Development On Land Affected By Contamination

Guidance for Developers, Landowners and Consultants

Reigate & Banstead
BOROUGH COUNCIL
Banstead | Horley | Redhill | Reigate

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Version 1

Disclaimer

This document is for guidance. It is intended to review this guidance annually, but readers must note that legislation, guidance and practical methods are subject to change and therefore should be aware of current UK policy and best practice.

This note should be read in conjunction with prevailing legislation and guidance, as amended, whether mentioned here or not. Where legislation and documents are summarised this is for general advice and convenience, and must not be relied upon as a comprehensive or authoritative interpretation.

Ultimately it is the responsibility of the person/company involved in the development or assessment of land contamination to apply up-to-date working practices to determine the contamination status of a site and the remediation and verification requirements.

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Introduction

The purpose of this guidance is to assist developers, landowners and consultants who wish to re-develop or significantly change the use of land or buildings which could be affected by contamination, or introduce an end use that is vulnerable to contamination, for example housing, schools, hospitals and children's play areas (see Appendix 1A).

This guidance explains the general process that should be followed and action that should be taken when redeveloping land to ensure that it is suitable for use. Importantly it explains what information should be submitted to the Local Planning Authority. All aspects of investigations into possible land contamination should follow the guidelines within CLR11 Model Procedures for the Management of Land Contamination, in line with current best practice.

Following this guidance will assist you to understand what is involved with development of land affected by contamination and will help prevent delays in processing your planning application.

Land Contamination – A Material Planning Consideration

Certain types of contamination are known to be hazardous to human health and the environment. The Government has decided that it is no longer acceptable to redevelop contaminated sites without, at the same time, minimising the risks that the contamination creates, to make the site suitable for its new use and to ensure that it does not cause pollution of the wider environment.

The presence of contamination does not necessarily present an unacceptable risk. Risk exists when a source (a contaminant) and a receptor (e.g. humans, controlled waters or the wider environment) both exist at a site with a pathway linking the two. This is known as a pollutant linkage. For example, humans can be affected by contaminants in soil by ingesting vegetables grown in the soil. The contaminant may be present in various forms, for example, chemical, biological or radioactive. Development can create risk by introducing new pathways and also by introducing new receptors e.g. by introducing residents to land affected by contamination.

Where a proposed development introduces a vulnerable end use and/or the development site could have been affected by a former potentially contaminative land use (see Appendix 1B), the possibility of land contamination should always be considered.

The presence of contamination should be considered by the prospective developer at the outset. Where land is grossly contaminated then the presence of contamination may prevent development. In most cases it should be possible to develop land but contamination can affect the construction details and layout of a scheme. The assessment of contamination and any changes to construction as a result of the

changes incurs a cost and this alone may affect the viability of the development or the proposed layout.

The Role of the Local Planning Authority

The Local Planning Authority has a duty to take account of all material considerations, including contamination, in the control of development. It needs to be satisfied that land is made suitable for the proposed future use, and that any remediation required is properly maintained thereafter.

All planning applications have to be considered for potential contamination issues to ensure compliance with the provisions of the Town and Country Planning Act 1990 (as amended) and with Planning Policy Statement (PPS23) that states:

> 'Where any contamination is known or suspected or the proposed use would be particularly vulnerable (such as housing with gardens) the Local Planning Authority should require the applicant to provide with the application such information as is necessary to determine whether the proposed development can proceed.'

The Local Planning Authority may use conditions to secure the investigation and remediation of land so that it is satisfied that land is suitable for use.

On any site where there is the potential for contamination to influence the site, or where the proposed development is vulnerable, the Planning Officer may seek advice from the Environmental Health Division, the Environment Agency or other third parties with appropriate expertise. As a result of this advice then the application may be refused; the applicant may be required to submit further information; or planning conditions may be imposed to ensure that the site will be suitable and safe for the end users, the environment and the public.

