EPSOM & EWELL BOROUGH COUNCIL

Planning Advice Note on the Assessment and Remediation of Contaminated Land

Introduction

The intention of this guide is to assist developers and their environmental consultants in meeting the requirements of planning conditions relating to contaminated land. This advice note does not form part of any planning permission and is intended only as a guide to assist in complying with the planning permission. A glossary of terms is included at the back of this document.

Liaison with the Borough Council

This document is not a step-by-step guide to dealing with all contaminated land issues. Epsom & Ewell Borough Council's Building Control Officers may have special requirements concerning structural aspects of the development as a result of any contaminants that may exist. The developer is encouraged to make early co-operation and discussion with the Borough Council's Environmental Health Services, Planning and Building Control Teams. This will help to prevent avoidable delays.

Failure to comply with the planning condition may have the following consequences:

- Delay in progressing the development
- Enforcement action by the planning authority
- An increase in costs if further investigation is required
- The land being determined as Contaminated Land under Part IIA of the Environmental Protection Act 1990 (as inserted by section 57 of the Environment Act 1995)
- Problems with the future sale of the land or buildings

The assessment of Contaminated Land

The aim of assessing and remediating Contaminated Land is to protect public health, the environment and controlled waters from contaminants present in the soil. Official guidance relating to contaminated land in the UK promotes a risk based approach to dealing with soil and ground water on a 'suitable for use' basis. Fundamental to the risk based approach is the source - pathway - receptor or pollutant linkage concept. Put simply, before a source of contamination (e.g. a disused gas works site) can cause a risk to a receptor there must be a pathway by which the receptor can come into contact with the contamination. Such pathways may include vapour inhalation, ingestion or skin contact.

Where official guidance has been produced by government or other authoritive sources, the investigation and remediation of land should be carried out in accordance with those standards and recommendations. Care should be taken to select a competent and suitably experienced environmental consultant. This is fundamental to producing a credible and appropriate assessment. The council will reject reports and/ or require further information in cases where work has not been carried out in accordance with good practice or fails to establish confidence in the findings and conclusions reached. Work is most often rejected where:

- work starts without establishment of effective dialogue and the Council's specific agreement to the proposals
- work deviates from agreed methods without prior agreement

- the development begins before all assessment work and remediation proposals are agreed with the Council

The council wishes to avoid these circumstances and recommends most strongly that developers maintain close and effective dialogue at all stages of the process. It must also be stressed that the responsibility for completing work and providing information rests entirely with the developer and their advisers where appropriate.

Environmental Risk Assessment

It is normal practice for an environmental risk assessment to be carried out in three (3) distinct phases as stated in the planning condition. Attached to the end of this advice note is an inclusion checklist for all 3 phases which should be adhered to in conjunction with CLR 11.

Phase One

The purpose of a phase one risk assessment is to:

- establish whether there has been any potentially contaminative site uses on the site itself or nearby land
- identify the presence of any existing and/ or proposed receptors
- establish whether a pathway exists which links the suspected source of contamination with the receptors i.e. whether the potentially contaminative use could impact on receptors at the site or nearby
- obtain enough information to design a phase two risk assessment

A phase one risk assessment report should indicate all sources of research and consist of:

- **Historical Research of the site**

Historical and current OS maps, trade directories, planning records, libraries, archives, local knowledge. Obtaining existing information and previous investigation reports from EEBC.

- **Environmental Setting**

Geology, hydrogeology, surface water features, designated ecological areas, water abstraction points, discharge consents, landfill sites within 250 metres of site

- **Initial site walkover/ survey**

Site layout, neighbouring properties (nature and location) and sources of obvious contamination such as signs of stressed flora and fauna, structures indicating potential contamination (e.g. fuel tanks or asbestos inside buildings).

➢ **Conceptual Site Model**

A conceptual site model should show the potential source of contamination, the nature of the contamination, the potential receptors and potential migration pathways. Therefore, it will identify any potential contamination of the site and the subsequent design of the phase 2 investigation, if this is deemed necessary. A brief should now be agreed between the client, contractor and EEBC. Accepted procedures are detailed in "Guidance on Preliminary Site Inspection of Contaminated Land" CLR report no. 2, volumes 1 and 2.

