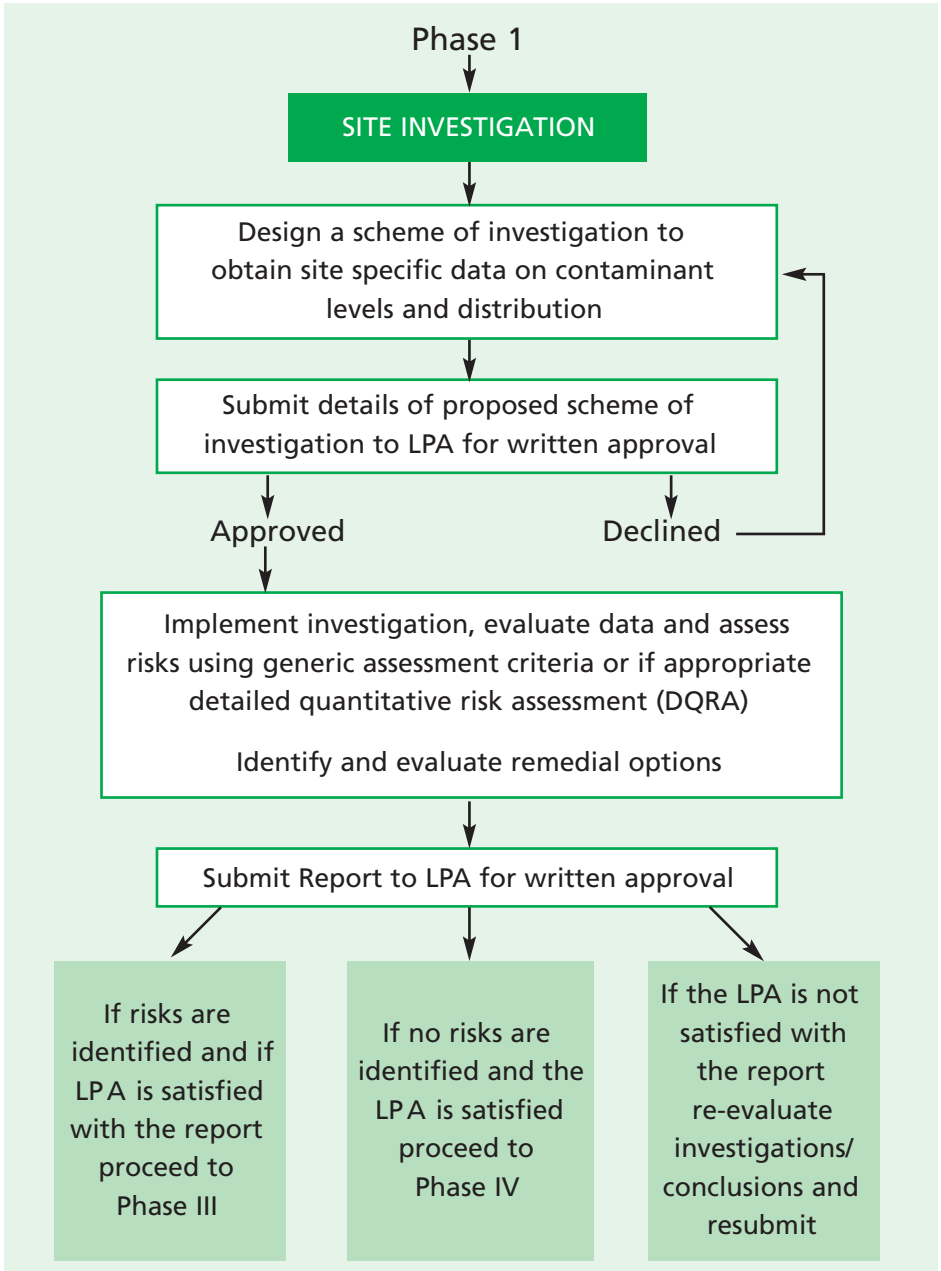
Required Output

Finally the report should conclude what the likely risks are, if any, and recommend what further work is be required to validate or quantify these risks.

The report should be submitted to the LPA prior to any further site works proceeding to ensure they are satisfied with the content, conclusions and recommendations made.