Potential developers and their consultants/advisors are encouraged to pursue pre-application discussions with the Planning Officer prior to submission of any formal planning application. This provides the opportunity to discuss draft proposals informally, identify issues that will need to be addressed, and the technical information that will be required. Dependent on the circumstances then a pre-application fee may be payable in respect of pre-application meetings and discussions. The developer may hold discussions with or submit information directly to the specialists from whom the Planning Officer will seek advice however it is important that the relevant Planning Officer is kept advised and copied in on information since it is their role to consider matters related to any planning submission.

The Responsibility of the Developer

Where a development is proposed, it is the responsibility of the developer to ensure that:

- issues of land contamination are appropriately considered;
- remediation (where necessary) takes place; and
- the land is safe and 'suitable for use' i.e. the site is cleaned up to a level which is appropriate for the proposed end use.
- The Local Planning Authority is presented with documentary evidence clearly demonstrating that works have been carried out to the appropriate standards in a timely manner.

Where land is developed, the developer is responsible for obtaining the necessary specialist advice and skills required to ensure that development proceeds safely and that the finished development is suitable for the proposed use. The Council cannot arrange for nor provide this advice.

Where documentation is presented to the Council for approval, then works should not proceed until written approval has been received from the Local Planning Authority. Any queries on progress with approval should be directed to the Local Planning Authority.

Preliminary considerations for development

Before considering development and as a minimum it is recommended that a developer should make enquiries about the previous use of land by obtaining either a commercially available search or a report from the local authority.

This will not by itself fulfil the planning requirements for a desk study where an investigation is required but it will provide an initial indication as to the potential for contamination.

Establishing this information will assist in completing any planning application submission as outlined below.

Submitting a Planning Application

Question 15 of the national planning application form (1APP) requires the applicant to identify if there is a potential for land contamination at the site or if a vulnerable use is being introduced. The terms "potential for land contamination" and "vulnerable use" are explained in the following section on how to answer the questions.

Applicants must address the questions in the Existing Use section when preparing a planning application.

Example of the Existing Use Section from the Standard 1APP Form

From April 2008, all planning applications must use the new national 1APP planning application form. Section 15 (Existing Use) of 1APP highlights the requirements of PPS23, as shown in Figure 1 below.

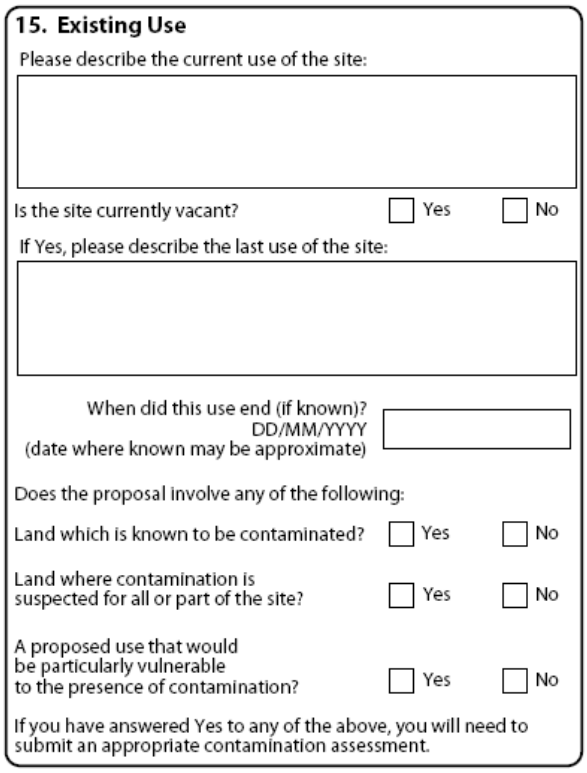
Does the proposal involve any of the following?

1. Land which is known to be contaminated?
This would include a development on land which has known contamination or on land which is known to be affected by contamination.

2. Land where contamination is suspected for all or part of the site?
This would include a development on or near land which has had a previous potentially contaminative use, but there is no actual knowledge of land contamination issues.

