



LAND AFFECTED BY CONTAMINATION: Technical Guidance for Applicants/Developers and Environmental Consultants



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1.0 Introduction

This guidance note is to assist developers and their advisors involved with the investigation, assessment and remediation of land potentially affected by contamination, through the planning process. This guide comprises general advice on the UK contaminated land framework and details the information that needs to be submitted as part of a planning application. This guidance note has been prepared with reference to relevant legislation and guidance.

Sefton Borough has a legacy of land contamination as a consequence of historical industrial land-uses that varies significantly in its nature and extent across the Borough. The range of industries is extensive and includes gas works, tar distillation works, tin smelters and tanneries among others.

Additionally, there are many sites within the Borough that may be affected by contamination due to current contaminative land uses or through various waste materials that have been deposited throughout the Borough. The deposition of waste materials has occurred at a number of locations and in a variety of circumstances, such as, infilling of excavations, land reclamation works, landfill sites, road construction and sea defences.

Where development or redevelopment is proposed on land affected by contamination, the developer is responsible for establishing the nature, degree and extent of any contamination and other relevant ground conditions. If unacceptable risks are identified, it will be necessary for the developer to deal effectively with the risks from contamination in a sustainable way, to ensure that the site is safe and suitable for its intended end-use.

This guidance note sets out the information that is required to be submitted with reports as part of the planning process for managing risks from contamination associated with the development or redevelopment of land affected by contamination. The guidance, policies and criteria against which Sefton Council assesses land contamination reports are detailed in this guidance note, to assist developers and their advisors progress sites through the planning regime.

Disclaimer

This Guidance Note has been prepared as an informative for the purpose of providing guidance to those involved in the development or redevelopment of land affected by contamination, through the planning regime. It must be noted that new guidance, changed practices or new legislation may necessitate revision of this guidance note in whole or in part after that date.

2.0 Background

The primary legislation for the contaminated land regime is defined under Part 2A of the 'Environmental Protection Act 1990', which was brought into force in England on 1st April 2000. Section 57 of the Environment Act 1995 created Part 2A of the 'Environmental Protection Act 1990' (Part 2A), which establishes a legal framework for dealing with contaminated land in England.

The contaminated land regime is set out in primary legislation and is implemented by Statutory Guidance provided by the Secretary of State and Regulations.

The Statutory Guidance explaining how Local Authorities should implement the Part 2A regime, including how they should go about deciding whether land is "contaminated land" in the legal sense of the term, is provided in the DEFRA document 'Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance' (2012) available for download at www.gov.uk.

The Contaminated Land (England) Regulations 2006 and The Contaminated Land (England) (Amendment) Regulations 2012 are available for download at www.legislation.gov.uk.

The relationship between the contaminated land regime and the planning system is prescribed in the Communities and Local Government 'National Planning Policy Framework' (2012) available for download at www.gov.uk.

The term 'contaminated land' is used to refer to land that meets the statutory definition under Part 2A of the Environmental Protection Act 1990 and it should only be used in this context. To avoid any confusion, the terms 'land affected by contamination' or 'land contamination' are used to describe land where contaminants may be present regardless of whether or not the land meets the statutory definition under Part 2A.

The contaminated land regime in Part 2A was introduced specifically to address the historical legacy of land contamination. It applies where there is unacceptable risk, assessed on the basis of the current use and the relevant circumstances of the land. It is not directed to assessing risks in relation to a future use of the land that would require the specific grant of planning permission.

Under the planning regime, sites identified for development or redevelopment that may be affected by contamination are risk assessed based on the intended use of the land, rather than the existing use. The approach to dealing with land contamination and the policy of identification and removal of unacceptable risks to human health and the environment are similar for both regimes.

The 'National Planning Policy Framework' (2012) states that after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990.

3.0 Risk Based Approach

The technical framework for the risk management of land affected by contamination is prescribed in the DEFRA and Environment Agency Contaminated Land Report 11 (CLR11) 'Model Procedures for the Management of Land Contamination' (2004) available for download at www.gov.uk.