Site Investigation - Phase II Assessment

Detailed investigation and risk assessment



The site investigation assessment will confirm site specific conditions, such as geology and hydrogeology, which were identified during the desktop study.

The investigation should obtain representative soil, soil gas and water samples where appropriate, for analysis, the results of which should feed into the risk assessment process.

The key requirements of a site investigation report include:

- Aims and objectives
- Reference to the desktop study and conceptual model
- Consideration of proposed development
- Site plan prior to development
- Plan of proposed site layout following development
- Details of any site sampling strategy and justification for methodology and linked back to the Phase I preliminary conceptual model
- Plans marking the location of sample points
- Details of laboratory analysis, including methodology, results, accreditation and quality control procedures adhered to
- Methodology by which the samples are collected, stored and preserved
- Information/logs collated from intrusive trial pits, borehole logs, etc.
- Interpretation of the site conditions and sampling results
- Further details of any monitoring proposed
- A discussion of the sampling results in relation to the site conditions
- Comparison of sample results to acceptable generic risk screening values or site specific criteria
- Suitable Risk Assessment, including updated conceptual model
- Discussion, conclusions and recommendations for further work

Land Gases

Land gases, in particular methane and carbon dioxide, are an important consideration and monitoring must be carried out in accordance with best practice, i.e. CIRIA C665 (2007). Levels can vary greatly, affected by atmospheric pressure, temperature, ground water levels etc. Where gas monitoring is required results should include monitoring under worst case situations, i.e. during periods of low atmospheric pressure. If the desktop study identifies a potential land gas source, 3-12 months of monitoring data may be needed to confidently characterise the gas regime. Therefore, it is essential that sufficient time is made available to monitor ground gases properly and the LPA is consulted at the earliest opportunity.

Laboratory Analysis

Test methods should be MCERTS accredited and reported results must indicate the methods used with an estimate of bias and precision.

Sampling Strategy

The site investigation report should always include a written sampling strategy. It should be linked back to the uncertainties identified in the preliminary conceptual model of the desktop study.

It should include:

- Number of sampling points, with justification.
- Sampling depths at each location to reflect receptors of concern and sources of potential contamination, e.g. underground storage tanks.

Samples should be taken throughout the soil profile. Reference should be made to CLR4 (DoE, 1994) (now withdrawn, but recommended until replacement document produced) for assessment of number of samples required. Further guidance is available from the Environment Agency (EA, 2000).

Data Evaluation

It is often assumed that the results obtained from sampling are representative of the actual ground conditions. This is not always the case due to variations in the site and uncertainties in the measurement. To ensure confidence in the decisions made it is essential that the soil sampling strategy is appropriate and that the data is adequately evaluated. This may include the use of statistical tests where sampling is non-targeted. Statistical testing should be performed in accordance with best practice, i.e. Guidance on Comparing Soil Contamination Data with a Critical Concentration, CLAIRE (2008).

Risk Assessment

All decisions regarding land contamination are based on risk and the assessment of that risk.