➢ **Limited initial intrusive testing**

To increase the amount of data available to be able to inform the phase II stage of investigations, or to diminish the need for Phase II works.

Phase Two

The purpose of a phase two risk assessment is to characterise the risk through a site specific risk assessment process to determine the need for remediation.

A phase two risk assessment report should, therefore, include details of:

- **A Copy of the Brief or Specification between the Client, Contractor and EEBC**

- **Objectives of Investigation:**

  The objectives should be drawn from the findings of phase one.

- **Investigation Strategy:**

  Field Testing:

  - sampling locations marked on a site plan, targeted to those areas of the site where contamination is likely

  - nature and number of sample – chemical testing
    – hydrogeological testing
    – gas testing

  - procedures for sampling, handling, storage, collection and transport

  - use and calibration of appropriate equipment

  Laboratory Analysis:

  - use of a UKAS / MCERTS accredited laboratory

  - sample preparation and analytical methods used that are traceable to national and international standards (e.g. NAMAS, ISO 17025

standards, MCERTS). Any individual test not accredited should be specified.

- original authorised results and any laboratory interpretation of results

- **Risk Assessment:**

  This is based upon the results of sampling in the context of the proposed end use.

  The current situation with regard to risk assessment criteria and the use of SGVs in determination of sites should be referenced e.g. SGV – The Way Forward. The use of any interim alternative guideline values such as CLEA, former Dutch values, US EPA soil screening levels etc. must be qualified and appropriate with justification. It is preferable to have in house SSVs (Soil Screening Values) which are site specific to the investigation in question. The contaminant concentration used for comparison must also be stated i.e. average, maximum.

  Use of risk assessment models such as RBCA, Risk Assistant, SNIFFER FRAMEWORK, etc. must be qualified and appropriate. All model uncertainties and assumptions must be stated and the risk estimate produced by the model fully explained.

- **Risk Evaluation:**

  The risk must be quantified and its acceptability determined in the context of the proposed site use. A decision can then be reached as to the need for risk management or remedial action, based on the SPOSH principle.

  Accepted and authoritative procedures are included in:

  - BS 10175:2001 Code of Practice on the Identification of Potentially Contaminated Land and its Investigation.

  - Contaminated Land CLR Reports 1-11 (sampling Strategies for Contaminated Land CLR Report No. 4).

  - Environment Agency (EA)/NHBC 2000 Guidance for the Safe Development of Housing on Contaminated Land

  - EA Secondary Model Procedures for the Development of Appropriate Soil Sampling Strategies for Land Contamination (2001).

  - DETR 2000 Guidelines for Environmental Risk Assessment and Management.

- Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources. Environment Agency R and D Publication 20.

- Waste Management Paper 27 – Landfill Gas.

- DEFRA / EA CLAN notes

Phase Three

Phase three is the Remediation Strategy, the objectives of which should be agreed with the Council's Planning Department, Building Control and Environmental Health Teams via the Contaminated Land Officer and where necessary, the Environment Agency. The remediation will either be voluntary or enforced through the use of a remediation notice. The report should include:

- a full description of the contamination issues on site

- the remediation objectives and remediation plan

- a health and safety plan

- a work plan

- details of any required long term monitoring/maintenance measures

After remedial works have been completed, a validation/completion report will be required to discharge any planning conditions relating to contaminated land.

OTHER CONSIDERATIONS:

Contingency Plan

Unexpected areas of contamination may be discovered during remediation or development and may include underground structures such as fuel storage tanks or other sources of contamination. The remediation strategy should make contingencies to deal effectively with unexpected discoveries including notification to the Council and any other interested agencies such as the Environment Agency, Health and Safety Executive, etc. If necessary, a specific risk assessment, or additional sampling, may also be needed as well as unexpected changes to risk assessment parameters. Any such changes should be submitted in writing to EEBC.

Record Keeping

The need for comprehensive and accurate record keeping is

fundamental to safe and effective remediation and must be included in the strategy. These records will also form the basis of a contaminated land review by the Council in the future under Part IIA of the Environmental Protection Act 1990. If the site records can demonstrate that appropriate and durable remediation works have been carried out and they remain effective, the Council will not proceed with further regulatory action under Part IIA and the site will no longer be considered to be a site of potentially contaminated land by EEBC.

