

LAND AFFECTED BY CONTAMINATION

Technical Guidance for Applicants and Developers



Essex Contaminated Land Consortium



THURROCK COUNCIL



Chelmsford BOROUGH COUNCIL



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CONTENTS

1. Introduction	5
2. Site Characterisation & Risk Assessment	6
<i>Phase 1 – Desktop Study</i>	6
<i>Phase 2 – Intrusive Site Investigation</i>	7
3. Remediation Scheme	9
4. Validation	10
5. Local Authority Considerations	11
6. General Requirements	11
<i>Competency</i>	12
<i>Health and Safety</i>	12
7. And finally	13
<i>Part IIA of the Environmental Protection Act 1990</i>	13
8. References and Useful Sources of Information	14
Appendix 1 Site Assessment Procedure Flow Chart	15
Appendix 2 Validation Certificate to be completed by applicant / developer	17

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1. Introduction

- 1.1 As part of the Development Control process the council aims to make the best use of land within its defined settlements. Some sites, particularly those that have been used for industrial processes, may be affected by contamination. This may include soils contaminated by chemicals; migration of contaminants to ground and surface waters; and the production of hazardous gases.
- 1.2 The appropriate assessment of the risks posed by potentially contaminated sites and the subsequent provisions for agreed remediation and validation is an integral part of the development control process. There are now also liabilities to consider arising from the final condition of the site to prevent it from being designated in the future as contaminated land as defined by Part IIA of the Environmental Protection Act 1990 (See 7).
- 1.3 Additionally a full warranty from the NHBC or other warranty providers will be withheld until sufficient information is provided to demonstrate to them that there is an acceptable risk to health, property and the environment. Until such time mortgage funds cannot be released and legal completion will be prevented.
- 1.4 The Essex Contaminated Land Consortium, which consists of representatives from all Essex local authorities, Essex County Council and the Environment Agency, decided that there was a need to produce a clear and informative guide to developers and applicants relating to how to deal with land contamination. By doing this it would also ensure a consistent approach across the county.
- 1.5 The purpose of this guide is to provide planning agents, developers and other applicants with details of the type and extent of investigations and decontamination schemes required by the council for these sites. This is so that the council can discharge its statutory responsibilities relating to planning and Building Regulation* applications whilst addressing relevant environmental health issues. This will include generating and enforcing appropriate planning conditions relating to contamination in any permission.
- 1.6 The council will also consult and have regard to comments made by other statutory bodies, principally the Environment Agency. The Agency has many regulatory powers relating to the protection of ground and surface waters. They are also primary consultees for local authorities when determining sites as contaminated land under the Environmental Protection Act 1990.
- 1.7 To make the application process more efficient we aim to provide you with as much information as possible about dealing with contamination. It should be appreciated however that the assessment of land affected by contamination is a complex subject. Each site will be judged separately and individual and additional considerations may apply.
- 1.8 A flow chart summarising the stages involved is included in Appendix 1.

*This guidance conforms to the revised Approved Document C, published 1 April 2004

2. Site Characterisation & Risk Assessment

- 2.1 Although contamination is widespread it may not always be present in a form that would pose an unacceptable risk to human health, controlled waters, property, ecological systems and the environment. Therefore, it would be unreasonable to require every application to be supported by a desktop study and intrusive investigation. Conversely its existence is not always easy to predict so it would be insufficient to expect an assessment only where the presence of contamination has been established.
- 2.2 To overcome this issue the council's requirements to characterise the site for contamination will be proportionate to the risk of harm perceived in the light of information available. Therefore, for all sites where contamination is known or there is a reasonable suspicion of contamination i.e. former industrial, commercial, trade or agricultural use or where there are indications of contamination, an investigation will be required starting with a desktop study.
- 2.3 Site characterisation consists generally of Phase 1 and 2 investigations. The objective of these is to establish a risk assessment to enable the applicant and the regulators to clearly define the risk of harm to existing and proposed end users and other environmental receptors from contamination.
- 2.4 Competent and experienced persons must carry out all elements of the site characterisation. Usually this would mean commissioning consultants or specialists. These persons must be familiar with all elements of modern risk assessment and site investigation techniques. They should also be familiar with current UK policy and the legislative framework surrounding land affected by contamination.
- 2.5 The UK Risk Assessment Framework is based on a staged or tiered approach:
- Tier 1 Risk screening
 - Tier 2 Generic quantitative risk assessment (GQRA)
 - Tier 3 Detailed quantitative risk assessment (DQRA)
- 2.6 All risks identified must be evaluated fully to ensure that justifiable conclusions about the nature and level of risk have been drawn. This will include use of any non UK standards and adjustments made to those models. Any recommendations made as a result of the assessments must therefore be defensible. The risk evaluation will also contain any uncertainties surrounding the assessment.