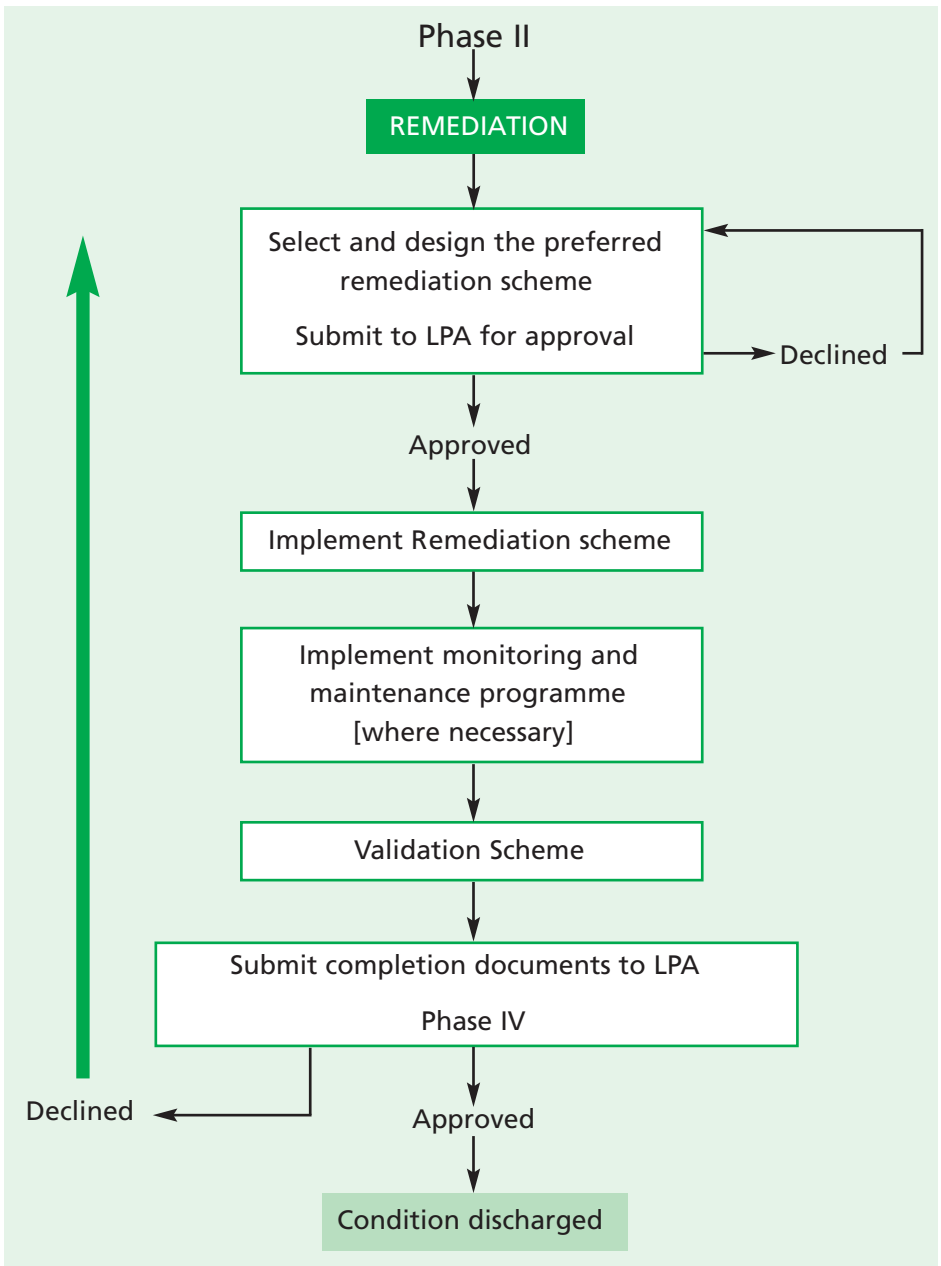
Where quantitative site data is available two types of risk assessment can be used:-

- Generic Assessment Criteria (GAC). These are “guidance values” determined using standardised exposure scenarios. To be appropriate GAC must reflect the “real life” on-site scenario and be developed according to UK policy decisions. Soil Guideline Values (SGVs) were provided specifically for the UK, but currently only include a few key contaminants. Other GAC include the American USEPA Soil Screening Levels (SSL) and the Dutch Serious Risk Concentrations (SRC). Where these other values are used it is important that their applicability is justified.
- Detailed Quantitative Risk Assessment (DQRA). If generic guidelines are not available or are inappropriate it may be necessary to generate site specific criteria. Such criteria require evaluation of specific Health Criteria Values appropriate to the contaminant concerned. The Environment Agency has updated and replaced its toxicological framework document that describes how the toxicity of chemical soil contaminants are assessed (previously published in 2002 as R&D Publication CLR9) to incorporate the changes proposed by DEFRA, and to provide more detailed guidance on chemical risk assessment (EA, 2008).
- Values derived from DQRA must be able to demonstrate transparency in the procedures used, evidence of sound science and clarity in the assumptions made. Due to the complicated nature of this process it is essential that prior consultation takes place with the LPA.

It should be noted that DEFRA has withdrawn the ICRCCL Guidance Note 59/83 2nd Edition 1987; the trigger values contained within the report are no longer considered to be “appropriate, authoritative and scientifically based guidelines” and are not consistent with the new approach to risk assessment for human health. **Therefore the LPA will not accept ICRCCL trigger values used for the purposes of risk screening for human health.**

Remediation Strategy - Phase III

Development and implementation of a remediation strategy



The design of the remediation strategy should consider the results from the previous two phases of investigation and consider the proposed use/layout of the development.