Contact Details

All enquiries relating to remediation standards should be referred to:

Environmental Health Services
Epsom & Ewell Borough Council
Town Hall
The Parade
Epsom
Surrey
KT18 5BY

Direct Dial (01372) 732 000 Fax: (01372) 732 452

GLOSSARY OF TERMS

A **Conceptual Site Model (CSM)** is a testable representation of environmental processes on a site and its vicinity with a view to identifying receptors, pathways and contaminants and their significant pollutant linkages and should be developed for every site.

Contaminated Land is defined as 'any land which appears to the Local Authority in whose area is it situated to be in such a condition, by reason of substances in, on or under the land, that

(a) SIGNIFICANT HARM is being caused or there is a SIGNIFICANT POSSIBILITY of such harm being caused; or

(b) POLLUTION OF CONTROLLED WATERS is being, or is likely to be caused.'

For a site to be registered on the Council's Statutory '**Contaminated Land Register'** an investigation has to have concluded that there is a need for a remediation notice to be issued (voluntary remediation will not be included on the register). Currently although we are aware of several sites with contamination issues, no remediation notices have been issued, consequently there are no entries on our Contaminated Land Register.

Contaminant: a substance present in, on or under any land, which has the potential to cause harm to people, buildings or the environment or pollution of controlled waters.

Contamination Rejected: enough investigation has been carried out or sufficient information has been gathered to conclude:
'that there is no longer a reasonable possibility that a particular pollutant linkage exists on the land and the council will not carry out any further detailed inspection for that pollutant linkage'.

Controlled Waters: defined in section 78A(9) by reference to Part III of the Water Resources Act 1991; this embraces territorial and coastal waters, inland fresh waters and groundwaters.

CLEA: The Contaminated Land Exposure Assessment Model (CLEA), produced by the Department of the Environment, Food and Rural Affairs (DEFRA) and the Environment Agency.

CLR Reports: A series of 'contaminated land research' reports originally produced by the contaminated land research programme of the Department of the Environment. Some reports are currently in production by the Department of the Environment Food and Rural

Affairs**.**

A **Desk Top Study** is a desk based research exercise which identifies any potentially contaminative uses, includes a CSM, sets objectives for any site investigations if required and provides a general description of the site and its vicinity.

Dutch Values: generic intervention and target values for specific contaminants in soil, produced for soil remediation policy in the Netherlands. To be used with caution in the UK and only with the accompanying advice.

Environmental searches are commonly carried out by solicitors through independent companies during conveyancing. The Council's investigations will not be highlighted through these searches; however entries on the Contaminated Land Register and the history of the area will be shown. An environmental search is not sufficient enough to give a classification of contamination or no contamination.

A **Liability Group** is a group of persons or person who would be responsible as the 'appropriate person' to pay for remedial action referable to a significant pollutant linkage.
Orphaned sites are areas of contaminated land where no appropriate person can be found or where those who would otherwise be liable are exempted by one of the statutory provisions. The guidance clearly states that initially the Group A person will be approached for remedial costs, this is normally the original polluter. If no such Group A person can be found, a Group B person will be sought, in this case normally the resident or landowner.

MCERTS: The Environment Agency's Monitoring Certification Scheme to ensure quality in all aspect of environmental measurements

NAMAS: (National Accreditation of Measurement and Sampling) Laboratories apply for accreditation for specific tests or calibrations and are assessed for that work by UKAS (see below). NAMAS accredited tests are traceable to national and international standards and are a guarantee that the specified methods and procedures have been followed and have been stringently assessed by independent experts.

Pathways: One or more routes or means, by which a receptor is being exposed or affected by a contaminant, or could be so exposed or affected.

A **pollutant linkage** consists of the presence of a Contaminant, a Receptor and a Pathway which is capable of exposing a receptor to the contaminants. If all three components are not present, there is no risk represented and so assessment on that site would cease.

A **receptor** is a living organism, an ecological system, a piece of property or a controlled water body which is being or could be harmed by a contaminant.

Remediation is defined as the doing of any works, the carrying out of any operations or the taking of any steps in relation to any such land or waters for the purpose

- of preventing or minimising, or remedying or mitigating the effects of any significant harm, or any pollution of controlled waters, by reason of which the contaminated land is such land; or

- of restoring the land or waters to their former state or

- the making of subsequent inspections from time to time for the purpose of keeping under review the condition of the land or waters

Remediation/remedial action: any works or steps taken in relation to contaminated land or waters for the purpose of preventing, minimising or mitigating the effects of any harm or pollution of controlled waters. This can include restoring the land or controlled waters to their former state.