Phase 1 – Desktop Study

- 2.7 Applicants should familiarise themselves with the site, its former use and its potential to cause contamination. Failure to demonstrate this may result in the planning authority refusing an application as important information could be missed.

- 2.8 The object of the study is to formulate a conceptual model and preliminary risk assessment (Tier 1). The study will include:
- Site reconnaissance or walkover
 - A physical site description including geology, hydrogeology, etc.
 - The condition of soil and vegetation
 - The condition of structures on site
 - Review of current and historical maps
 - Previous, present and proposed uses of the site and direct vicinity
 - Previous and current industrial processes carried out on site
 - Details of any waste disposal practices
 - Details of spillage or pollution incidents
 - Any excavation and infilling activities
 - A review of any previous investigations
 - Initial sampling of soils and waters where deemed appropriate
 - An appreciation of all potential receptors on and outside of the site
- 2.9 During the desktop study it will be expected that initial contact is made with the Environment Agency.
- 2.10 From the findings of this study an initial conceptual model will be produced. This is usually in the form of a diagram or table that illustrates any potentially significant sources of contamination; pathways through which contaminants can travel; and receptors that ultimately can be affected.
- 2.11 The risk assessment derived from the conceptual model will indicate whether it is necessary for it to be followed up by a further intrusive or Phase 2 investigation and risk assessment (Tier 2).
- 2.12 The Desktop Study should be submitted to the council as a written report prior to the commencement of a Phase 2 investigation. At this stage the council or Environment Agency may request further information or clarification of points.

Phase 2: Intrusive Site Investigation

- 2.13 If the Phase 1 study indicates that there is a potential risk of harm from contamination an investigation shall be undertaken to prove or disprove elements of the conceptual model. Therefore, it should refer directly to the desktop study findings.
- 2.14 This is also the opportunity for further consultation with the Environment Agency on matters relating to ground and surface waters.
- 2.15 There may also be the need to monitor off-site to assess impacts of migrating contaminants.
- 2.16 The intrusive investigation must be carried out by suitably competent and experienced consultants or specialists. This will include access to specialist contractors and engineers.

- 2.17 The investigation including sampling techniques should be carried out in accordance with *BS10175:2001 Investigation of potentially contaminated sites – code of practice*.
- 2.18 Analysis of all samples shall take place at UKAS quality-assured and accredited laboratories.
- 2.19 When completed the results of the investigation should be compared against suitable criteria. In the first instance exposure to human health will be assessed with reference to the Soil Guideline Values (SGVs), published by DEFRA, and the Contaminated Land Exposure Assessment Model 2002 (CLEA) where appropriate. Values using the CLEA model are derived in accordance with the “acceptable risk” approach.
- 2.20 In the absence of a specific SGV or where these are not appropriate the risk assessor should use screening tools or standards derived from authoritative, published sources. This may entail sourcing data to derive site specific screening levels (Tier 3). These must be in accordance with UK policy and the necessary adjustments must be made where this differs. This includes adjustments to soil types and toxicological data, such as exposure lifetimes and the way that carcinogenic data is produced. Please note that models are also specific to certain land uses and receptors.

The following are examples of standards that are currently available:

- Scotland and Northern Ireland Forum For Environmental Research (SNIFFER) *Framework for Deriving Site-Specific Human Health Assessment Criteria for use in the Assessment and Management of Contaminants in Soil*
- Risk Based Corrective Action (RBCA) Toolkit (pronounced “rebecca” – USEPA)
- Dutch Intervention Levels Dutch National Institute for Public Health and the Environment (RIVM)
- RISC Human (RIVM)
- American Society for Testing and Materials (ASTM)

*NB. From December 2002 trigger and action levels as laid down by the Interdepartmental Committee Reclamation of Contaminated Land (ICRCL) Guidance Note 59/83 have been withdrawn and **will not be accepted**. However, phytotoxicity levels stated in ICRCL Guidance Note 70/90 are still current at the time of publication.*

- 2.21 Risks to ground and surface waters should be assessed using the Environment Agency’s *Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources*. Additionally the ConSim and LandSim models may be appropriate. Other models such as RBCA, may be used to assess risks to controlled waters. Please contact the Environment Agency for further information.