The purpose of this stage is to consider the risks and design measures to remove the risks that are appropriate to the nature of the intended development.

The key requirements to be included in the remediation strategy are:

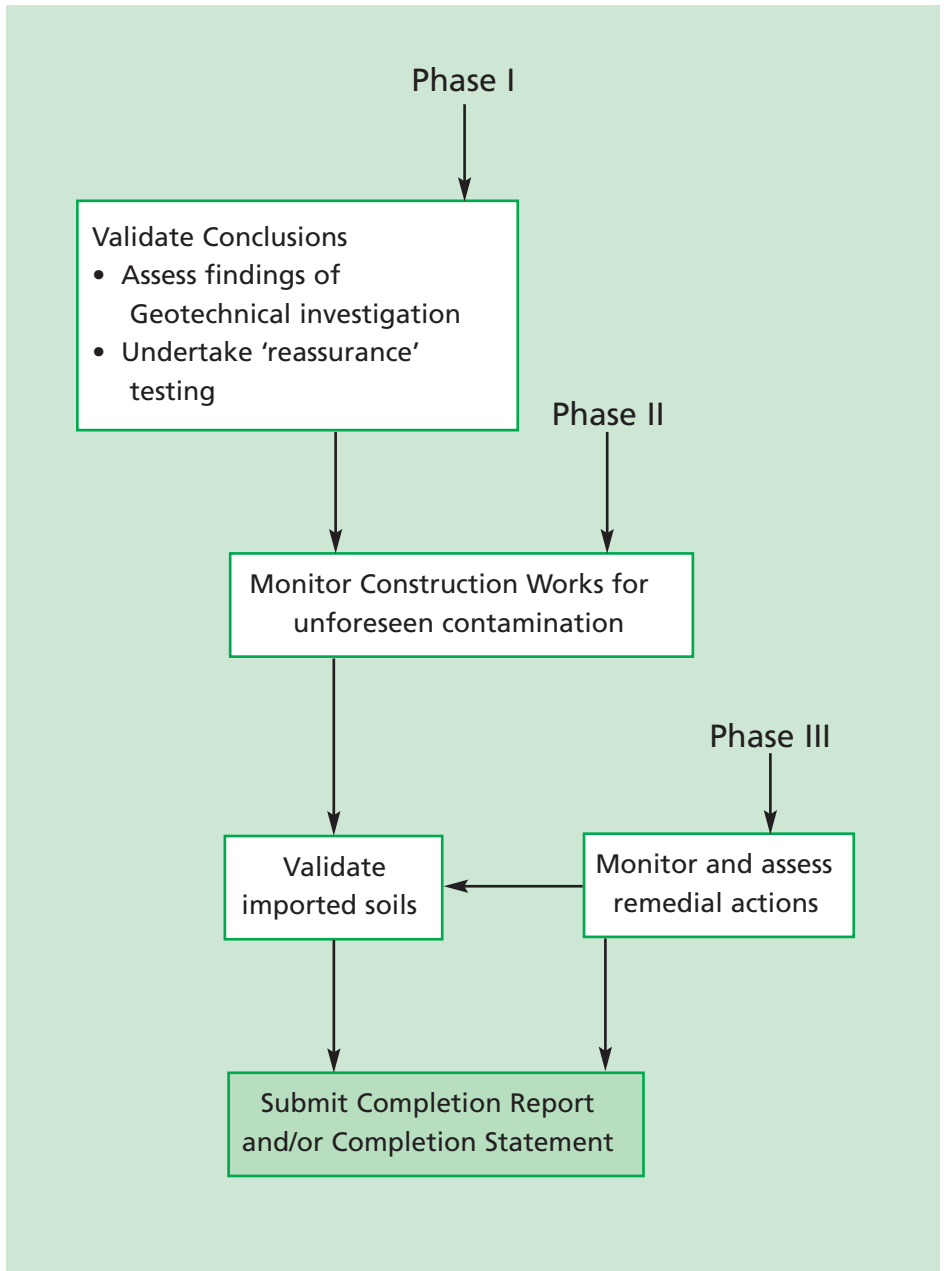
- Reference to the risks identified in the previous investigations
- Reference to the nature and layout of the proposed development
- Description of the proposed remediation and how it will remove the risks identified
- Method statements for the proposed works
- Specifications
- As built drawings
- Calculations, where required, e.g. depth of clean cover used
- If remediation will attempt to reduce the concentration of contaminants on site then details of the intended target values must be submitted and agreed
- Identify monitoring and maintenance programmes

Required Output

The presentation of a remediation strategy to the LPA for approval.