The technical approach presented in CLR11 is designed to be applicable for the development or redevelopment of land under the planning regime and regulatory intervention under Part 2A of the Environmental Protection Act 1990.

The risk management process comprises a number of stages that includes risk assessment, options appraisal, implementation of a remediation strategy and verification. This process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK.

As detailed above the complete technical framework for this risk management process is prescribed in the document CLR11.

4.0 Planning Applications

There are several stages to the planning application process and these are summarised in brief below.

4.1 Pre-application Consultations

If it is known or suspected that a proposed development site may be affected by land contamination it is advised that pre-application discussions are undertaken with the Local Authority. The Environment Agency and other interested parties may also need to be consulted.

Pre-application discussions can help to identify the likelihood and possible extent and nature of contamination and its implications for the development being considered.

In addition, it may be possible to progress specific phases of investigation and assessment pre-application and before an application for planning approval is required, with the aim of obtaining sufficient information to support a planning application. Progressing land contamination issues at pre-application may reduce the level of information and works required once planning approval has been granted.

Development will only be permitted where sufficient information is provided to verify that the potential contamination can be dealt with by remediation, such that the proposed development is shown to be viable, will be suitable for its new use, and will not place the users of the proposed development and neighbouring land uses or environment at unacceptable risk.

4.2 Planning Application Validation

Upon submission of a planning application, the Local Planning Authority will screen the application against a validation checklist applicable for the type of development to assess if sufficient information has been submitted to be able to determine the application. The national and local lists of requirements to validate a planning application are available on the Sefton Council Planning Services web pages (www.sefton.gov.uk).

For sites that are known or suspected of being significantly affected by contamination, or where the proposed development may be particularly sensitive to contamination, to assist with the determination of the application specific supporting information may be required to be submitted.

Dependent on the site and the nature of the development sufficient information will be required to determine the existence or otherwise of contamination, its nature and the risks it may pose and whether these can be satisfactorily reduced to an acceptable level.

As a minimum a Preliminary Investigation report, prepared in accordance with current guidance and best practice, should be submitted with a planning application if it is known or suspected the land is affected by contamination and/or the proposed end use is particularly sensitive.

4.3 Planning Approval

There are five standard land contamination conditions that are attached to a planning approval to ensure that on completion of the development it will be safe and suitable for use. The land contamination conditions attached to the planning approval notice require a preliminary investigation to be undertaken and, if necessary, a full site investigation and assessment prior to commencement of the development. Where remedial measures are required to deal effectively with contamination, a verification report must be submitted to demonstrate compliance with the agreed remediation objectives and criteria. After remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990.

The standard conditions are phased and worded in accordance with the risk management framework prescribed in CLR 11 as follows:

- 1. Preliminary Investigation**
- 2. Site Characterisation**
- 3. Submission of Remediation Strategy**
- 4. Verification Report**
- 5. Reporting of Unexpected Contamination**

The above conditions will be attached to the Planning Approval Notice and will be numbered uniquely on the Notice. The conditions can only be discharged under a 'discharge of conditions application', which must be made to Sefton Council Planning Services.

Furthermore, the first three conditions (Preliminary Investigation, Site Characterisation and Submission of Remediation Strategy) are all pre-commencement conditions that are required to be satisfied prior to commencement of development.

5.0 Report Requirements

The appropriate reports will need to be submitted to the Local Planning Authority to satisfy the standard land contamination conditions detailed below. It is advised that the reports submitted to satisfy these conditions should be completed in accordance with the DEFRA and Environment Agency document CLR 11 'Model Procedures for the Management of Land Contamination' (2004).