- 2.22 The conceptual model and risk assessment should be reviewed after the investigation is completed in order that a remediation scheme can be designed for any remaining significant risks to health or the environment.
- 2.23 Underground structures such as foundations, fuel tanks, pipework and archaeological sites need to be identified. Archaeological sites are treated as contamination receptors and advice from local and national agencies such as English Heritage may be required.
- 2.24 A report detailing the methodologies used in the investigation, results, conclusions and recommendations will be submitted to the council. The report will also include:
- A rationale for sampling
 - Field sampling techniques utilised
 - Scaled sampling plans
 - Borehole logs and soil profile
 - Range of contaminants analysed
 - Plan showing location of significant contamination
 - Any uncertainties relating to the conclusions
 - Recommendations

3. Remediation Scheme

- 3.1 A scheme to remediate the site (or render the identified risks to an acceptable level) can be agreed upon once the council deems that the site can be made fit for its proposed end use. The remediation scheme may be subject to a separate condition depending on where the investigation falls within the planning requirements. Remediation of ground and surface waters will be agreed in conjunction with the Environment Agency. Details of the work shall be submitted in writing to the council and the Environment Agency (where controlled waters are involved).
- 3.2 It has sometimes been necessary for some work to start before the decontamination scheme is agreed. If this is the case it must be approved by the local planning authority as soon as possible.
- 3.3 Suitably trained and competent persons shall be appointed to oversee the remediation works. They shall also be responsible for the safety of site workers and the public. These procedures must be in place before the work commences.
- 3.4 The appointed person shall be responsible for the documented identification, handling, storage and fate of contaminated waste. There may also be a requirement for a waste management licence or a permit. Please contact the Environment Agency for advice.
- 3.5 Any unexpected contamination or pathways that become evident during the development of the site shall be reported to the local planning authority immediately. The risk assessment shall be reviewed in the light of this.

- 3.6 The council will also have preference to the use of alternative, more sustainable remediation techniques as opposed to the “dig-and-dump” method. Off-site disposal of grossly contaminated soils and waters may still be necessary. However, current technology allows soils and waters contaminated to certain levels to be treated for reuse. Techniques include:
- In-situ and ex-situ bioremediation of soils
 - In-situ enhanced natural attenuation of groundwater
 - Thermal desorption
 - Monitored natural attenuation
 - Air Sparging
 - Permeable Reactive Barriers
 - Soil Washing
 - Solid Phase Biopiles
- 3.7 The Environment Agency should be consulted where such techniques are proposed as certain remedial activities may require mobile plant or waste management licences.
- 3.8 Although these methods may take more time, there is often a cost benefit associated with them e.g. waste disposal and transportation costs. They will also avoid pollution caused by excessive vehicle movements and the need for landfill.

4. Validation

- 4.1 After completion of the works a validation report will be submitted to the council for approval before construction begins (unless the remediation forms part of the construction). The validation report demonstrates whether the agreed remediation objectives have been met. This will include:
- a summary of the risks that have been managed
 - certification of any imported topsoil (including appropriate analysis)
 - validation of soil horizons where plants and vegetables could be grown
 - certification of any gas protection measures installed in individual plots
 - ‘Duty of Care’ waste disposal documentation
- 4.2 There may be a requirement for future monitoring of the site to verify whether the remediation has been successful. This is particularly where on-site treatment processes have been used.
- 4.3 The council may require further sampling and remediation if it is not satisfied with the results.
- 4.4 When the council is satisfied that the site is suitable for use the applicant or developer will be expected to sign a Certificate to confirm that the site has been remediated in accordance with the scheme agreed by themselves and the council (Appendix 2).