Validation - Phase IV

Completion and Validation



No site assessment or investigation can guarantee to identify all contamination hazards. Therefore, it is essential that other evidence acquired during the project is used to review any earlier assumptions and validate the conclusions made. For example,

- Where the desktop study indicates no suspected hazards this can be substantiated with information gathered from geotechnical investigations. This exercise can be extended to include reassurance testing of soils on particularly sensitive developments or where the desk study has been inconclusive.
- Throughout all groundworks evidence of contamination must be monitored and, where detected, appropriately managed to the satisfaction of the LPA.

Where potential risks are identified on a site it may be necessary to undertake a programme of monitoring during and after development. This monitoring scheme and subsequent findings must meet the LPA's satisfaction before the discharge of any related planning conditions.

Successful remediation of a site is dependant upon implementing the scheme to the specified standard. A Validation Report is used to demonstrate this providing evidence of remedial actions undertaken.

It may include -

- Ground level surveys to demonstrate the depth of caps installed
- Photographic evidence of installed features
- Reassurance sampling
- Laboratory results of imported soils
- Post completion gas/water monitoring

Guidance on typical content for a Validation Report can be obtained from the draft science report produced by the Environment Agency (see References).

On completion of all sensitive developments the submission of a Completion Statement (see enclosed template) provides the developer with the opportunity to validate all their actions. If submitted with all relevant supporting documents, it will assist the Local Planning Authority in discharging any relevant conditions and aid responses to any Local Land Charge Search enquiries received when properties are marketed.

Further advice and information

Should you require further information about contaminated land, please contact Environmental Health on:

Tel: 01730 234332

Fax: 01730 234330

email: ehealth@easthants.gov.uk

or write to:

Contaminated Land Officer

East Hampshire District Council

Penns Place

Petersfield

Hampshire

GU31 4EX

If you have an enquiry relating to your planning permission, please contact Planning Services on:

Tel: 01730 234246 or 01730 234248 (Enquiry team)

Fax: 01730 234348

email: planningdev@easthants.gov.uk

If you have an enquiry relating to building control issues, please contact Building Control on:

Tel: 01730 234207

Fax: 01730 234210

email: building.control@easthants.gov.uk

If you wish to notify the Health and Safety Executive of a demolition to take place, please contact them on 01256 40 4000

References

British Standard (1999) Code of practice for site investigations.

BS 5930:1999. BSI. ISBN 0-580-33059-1.

British Standard (2001) Investigation of potentially contaminated sites – Code of practice.

BS10175:2001. BSI. ISBN 0-580-33090-7.

CIRIA (2001) Contaminated land risk assessment. A guide to good practice.

C552. CIRIA London. ISBN 0-86017-552 9.

CIRIA (2007) Assessing risks posed by hazardous ground gases to buildings.

C665. CIRIA London. ISBN 978-0-86017-665-7.

CLAIRE (2008) Guidance on Comparing Soil Contamination Data with a Critical Concentration.

CIEH. London.

www.cieh.org/library/knowledge/environmental_protection/contaminated_land/statistics_guidance_contaminaterd_2008.pdf

Department of the Environment (1994) Contaminated Land Report 4.

Sampling Strategies for Contaminated Land. DoE. Ruislip.

Environment Agency (not dated) Verification of Remediation of Land Contamination.

Science Report – NC/00/38/SR.

www.environment-agency.gov.uk/research/planning/40381.aspx

Environment Agency (2000) Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination.

R&D Technical Report P5-066/TR. Environment Agency. Bristol.

www.environment-agency.gov.uk/static/documents/2-SP5-066-TR-e-e.pdf

Environment Agency (2004) Contaminated Land Report 11.