3. A proposed use that would be particularly vulnerable to the presence of contamination?
This would include any residential building, schools, nurseries and allotments. For residential buildings, this will include any development of one dwelling or more, while extensions or conservatories will be excluded, unless there is a specific known land contamination issue.

Figure 1.
Section 15 of the 1APP planning application form



15. Existing Use

Please describe the current use of the site:

Is the site currently vacant? ☐ Yes ☐ No

If Yes, please describe the last use of the site:

When did this use end (if known)? DD/MM/YYYY (date where known may be approximate)

Does the proposal involve any of the following:

Land which is known to be contaminated? ☐ Yes ☐ No

Land where contamination is suspected for all or part of the site? ☐ Yes ☐ No

A proposed use that would be particularly vulnerable to the presence of contamination? ☐ Yes ☐ No

If you have answered Yes to any of the above, you will need to submit an appropriate contamination assessment.

If the answer to any of the questions in the Existing Use Section is 'yes', then an appropriate contamination assessment must be submitted with the planning application.

As a minimum, a contamination assessment must include a Phase 1 investigation (which consists of a desk study, a site walkover and an initial risk assessment). Phase 1 investigations are discussed in further detail on page 10 of this document.

The Phased Investigation of Land Affected by Contamination

Introduction
This section of the guidance provides a short descriptive overview of the process, including a flow diagram followed by more detailed information about each of the phases of investigation and remediation of land.

The investigation, assessment and clean up (remediation) of land contamination can be divided into a series of four phases:

Phase 1
This is a preliminary investigation to obtain a good understanding of a site's history, its environmental setting and its potential to be contaminated. It may involve limited sampling. The findings will inform further investigations (as appropriate) and assist in the identification of any special procedures that may be required in the further tests.

Importantly it will assist in the formulation of a preliminary conceptual model that describes the potential contaminants, pathways and receptors.

Phase 2
This comprises the main investigation of a site. It serves to clarify the extent and nature of contamination and inform revision of the conceptual model.

The proposals for phase 2 investigation normally need to be approved by the Local Planning Authority before implementing the investigation.