The conditions are phased and each condition must be satisfied in order, prior to progressing to the next in the sequence. As a minimum, the following should be reported to satisfy each condition:

5.1 Phase 1 (Preliminary Investigation)

- i. Aims and objectives of the study
- ii. Site location and layout plans
- iii. Appraisal of site history and previous uses of the land surrounding the site
- iv. Assessment of environmental setting, to include:
 - Geology, hydrogeology, hydrology;
 - Site walkover survey;
 - Information on coal workings and other mining or quarrying activities;
 - Information from the Environment Agency on abstractions, aquifer designations, pollution incidents, water quality classification, landfill sites, prescribed processes; and
 - Information from the Local Authority on pollution incidents, hazardous substances, landfill sites, contaminated land, prescribed processes (Environmental Information Requests can be made by e-mail to contaminatedland@sefton.gov.uk).
- v. Assessment of current site use, surrounding land uses and identification of any constraints.
- vi. Review of any previous site contamination studies (desk-based or intrusive) or remediation works.
- vii. Preliminary (qualitative) assessment of risks based on proposed site use and identification of actual and/or potential contaminant sources, pathways and receptors.
- viii. Presentation of an initial Conceptual Site Model (diagrammatic and/or written form).
- ix. Recommendations for intrusive contamination investigation, if required, which should be submitted for approval prior to being undertaken.

5.2 Phase 2 (Site Characterisation)

- i. Review of any previous site contamination studies (desk-based or intrusive) or remediation works.
- ii. Site investigation methodology, including:
 - Methods of investigation;
 - Scale plan showing exploratory locations;
 - Justification of exploratory locations;
 - Sampling and analytical strategies.

- iii. Results and findings of investigation:
 - All laboratory certificate of analysis reports must be provided in their entirety;
 - Ground conditions (soil, gas and water regimes, including made ground);
 - Discussion of soil/gas/water analytical and monitoring data, including any visual or olfactory evidence of contamination.
- iv. Risk assessment that evaluates each potential pollutant linkage and establishes the significance of any potential risk. Justification must be provided for any risk assessment model used to ensure it is appropriate for the conceptual site model. All supporting information concerning the selection and derivation of the Generic Assessment Criteria (GACs) must be provided.
- v. Presentation of revised Conceptual Site Model (diagrammatic and/or written form).
- vi. Options appraisal and recommended remediation if the risk assessment identifies pollutant linkages that represent unacceptable risks that need to be managed.
- vii. Recommendation for further investigation or a detailed quantitative risk assessment (if necessary).

5.3 Phase 3 (Remediation Strategy and Implementation Plan)

- i. Objectives of the remediation works.
- ii. Detailed description of the works to be carried out, including as a minimum:
 - Characteristics of site including description of soil conditions, gas regime, hydrology and hydrogeology;
 - Updated Conceptual Site Model;
 - Remediation objectives including description of the nature, degree and extent of contamination to be remediated;
 - Remediation methodology;
 - Validation chemical testing suite;
 - Remediation criteria;
 - Scale site plans and drawings;
 - Phasing of works and timescales;
 - Requirements for post remediation maintenance and monitoring, including any long-term obligations;
 - Allocation of roles and responsibilities.
- iii. Regulatory permits, licences and permissions.
- iv. Site management procedures to protect site neighbours, environment and amenity during works, including where appropriate:
 - Dust, noise, odour and vapour controls;
 - Stockpile management practices;
 - Control of surface run-off;
 - Materials Management Plan.
- v. Details of how any necessary variations from the approved remediation strategy and implementation plan arising during the course of works will be dealt with, including notification to the Local Planning Authority.
- vi. Details of how the works will be validated to ensure the remediation objectives have been met, including:

- Sampling strategy;
 - Use of on-site observations, visual/olfactory evidence;
 - Chemical analysis/monitoring data;
 - Proposed remedial targets including full justification for proposed remediation criteria.
- vii. A post remediation conceptual site model demonstrating how identified pollutant linkages that represent unacceptable risks are to be managed.

5.4 Phase 4 (Verification Report)

Where the development of a site is phased, separate verification reports may be needed for each phase.