Risk Assessment: an assessment of the probability or frequency of occurrence of a defined hazard (for example skin exposure to the soil) with the potential to cause harm and the magnitude (including the seriousness) of the consequences.

Risk Assessment Models: RBCA-a US model developed for petroleum release sites; Risc Human 3.1- a Dutch model available as computer software; Sniffer Framework-'Framework for Deriving Numeric Targets to Minimise the Adverse Human Health Effects of Long–term Exposure to Contaminants in Soil', relates only to chronic human health risks for a limited number of contaminants. Regard must be given to the inherent limitations and assumptions of each model.

Source: the presence of contaminant/contaminants in, on or under any land.

UKAS: (United Kingdom Accreditation Service) the sole national body recognised by government for the accreditation of testing and calibration laboratories, certification and inspection bodies. UKAS accreditation demonstrates the integrity and competence of organisations providing calibration, testing, and inspection and certification services. This means that the customer reduces the risk of selecting an incompetent evaluator and acting upon invalid results.

Accredited laboratories can be found at **www.ukas.org** or telephone 020 8917 8400 at UKAS Feltham, Middlesex.

Validation report: required to demonstrate that any remediation carried out has been done in accordance with the approved remediation strategy and has met the objectives of the strategy. Validation reports should include records of testing and monitoring of remedial works, all results of any testing and monitoring, ‘as built drawings’, and correspondence from regulatory authorities.

Please do not use the below checklist as a template, but refer to it before completing your report as well as referencing CLR Reports (CLR 11)

A. DESK STUDY / 'PHASE I' REPORTS

(a) Purpose and aims of study

(b) Site location and layout plans

(c) Appraisal of site history

(d) Assessment of environmental setting, to include

- geology, hydrogeology, hydrology
- information on coal workings (if appropriate)
- information from Environment Agency on abstractions, pollution incidents, water quality classification, landfill sites within 250m etc.

(e) Assessment of current / proposed site use and surrounding land uses

(f) Review of any previous site contamination studies (desk-based or intrusive) or remediation works

(g) Preliminary (qualitative) assessment of risks

- Appraisal of potential contaminant sources, pathways and receptors
- Conceptual site model

(h) Recommendations for intrusive contamination investigation, if necessary

B. SITE INVESTIGATION / 'PHASE II' REPORTS

(a) Review of any previous site contamination studies (desk-based or intrusive) or remediation works

(b) Site investigation methodology

- methods of investigation
- plan showing exploration locations
- justification of exploration locations
- sampling and analytical strategies

(c) Results & findings of investigation

- ground conditions (soil and groundwater regimes, including made ground)
- discussion of soil / groundwater / surface water contamination (visual, olfactory, analytical)

(d) Conceptual site model

(e) Risk assessment – as a minimum, based on contaminant-pathway-receptor model. Should take account of severity of consequences and likelihood of occurrence. Justification of any Quantitative Risk Assessment models used.

(f) Recommendations for remediation – justification should relate to proposed site use, risk assessment findings, as well as technical and financial appraisal

(g) Recommendations for further investigation (if necessary)

C. <u>REMEDIATION STATEMENTS</u> (submitted *before* remediation)

(a) Objectives of the remediation works

(b) Detailed outline of the works to be carried out

- Description of ground conditions (soil and groundwater)
- Type, form and scale of contamination to be remediated
- Remediation methodology
- Site plans/drawings
- Phasing of works and approximate timescales

(c) Consents, agreements and licences (discharge consents, waste management licence etc.)

(d) Site management procedures to protect site neighbours, environment and amenity during works, should include where appropriate

- Health & safety procedures
- Dust, noise & odour controls
- Control of surface run-off

(e) Details of how any necessary variations from the approved remediation statement *arising during the course of works* will be dealt with.