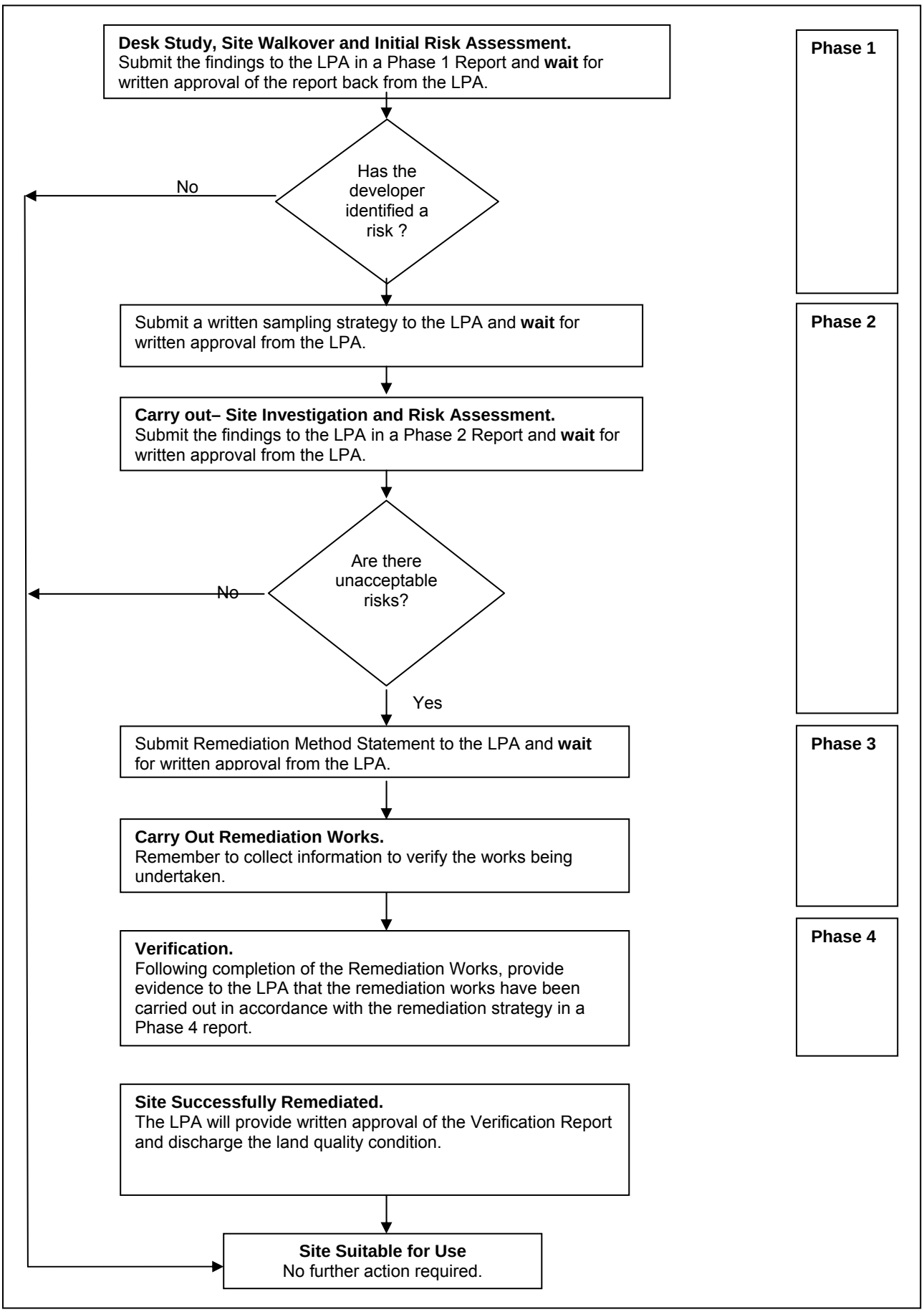
Phase 3
This refers to the remediation of the site, that is the actions that will be taken to ensure that any significant pollutant linkages identified in the conceptual model are treated so as to ensure the land is suitable for use, it will also include information on how the applicant will prove that those works have been carried out for the purposes of the verification report (Phase 4).. The remediation strategy should be designed having regard to the information obtained in the previous phases. It should identify clear standards that are to be achieved by remediation and include proposals for verifying that remediation works were implemented.

A remediation strategy will need to be submitted for approval by the LPA before remediation works commence.

Phase 4
This is verification of the proposed remediation works, that is, it is the process of demonstrating that the risks from contaminated land have been reduced to meet the remediation criteria and objectives based on quantitative assessment of remediation performance.

Please note that not every site will require every phase to be carried out. The phases are shown in Figure 2 below.

Figure 2: Indicative Steps in Investigation & Remediation



Phase 1 – Desk Study, Site Walkover and Initial Risk Assessment

The purpose of a Phase 1 assessment is to obtain a good understanding of a site's history, its setting and its potential to be contaminated. Failure to demonstrate this may result in the Local Planning Authority refusing a planning application, as important information could be missed.

A Phase 1 assessment, which is sometimes referred to as a contamination assessment, consists of a desk study, a site walkover and an initial risk assessment with the findings compiled into a report. The results of a Phase 1 assessment will determine if further investigation is required.

The developer is responsible for producing the Phase 1 report.

Desk Study

A desk study is a detailed search of available historical and current records and maps to identify potential on-site and off-site sources of contamination. It should include information on:

- Site location and setting (including a site plan).
- Current land use on, and in the vicinity of the site.
- Historical land use on, and in the vicinity of the site obtained from various sources including historical maps and directories.
- Mining or quarrying activities.
- Types of contamination that may be present.
- Details of spillages or pollution incidents.
- Soils and underlying geology.
- Ecology and archaeology.
- Groundwater and surface water.
- Location of permitted, unpermitted and exempt waste sites.
- Abstraction and discharge licences.