- i. Include supplementary information as per items 5.3(i) to 5.3(vi) under Phase 3 (Remediation Strategy and Implementation Plan) detailed above.
- ii. Supporting information should include where appropriate:
 - Chemical testing results for works undertaken during remediation works demonstrating delineation and removal of identified areas of contamination;
 - Chemical certificate(s) of analysis for imported materials;
 - Confirmation of source and quantity of material imported to site;
 - Monitoring results for surface water, groundwater and ground gases;
 - Evidence of physical containment measures, such as engineered capping systems and gas protection measures;
 - Summary data plots and tables relating to verification assessment criteria;
 - Scale plans showing treatment areas and details of any differences from the approved remediation strategy and implementation plan;
 - Photographic evidence of implementation of remedial actions;
 - Waste management details and records;
 - Confirmation that remediation objectives and criteria have been achieved.

Refer to section 8.0 for specific verification requirements.

5.5 Reporting of Unexpected Contamination

- i. In the event that previously unidentified contamination is found at any time when carrying out the approved development immediate contact must be made with the Local Planning Authority and works must cease in that area. An investigation and risk assessment must be undertaken and where remediation is necessary, a remediation scheme must be prepared.
- ii. Following completion of the remedial works identified in the approved remediation strategy, verification of the works must be included in the Verification Report.

6.0 Current Guidance and Best Practice

A list of the main documents employed to review reports submitted to satisfy the standard land contamination planning conditions is provided below.

This list is not exhaustive or exclusive, however, referenced are the current guidance and best practice documents that the Sefton Council Contaminated Land Team require to be utilised in the undertaking of site investigation and risk assessments and production of reports submitted to satisfy the standard land contamination planning conditions.

6.1 Site Investigation

- (1) British Standard, BS 5930:2015. *Code of practice for ground investigations.*
- (2) British Standard, BS 10175:2011+A1:2013. *Investigation of potentially contaminated sites – Code of practice.*
- (3) Environment Agency. *Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination.* R&D Technical Report P5-066/TR. (2000).

6.2 Human Health Risk Assessment

- (1) Department for Environment, Food and Rural Affairs/Environment Agency. *Model Procedures for the Management of Land Contamination.* Contaminated Land Report 11 (CLR11) (2004).
- (2) Environment Agency, Science Report: P5-080/TR3. *The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils.* (2005).
- (3) Environment Agency, Science Report: SC050021/SR7. *Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values.* (2008).
- (4) Environment Agency, Science Report – Final SC050021/SR2. *Human health toxicological assessment of contaminants in soil.* (2009).
- (5) Environment Agency, Science Report: SC050021/SR3. *Updated technical background to the CLEA Model.* (2009).
- (6) Environment Agency, Science Report: SC050021/SR4. *CLEA Software (Version 1.05) Handbook.* (2009).
- (7) Environment Agency, Science Report: SC050021/SGV introduction. *Using Soil Guideline Values.* (2009).

6.3 Ground Gas & Vapour Investigation and Assessment

- (1) British Standard, BS 8485:2015. *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.*
- (2) British Standard, BS 8576:2013. *Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs).*
- (3) CIRIA C665. *Assessing risks posed by hazardous ground gases to buildings.* (2007).
- (4) CIRIA C682. *The VOCs Handbook. Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination.* (2009).

- (5) Chartered Institute of Environmental Health. *The Local Authority Guide to Ground Gas*. (2008).*
- (6) NHBC. *Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present*. Report Edition No: 04. March 2007

*BS 10175:2011+A1:2013 states that Local Authorities also refer to *The Local Authority Guide to Ground Gas*, which is not commercially available, but is essentially the same as *The Ground Gas Handbook* (2009).

7.0 Local Issues

7.1 Tin Slag

Historically, much of the Sefton area has been used for metallurgical manufacturing processes including tin smelting operations that were located in the south of the Borough. A by-product of the tin smelting process is tin slag that has been deposited on sites as backfill, and in other instances used either as hardcore for foundations or as a substitute for stone in concrete constructions.

The tin ore material used in the tin smelting process contains naturally occurring radionuclides, principally thorium and uranium. The tin smelting process concentrates these naturally occurring radionuclides rendering the by-product tin slag radioactive. The levels within the tin slag may present an occupationally significant risk to those working on contaminated sites, and a significant risk to persons occupying dwellings constructed on such a site.