5. Local Authority Considerations

5.1 We will consider the following prior to or on receipt of the application:

Site Characterisation & Risk Assessment

- Has the site been determined as contaminated land under Part IIA of the Environmental Protection Act 1990?
- Is the site known or suspected of being contaminated?
- Does the council possess any information about the site?
- Are the previous uses likely to have left the site in a contaminated state?
- Does the site require investigation prior to the application being determined?
- Have competent persons carried out the investigation?
- Has the applicant gathered sufficient information?
- Has sufficient sampling been undertaken?
- What levels of confidence and uncertainty are included with the results?
- Has an appropriate laboratory been used to carry out the analyses?
- Has the Environment Agency been consulted regarding ground and surface water contamination?
- Have suitable threshold criteria been used?
- Does the condition of the site pose an acceptable risk?
- Has the applicant met the objectives set by the council?

Remediation & Validation

- Does the site require remediation for its proposed use?
- Can the design of a remediation scheme be conditioned or is it required before the permission is determined?
- Will the scheme render the site suitable for its end use?
- Have all sustainable remediation techniques been considered?
- Has the Environment Agency been consulted regarding waste management practices?
- Does the site require post-development monitoring?
- Has a monitoring scheme been agreed?
- Has the developer complied with the agreed scheme?
- Will there still be liabilities relating to Part IIA of the Environmental Protection Act 1990?
- Has the post remediation sampling and analysis been carried out sufficiently for validation?
- Are there any uncertainties remaining?
- Is all the necessary documentation attached to the validation report?

6. General Requirements

6.1 There are some matters that an applicant has to consider for all parts of the investigation and remediation.

Competency

- 6.2 Care must be taken to ensure that additional pollutant linkages are not created during any works carried out at the site. This could result in the site being determined as contaminated under Part IIA of the Environmental Protection Act 1990. Particular care must be taken when any piling is necessary. Piling can create direct pathways into groundwater; fissures in the strata that may allow the migration of gases; or may risk exposure to site workers from contaminated arisings. This highlights the need for specialist advice for all parts of the investigation.
- 6.3 Many organisations feel able to complete part of the assessment (usually the desktop study). The council will have regard both to the content of reports and to professional experience, affiliation and demonstrable expertise. A failure to demonstrate this could lead to the report being rejected.
- 6.4 A specialist consultant should be commissioned to carry out all aspects of the investigation. He/she should be able to demonstrate:
- Experience
 - Technical expertise in site investigation and remediation
 - Familiarity with current UK policy relating to contaminated land
 - Familiarity with the legal framework surrounding contaminated land
 - Knowledge in the use and application of best practice techniques
 - Full QA and QC
- 6.5 Additionally they should be knowledgeable in the use and application of:
- CLEA Soil Guideline Values
 - The use of CLEA where no SGVs are published as set out in DEFRA and Environment Agency Contaminated Land Reports, CLR 9 & 10
 - *BS10175:2001 Investigation of potentially contaminated sites – code of practice*
 - Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources R&D Publication (20) 1999
 - Other standards or models when used to support risk assessments.
- 6.7 In all cases all reports should be rational, ordered and in sufficient detail to demonstrate a logical progression of the assessment procedure. The reports should be clear and avoid excessive use of scientific terminology. They should also include a summary written in non-technical language.

Health and Safety

- 6.8 The developer is responsible for ensuring that site workers and members of the public are protected from the potential effects of contamination during the entire process. Enforcement for health and safety matters on construction sites is the responsibility of the Health and Safety Executive (HSE).

7. And finally...

7.1 The applicant is responsible for:

- (a) providing sufficient correct information to ascertain whether a site is contaminated and that it has successfully been decontaminated. Many of the decisions made by the council will be on the basis of the information that has been provided to it and,
- (b) the safe development and secure occupancy of the site.

Part IIA of the Environmental Protection Act 1990

7.2 Local authorities are obliged to identify and have land remediated where contamination is causing unacceptable risks to human health and the wider environment, assessed in the context of its current land use and circumstances of the land.

7.3 Such land is determined “contaminated land” which is defined under Section 78A(2) of the Act as:

“land which appears to the Local Authority to be in such a condition, by reason of substances in, on, or under the land, that significant harm is being caused, or there is a significant possibility of such harm being caused; or pollution of controlled waters is being, or is likely to be caused.”