(f) Details of how the works will be validated to ensure the remediation objectives have been met; should include details on

- Sampling strategy
- Use of on-site observations, visual/olfactory evidence
- Chemical analysis
- Proposed clean-up standards (i.e. contaminant concentrations)

D. <u>VALIDATION REPORTS</u> (submitted *following* remediation)

(a) Include information as C(a) to C(f) above

(b) The qualification of who carried out the work

(c) Details and justification of any changes from original Remediation Statement

(d) Substantiating data – should include where appropriate

- Laboratory and in situ test results
- Monitoring results for groundwater and gases
- Summary data plots and tables relating to clean-up criteria
- Plans showing treatment areas and details of any differences from original Remediation Statement

(e) Confirmation that remediation objectives have been met

Notes

(1) Desk Study and Site Investigation Reports may be combined providing the submitted report contains sections A(a) to A(f).

(2) General recommendations for remediation made in the Site Investigation Report will not be accepted as a substitute for a Remediation Statement.

Key Documents

As well as the above all land contamination work should reflect the following guidance and standards:

1. British Standard BS 10175:2001 *Investigation of potentially contaminated sites – Code of Practice.* This revised version of BSI's DD175:1987 contains technical advice on the design and implementation of site characterisation (including site investigation) activities for contaminated land. [A]

2. British Standard BS5930:1999 *Code of practice for site investigations.* [A]

3. Environment Agency Technical Report P5-065/TR (2000 – 2 volumes) *Technical aspects of site investigation.* [B]

4. Environment Agency Technical Report P5-066/TR (2000) *Secondary model procedure for the development of appropriate soil sampling strategies for land contamination.* [B]

5. DEFRA (2001) Contaminants in soils – Reports CLR7, CLR8, CLR9, CLR9 TOX, CLR10, CLR10 GV, [B]

6. SNIFFER (January 2000) Report SR99(02)F: *Framework for deriving numeric targets to minimise the adverse human health effects of long-term exposure to contaminants in soil.* [C]

7. Environment Agency Technical Report 20 (1999) *Methodology for the development of remedial targets for soil and groundwater to protect water resources.* [B]

8. Environment Agency/NHBC R&D Report 66 (2000) *Guidance for the safe development of housing on land affected by contamination.* [B]

9. Environment Agency Technical Report P336 (also BR414) *Protective measures for housing on gas-contaminated land.* [B]

10. HS(G)66 (1991) *Protection of workers and the general public during the development of contaminated land.* [D]

11. Construction Industry Research & Information Association (CIRIA) Report 132 (1996) *A guide for safe working on contaminated sites.* [E]

11. Construction Industry Research & Information Association (CIRIA) Report C659 (2007) Assessing risks posed by hazardous ground gases to buildings. [E]

Other Important References

All land contamination work should have regard to the following guidance and standards:

12. DoE Report CLR3 (1994) *Documentary research on industrial sites.* [F]

13. DoE Report CLR2 (1994 – 2 volumes) *Guidance on preliminary site inspection of contaminated land.* [F]

14. CIRIA Report SP103 (1995) Remedial treatment for contaminated land: Site investigation and assessment. [E]

15. DoE Industry Profiles (1995) *(Various titles).* These documents provide information on individual industries – i.e. background, process descriptions, contamination features and sources of further information. A list of the industries addressed can be viewed at www.defra.gov.uk/environment/landliability/2.htm. [F]

16. Institute of Petroleum (1998) *Guidelines for investigation and remediation of petroleum retail sites.* ISBN 0-852-932-162. [G]

17. DoE Report CLR12 (1997) *A quality approach for contaminated land consultancy.* [F]

18. DoE Report CLR11 (2001) *Model procedures for the management of contaminated land.* [F]

19. Building Research Establishment (BRE) Report BR212 (1991) *Construction of new buildings on gas-contaminated land.* [H]

20. Draft report Verification of Remediation of Land Contamination (January 2007) (EA Document)

21. CLAN06/06 "Soil Guideline Values: the Way Forward". (December 2006) (DEFRA).

Publishers:

[A] British Standards Institute – 020 8996 7000.
[B] Water Research Council – 01793 865000.
[C] Foundation for Water Research – 01628 891589.
[D] Health & Safety Executive – 01787 881165.
[E] Construction Industry Research & Information Association–020 7222 8891.
[F] Dept. of Transport, Local Government and the Regions – 01709 891318.
[G] Portland Press – 01206 796351.
[H] Building Research Establishment – 020 7505 6622.