Therefore, depending on the location of the proposed development site, a radiological survey may be a necessary part of any intrusive site investigation. The Contaminated Land Team will be able to advise whether a radiological survey is required on a site-specific basis. Please note that we will not accept reliance on a visual assessment in lieu of a radiological survey.

7.2 Peat

There are significant peat deposits in parts of Sefton; however, the generation potential of peat is very low. As a source of ground gas, peat is finite as all the gas has been generated and is trapped within the peat. It is not unusual for gas monitoring installations with a response zone that intersects peat deposits to record high levels of ground gas, as the installation creates an artificial pathway for gas migration.

In combination with a high water table, gas monitoring will consistently record high levels of ground gas and in these circumstances, an understanding of ground conditions and an assessment of the generation potential of the identified source is required. All too often, the risks associated with peat have been over estimated and recommendations for high specification gas protection measures, typically associated with a more significant gas source, have been proposed.

Gas monitoring data for peat will record high levels of ground gas and a generic risk assessment may identify a high level of gas protection is required, including the associated QA/QC to verify the installation of the gas protection measures. However, it is possible to estimate the volumes of gas within the peat and calculate the total amount of gas that would enter a building, which normally allows for a reduction of the gas protection measures.

To avoid gas monitoring on sites with a low gas generation potential and reliably determine the ground gas risk, an alternative approach is detailed in the CL:AIRE Research Bulletin 17 (RB 17) *A Pragmatic Approach to Ground Gas Risk Assessment*. (2012). A copy of the research bulletin is available for download at www.claire.co.uk.

The approach detailed within the referenced research bulletin may be suitable on proposed development sites with deposits of peat, but must be supported by suitably robust data on the ground conditions at the site.

7.3 Japanese Knotweed

The invasive plant species Japanese knotweed is present throughout the Borough and under the Wildlife and Countryside Act 1981, it is an offence to plant or cause Japanese knotweed to spread in the wild.

Under the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991, waste containing plant material seeds and soil containing rhizomes or seeds must be disposed of as controlled waste if it is to be removed from the site of origin.

The presence of Japanese knotweed can present a constraint to site investigation works that are necessary to characterise a site. Consideration will need to be given to minimising ground disturbance in the locality of Japanese knotweed and measures taken to eradicate it.

Any constraint that Japanese knotweed poses to site investigation works will not be accepted as a justification for not investigating potential areas of contamination. Areas of Japanese knotweed requiring treatment to facilitate a site investigation will need to be managed in accordance with the standard planning conditions specific to the treatment of Japanese knotweed.

Full details of a scheme for the eradication of Japanese knotweed will need to be submitted to and approved in writing by the Local Planning Authority. On completion of the eradication scheme a validation report confirming the remediation has been carried out and the site is free of Japanese knotweed shall be submitted to and approved in writing by the Local Planning Authority.

A code of practice for managing Japanese knotweed is detailed in the Environment Agency publication *Managing Japanese knotweed on development sites (version 3, amended in 2013) the knotweed code of practice*. A copy of the code of practice is available for download at www.gov.uk.

8.0 Standard Requirements

8.1 Imported Soils

The details of the validation methodology to demonstrate the suitability of all imported material and depth of clean cover must be included in the remediation strategy and implementation plan. Detailed below are the testing requirements for imported material on commercial and residential developments:

8.1.1 Residential Development

- 1 sample per 50m³ from a brownfield source, minimum of 4 per source.
- 1 sample per 100m³ from a greenfield source, minimum of 4 per source.
- A minimum of four soil samples should be taken from any soil imported to site and at an ongoing frequency to enable representative contaminant concentrations to be assessed. The source of the imported soil should be clearly identified. If the soil is obtained from a non-greenfield source, the validation testing schedule must reflect any additional contaminants of concern that may be appropriate.
- Confirmation of the quantity of material imported to site must be provided to ensure that representative sampling has been undertaken in accordance with the required testing frequency.
- The samples should be analysed for inorganics, pH, SOM/FOC, quantification of Total Petroleum Hydrocarbons in line with the TPH Criteria Working Group (TPHCWG) and PAHs.
- For materials obtained from a brownfield source, the validation testing suite may need to be amended to reflect any additional contaminants of concern that may be appropriate. As a minimum this should include asbestos.
- The copper, nickel and zinc phytotoxic threshold values in British Standard, BS 3882:2015. *Specification for topsoil*, are significantly lower than the human thresholds and we advise that these should be adopted for all imported material to be placed in gardens and areas of landscaping.