7.4 “Harm” is subsequently defined as:

“harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property.”

7.5 Therefore, should there be any failure to remediate land to a state that removes these risks which should have been identified in any investigation, remediation may be enforced post development at the expense of those persons deemed “appropriate” at the time as defined by the Act.

7.6 Section 78F(2) of the Environmental Protection Act 1990 defines “appropriate persons” as those who have caused or knowingly permitted a pollutant to be in, or under the land. As such they may be liable for the remediation of the site if it is subsequently determined as contaminated land by the local authority.

8. References and Useful Sources of Information

British Standards Institution, *BS10175:2001 Investigation of potentially contaminated sites – code of practice*

DEFRA & Environment Agency, *Contaminants in Soil: Collation of Toxicological Data and Intake Values for Humans*, Environment Agency, 2002

DEFRA & Environment Agency, *Soil Guideline Values*, Environment Agency R&D Publication, 2002

DETR, *Circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land*, The Stationery Office Limited, 2000

DoE, *Planning Policy Guidance 23 (PPG23): Planning and Pollution Control*, DoE, 1997 (under revision)

DoE, DEFRA, Environment Agency et al, *Contaminated Land Report (CLR) Series 1-12*, DoE, DEFRA, EA et al, 1994-2002

DTLR, *Development of Land Affected by Contamination – Draft Planning Technical Advice*, DTLR, 2002

Environment Agency, *Cost Benefit Analysis in the Remediation of Contaminated Land – Environment Agency Technical Record No.P316*, Environment Agency, 1999

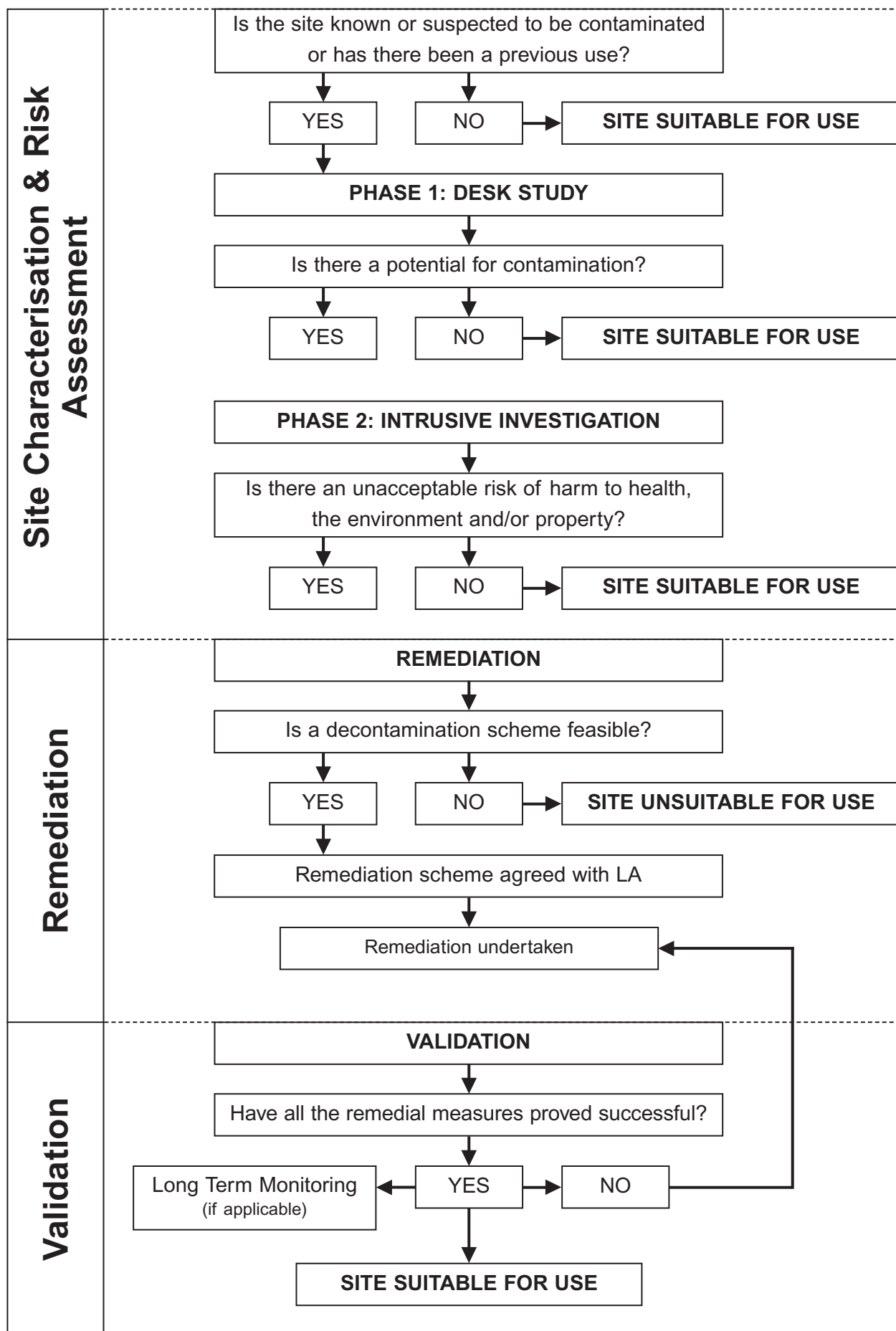
Environment Agency, *Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources*, Environment Agency R&D Publication (20), 1999