Model Procedures for the Management of Land Contamination.

Environment Agency. Bristol. ISBN 1844322955.

www.environment-agency.gov.uk/research/planning/33740.aspx

Environment Agency (2008) Human health toxicological assessment of contaminants in soil.

Science Report SC0500221/SR2. Environment Agency. Bristol.

www.environment-agency.gov.uk/static/documents/Research/scho0508bnqyee_2024094.pdf

Office of the Deputy Prime Minister (2004) Planning Policy Statement 23: Planning and Pollution Control.

HMSO. London. ISBN 0-11-753927-9.

www.communities.gov.uk/publications/planningandbuilding/pps23annex1

ENVIRONMENTAL SERVICES

FEEDBACK

Environmental Health are always striving to improve the service that we offer to you and as a result we would welcome your comments and views regarding this leaflet and more generally, the service we provide.

Please let us know your comments, whether good or bad. If we don't know how we are performing, we cannot make any changes or improvements!

	Yes	No	Not Really
1 Did you find the booklet helpful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Would you like more information on this subject?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 If you contacted Environmental Health, did you find the staff friendly and knowledgeable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Would you like this information in another format e.g. large print/on tape/ in another language?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If so, please state below which format you would like the information in

5 Generally, please let us know below any comments you may have on the service, particularly how it may be improved

Thank you very much. If you have asked for more information, possibly in another format or would like us to contact you regarding your comments, please do fill in your details below

Name

Address

Telephone number

E-mail

cut along this line

BUSINESS REPLY SERVICE
LICENCE No. SCE 12702

2

EAST HAMPSHIRE DISTRICT COUNCIL
ENVIRONMENTAL SERVICES
PENNS PLACE
PETERSFIELD
HANTS
GU31 4BR

Completion Statement Template

Proposal

Planning Application Number

Undertaken between the dates of and

Notes:

1. Please complete Part A in Full.
2. If no significant risks in Phase 1 and Phase 2 investigations then complete Parts E, F and G as appropriate.
3. If risks were identified in Phase 1 and Phase 2 investigations then complete ALL PARTS of the completion certificate.

Part A: Phase 1 Desk Study and Phase 2 Site Investigations

This is to confirm that the above named development was subject to an approved scheme* of investigation prior to development to assess the presence and significance of potential ground contamination as detailed in: (List all relevant documents in full)

Title:	Ref:	Author:	Date:

Part B: Phase 3 Remediation Statements and Validation Reports

To afford protection from those risks identified a scheme of remediation was implemented between the dates of and in accordance with best practice and the agreed specification* detailed in:

Title:	Ref:	Author:	Date:

Part C: Phase 3 Post Remediation Monitoring

Satisfactory implementation/post completion monitoring of the scheme is detailed in: (List all relevant documents in full)

Title:	Ref:	Author:	Date:

Part D: Building Material/ Design Considerations to Protect the Future Occupants from Contamination

Details of any special design consideration of the development to protect the occupants from contamination such as sulphate resistant concrete or fuel resistant water supply pipes are detailed in: (List all relevant documents in full)

Title:	Ref:	Author:	Date:

Details of the building control body that inspected and approved these works

Name of Building Control Body	Address	Name of Officer	Officers Telephone Number	Dates/ details relevant approvals and documents

Part E: Soil Materials Imported for Use in the Development

Confirmation that all imported soil materials are suitable for the proposed development are detailed in: (List all relevant documents in full)

Title:	Ref:	Author:	Date:

Part F: Unsuspected Contamination

All contractors employed by (the developer) were required to monitor for, and report, nay evidence of further unsuspected contamination found during construction (delete as appropriate)

- None was reported
- Further, unsuspected contamination was found. Actions taken are details in:

Title:	Ref:	Author:	Date:

Part G: Declaration

Appointed person that was responsible for the remediation works

Name	Position	Company	Company Address	Signed	Date

Person responsible for the development (acted on behalf of the developer)

Name	Position	Company	Company Address	Signed	Date

Local Authority Environmental Health Regulator

Name	Position	Company	Company Address	Signed	Date

I confirm that the land contamination investigation and remediation works as detailed in the above reports have ensured that the development site is suitable for its intended use. I recommend the contaminated land planning condition is discharged.