8.1.2 Commercial Development

- 1 sample per 100m³ from a brownfield source, minimum of 4 per source.
- 1 sample per 200m³ from a greenfield source, minimum of 4 per source.
- A minimum of four soil samples should be taken from any soil imported to site and at an ongoing frequency to enable representative contaminant concentrations to be assessed. The source of the imported soil should be clearly identified. If the soil is obtained from a non-greenfield source, the validation testing schedule must reflect any additional contaminants of concern that may be appropriate.
- Confirmation of the quantity of material imported to site must be provided to ensure that representative sampling has been undertaken in accordance with the required testing frequency.
- The samples should be analysed for inorganics, pH, SOM/FOC, quantification of Total Petroleum Hydrocarbons in line with the TPH Criteria Working Group (TPHCWG) and PAHs.

- For materials obtained from a brownfield source, the validation testing suite may need to be amended to reflect any additional contaminants of concern that may be appropriate. As a minimum this should include asbestos.
- The copper, nickel and zinc phytotoxic threshold values in British Standard, BS 3882:2015. *Specification for topsoil*, are significantly lower than the human thresholds and we advise that these should be adopted for all imported material to be placed in areas of landscaping.

The acceptability criteria for imported material may be screened against available Generic Assessment Criteria (GAC). The conceptual exposure model used in the derivation of the GAC must be consistent with that of the proposed development site, and the imported material must match the physical and chemical parameters in terms of soil type, pH and soil organic matter.

Any material imported to site must not contain contaminant levels that exceed the existing site conditions, regardless of whether they meet the assessment criteria. This is to ensure minimal risk levels are achieved.

Soil chemical analysis must be undertaken regardless of visual or olfactory evidence of contamination.

The collection of soil samples for chemical analysis must be undertaken on site and not at source, to avoid any doubt concerning the tracking of material between the source and the site.

Where separate subsoil and topsoil materials are used in the engineered cover system, it will be necessary to confirm the chemical quality of both of these components to demonstrate suitability for use.

Topsoil suppliers usually provide a laboratory analysis report for their client that is based on one soil sample, which is intended to give an indication of the chemical quality of the material. We do not accept the use of chemical soil analysis results from suppliers of imported material to validate the suitability of the material for use on a development site.

Details of the validation chemical testing suite, screening criteria and sampling methodology for assessing the suitability of the material must be provided in the remediation strategy and implementation plan.

8.2 Depth of Cover

The minimum depth of soil for a cover system that we accept on residential developments with gardens is 600mm and this depth is in addition to any other component of the required cover system such as a capillary break layer. In addition to breaking any plausible pollutant linkages, the depth of cover has to be sufficient to enable the end users to make full use of their gardens for activities typically associated with them and within the bounds of the current planning permission. Engineered cover systems must be designed for a particular purpose and it must be noted that site-specific conditions will determine the design of the cover system required to break any pollutant linkages identified by the risk assessment process.

Guidance on the design of engineered cover systems is provided in CIRIA publication *CIRIA Special Publication 124 - Barriers, liners and cover systems for containment and control of land contamination*. (1996).

The verification report must include evidence to confirm the required depth of cover has been provided and, where required, the engineered cover system has been completed in accordance with the agreed design specification.

On a residential development, the thickness of imported soil will need to be confirmed in each plot following placement of topsoil. This can comprise a small excavation into the placed material and verifying the depth using a levelling staff, which should then be photographed. The graduations on the levelling staff must be clearly shown in the photograph that should also seek to capture the base of the excavation with any geotextile separating layer or capillary break layer present where appropriate. Additional photographs should show the buildings of the relevant plots and it must be possible to identify the exact location on site shown in the photographs.