Environment Agency, *Guidance on the Application of Waste Management Licensing to Remediation (version 2.0)*, January 2001

NHBC & Environment Agency, *Guidance on the Protection of Housing on Contaminated Land*, Environment Agency R&D Publication (66), 2000

Scotland & Northern Ireland Forum For Environmental Research (SNIFFER) *Framework for Deriving Site-Specific Human Health Assessment Criteria for use in the Assessment and Management of Contaminants in Soil* (SNIFFER project ref. LQ01) April 2003

Appendix 1. Site Assessment Procedure Flow Chart



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Appendix 2. Validation Certificate to be completed by the applicant / developer

To the (council address)

This is to Certify that the scheme of remediation*, decontamination and reclamation at the site known as:

.....

in relation to planning application number:

was carried out between the dates of:and

and was completed in accordance with best practice and in accordance with the council's document Land Affected by Contamination: Technical Guidance for Applicants and Developers and to the agreed specification detailed in the document:

.....

.....

Document Reference: Date :

[**Together with the following amendments that have been submitted to and agreed in writing with the local planing authority:

.....

.....

Document Reference: Date:]

which were designed to afford protection from contamination* on the site to all known receptors*.

Signed: Dated:

Name:

Position:

Company Name and Address:

.....

*The words "contamination", "remediation" and "receptors" are defined by Part IIA of the Environmental Protection Act 1990.

**Complete/delete as applicable.

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Contact Information

Local Authorities

Basildon District Council

☎ 01268 294154 ☎ 01268 294162
✉ planning@basildon.gov.uk

Braintree District Council

☎ 01376 552525 ☎ 01376 557767
✉ colba@braintree.gov.uk

Brentwood Borough Council

☎ 01277 261111 ☎ 01277 200333
✉ hoehpps@brentwood-council.gov.uk

Castle Point District Council

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✉ ehcnet@castlepoint.gov.uk

Chelmsford Borough Council

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✉ evironmental.services@chelmsfordbc.gov.uk

Colchester Borough Council

☎ 01206 282581 ☎ 01206 282598
✉ pollution@colchester.gov.uk

Epping Forest District Council

☎ 01992 564053 ☎ 01992 561016
✉ jgravelle@eppingforestdc.gov.uk

Harlow District Council

☎ 01279 446611 ☎ 01279 446767
✉ env.health@harlow.gov.uk

Maldon District Council

☎ 01621 854477 ☎ 01621 875899
✉ pollution@maldon.gov.uk

Rochford District Council

☎ 01702 546366 ☎ 01702 545737
✉ environmental.health@rochford.gov.uk

Southend-On-Sea Borough Council

☎ 01702 215000 ☎ 01702 215888
✉ t&eservices@southend.gov.uk

Tendring District Council

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✉ environmental.services@tendringdc.gov.uk

Thurrock Council

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✉ environmental.health@thurrock.gov.uk

Uttlesford District Council

☎ 01799 510549 ☎ 01799 510567
✉ environmental@uttlesford.gov.uk

Other Organisations

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