A similar approach will be required for all areas of landscaping on a residential or commercial development and the number and location of inspection pits can be agreed as part of the design of a remediation strategy and implementation plan.

Where site remediation works requires the construction of an engineered cover system, a photographic record should be presented in the verification report showing each stage of construction of the cover system.

An alternative approach to the excavation of inspection pits would be the submission of topographical surveys of the site prior to and after placement of imported material.

8.3 BRE 465

We do not accept the use of BRE 465 *Cover systems for land regeneration, Thickness of cover systems for contaminated land*. (2004), for the design of covers systems that are required to break pollutant linkages that present unacceptable risks.

The document was produced as part of a research project and it is stated within the publication that '*This document deals with the design of simple cover systems, which tend to be used for more marginally contaminated land. The guidance, however, is not appropriate for sites when the contamination is so significant that exposure must be completely prevented.*'

Furthermore, the research has modelled the reduction of exposure using assumptions made in R&D Publication CLR 10 (2002), which has been updated and replaced by Science Report SR3 '*Updated Technical Background to the CLEA Model*' (2009). Therefore, BRE 465 is not compliant with the current guidance provided in SR3.

8.4 Generic Assessment Criteria for Human Health Risk Assessment

Generic Assessment Criteria (GAC) relating to human health, either commercially available or derived in-house, may be used as part of the risk assessment and verification process. In addition to the Soil Guideline Values (SGVs) released by DEFRA and the Environment Agency, examples of published GAC include:

- The LQM/CIEH S4ULs for Human Health Risk Assessment (2015);
- EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment (2010);
- Atkins ATRISK^{soil} Soil Screening Values (SSVs).

The conceptual exposure model for the GAC or site specific assessment criteria (SSAC) used in the risk evaluation, must be representative of the site being assessed or otherwise be sufficiently conservative. If a generic conceptual exposure model is not appropriate for the site being assessed, a risk assessment using a conceptual exposure model that more closely represents the site will need to be undertaken.

GACs and SSACs must be derived in accordance with UK legislation and the Contaminated Land Exposure Assessment (CLEA) framework. With the exception of published SGVs, justification must be provided concerning the selection and derivation of the GACs and SSACs, including the physical-chemical, toxicological and conceptual site model assumptions. All output data sheets for the models should also be included and a risk evaluation should be carried out and presented in the verification report.

8.5 Lead

The Environment Agency has withdrawn the lead SGV (R&D Publication SGV 10) report *Soil Guideline Values for Lead Contamination* (2002) and the toxicological (R&D Publication TOX 6) report *Contaminants in soil: Collation of Toxicological Data and Intake Values for Humans. Lead* (2002).

We will not accept use of the withdrawn SGV 10 report or the TOX 6 report for Lead.

DEFRA published a methodology in 2014 for deriving Category 4 Screening Levels (C4SLs) for use in screening out land that does not pose a significant possibility of significant harm under Part 2A of the Environmental Protection Act 1990.

The methodology includes a modified exposure model used to calculate the soil concentration that would result in an exposure equal to the Low Level of Toxicological Concern. This soil concentration is the provisional Category 4 Screening Level (pC4SL).

The pC4SLs represent a low level of risk and are a departure from the 'Minimal Risk' approach used in setting Environment Agency Soil Guideline Values. pC4SLs have been published for Arsenic, Benzene, Benzo(a)pyrene, Cadmium, Chromium (VI) and Lead.

The pC4SL for Lead is considered suitable to be used under the planning regime for deciding when land is suitable for use.

As with the use of any Generic Assessment Criteria (GAC) within a Generic Quantitative Risk Assessment (GQRA), it must be demonstrated that the conceptual site model assumptions used to derive the provisional C4SLs, are representative of the site being assessed or will otherwise be sufficiently conservative.

8.6 Validation of Gas Protection Measures

The validation of the installation of gas protection measures is an essential part of the overall verification process to confirm that remedial measures have been successfully implemented.

The construction details incorporating the gas/vapour protection measures to be installed in any new build or extension, must be approved by our Building Control or other approved inspector to ensure that the design of the proposed gas/vapour protection measures are compliant with required mitigation measures identified by the gas risk assessment. Confirmation that the design proposals have been approved must be provided prior to the construction or installation of any gas protection measures.

The Remediation Strategy and Implementation Plan will only be approved when confirmation has been provided that the required gas mitigation construction details have been approved. This will not apply where a site is remediated to a development platform.

It is essential that rigorous construction quality control is exercised during the installation of gas/vapour membranes in accordance with a Construction Quality Assurance (CQA) plan. Specialist contractors must install the gas protection measures under a QA system and their installation validated by an independent consultant. Upon completion of the installation of the gas protection measures, evidence must be included in the verification report that the works have been completed in accordance with the CQA plan and that they comply with the agreed design specification.

The verification report must include validation of the individual phases of construction and installation of the gas mitigation measures for every plot. An individual gas protection validation record for every plot completed by an independent consultant must be included and a gas protection validation record completed by the installer may supplement this information. The important items that require validation include:

- Installation of gas/vapour membranes;
- Floor slab construction;
- Underfloor venting; and
- In ground gas venting and barriers.

A photographic record of the construction and installation of the gas mitigation measures for every plot must be provided in the verification report.

The CIEH publication *The Local Authority Guide to Ground Gas*. (2008) explains the construction and validation process of gas protection measures and includes a verification report checklist, based on Environment Agency and NHBC guidance. A gas protection validation record is also included in the guidance.

Validation completed in accordance with this checklist, provision of a gas protection validation record and a photographic record for every plot, should provide the necessary information to confirm the required gas mitigation measures have been successfully installed.

8.7 Environment Agency

The Environment Agency (EA) may be consulted on a planning application where criteria set by the EA identifies their input is required. The EA provides advice on a range of issues, including potential controlled waters issues, flood risk implications, environmental permitting or waste exemptions.

If a site investigation report identifies a potential controlled waters issue, we will consult the EA as part of the process to determine an application or discharge a planning condition.

The EA has published generic guidance that describes what they consider to be good practice for the management of land and water that has been contaminated. The guidance mainly focuses on water and waste issues, and may be of assistance to those responsible for causing contamination, owners of affected land or those intending to develop it. The Guiding principles for land contamination publication *GPLC2 – FAQs, technical information, detailed advice and references*. (March 2010) signposts users to other GPLC guidance and advice, and is available for download at www.gov.uk.

8.8 MCERTS

In line with the requirements of the EA, we only accept analytical data from laboratories who are accredited under the MCERTS Chemical Testing of Soil scheme.

8.9 Environmental Information Request

The Contaminated Land Team has a lot of information and local knowledge concerning land contamination issues in the Borough that would not be included in a commercially available environmental search report.

As part of the preparation of a preliminary investigation report, consultants are encouraged to contact the Contaminated Land Team and submit a request for information under The Environmental Information Regulations 2004.

The information we are able to provide in response to an environmental information request typically includes the following:

- Identification of potentially contaminative land uses based on a review of historical and current Ordnance Survey maps;
- Details of landfill sites or suspected areas of tipping;
- Authorised processes;
- Details of site investigation and verification reports;
- Details of known pollution incidents;
- Confirmation if the site has been identified for inspection in accordance with our Contaminated Land Inspection Strategy under Part 2A of the Environmental Act 1990 (EPA 1990); and
- Details of sites determined or designated under Part 2A of the EPA 1990.

9.0 Contact Details

If you have any queries concerning land contamination issues, or require any further information, please contact a member of the Contaminated Land Team:

**Sefton Council
Contaminated Land Team
Magdalen House
30 Trinity Road
Bootle
Merseyside
L20 3NJ**

Tel: 0151 934 4030

E-mail: contaminatedland@sefton.gov.uk