Site Walkover

A site walkover survey should be undertaken to confirm the information gathered by the desk study. Observations should be made relating to:

- The site's layout, nature and setting (including information on the presence and condition of above-ground fuel tanks and manholes, deposits of waste material and the storage of hazardous chemicals).
- The condition of the site and structures.
- Visual or odorous evidence of contamination.
- Signs of vegetation distress.

Where possible photographic evidence should be used to supplement the reporting of the site walkover.

Initial Risk Assessment / Conceptual Site Model

After carrying out a detailed desk study and site walkover survey, an initial conceptual site model should be developed. This is usually a diagram or table that illustrates the potential pollutant linkages at a site. It should include the following:

- **Sources** of any potentially significant contamination e.g. tanks or nearby landfill sites.

- **Pathways** through which contaminants can travel e.g. direct contact or vapours.

- **Receptors** that ultimately can be affected by the contamination e.g. residents or groundwater.

Please note that not every source will be linked to every receptor through every pathway.

The conceptual site model will enable an initial risk assessment to be made, which will indicate whether a Phase 2 investigation is required. The conceptual model should be reviewed and revised through subsequent Phases as more information is gathered.

A Phase 1 report containing the information listed in Checklist 1 presented in Appendix 2 (page 23) of this guidance must be submitted to, and approved in writing by, the Local Planning Authority BEFORE proceeding to the next phase.

Phase 2 – Site Investigation and Risk Assessment

If Phase 1 indicates that there is a potential for contamination, a Phase 2 investigation will be required. Phase 2 comprises site investigation and risk assessment, to determine whether there are any unacceptable risks to people, property or the environment.

The developer is responsible for producing the Phase 2 report.

Site Investigation

A site investigation should be designed to determine the nature and extent of contamination where it is present and also areas where it is absent. It is important to refer to the conceptual site model completed in Phase 1, as this will ensure that all possible pollutant linkages are investigated. Investigations should be carried out in accordance with the procedural requirements of BS10175, BS5930, relevant Euro codes and CLR11.

Analysis of samples of soil, water and/or ground gases may be required to assess the contamination at a site. Please note that there are numerous sources of ground gases derived from both natural and human activities. Buried organic matter is of particular concern, as it has the potential to generate methane and carbon dioxide, so sites located in the vicinity of refuse tips may be at risk from ground gases. Further information is available in BS 8485, CIRIA C665 and the Chartered Institute of Environmental Health (CIEH) Local Authority Guide to Ground Gas.

The proposed site investigation works should be recorded in a sampling strategy and submitted to the Local Planning Authority for approval. The sampling strategy should include the following information:

- The purpose and objectives of the investigation formulated on the basis of the conceptual site model and the information gaps highlighted during Phase 1.
- Overview of the intended sampling – including information and justification of sample locations, depths, patterns and numbers and the frequency and duration of sampling or monitoring to be undertaken.
- Sampling and/or monitoring methods to be used.
- The contaminants and parameters that will be assessed.
- The likely number of samples (soil, water and/or ground gas) that will be taken for subsequent laboratory analysis.
- The laboratory methods that will be used. Please note that independently accredited laboratories and analytical methods should be used (e.g. UKAS, MCERTS).

A written sampling strategy (scope of works) will need to be submitted to, and agreed by, the Local Planning Authority before the commencement of site investigation works. Please contact the Development Management section of the Council to discuss the procedural requirements.

Risk Assessment

After approval of the sampling strategy and completion of the site investigation works, the conceptual site model developed in Phase 1 should be reviewed and updated.

It is important to consider each potential pollutant linkage during the risk assessment and decide whether it is active at the site and whether it has the potential to harm the receptor.

Assessing Risk to Human Health

A tiered approach to estimating risk should be followed involving the direct comparison between observed levels of contamination and firstly Generic Assessment Criteria (GAC) followed by Site Specific Assessment Criteria (SSAC), if deemed necessary.

GAC must be derived from authoritative published sources. If values from other countries are used, they must be adapted to ensure that they are relevant to UK policy and environment. Justification of their use must also be provided.

If the observed levels of contamination exceed the GAC, then a more detailed site specific risk assessment is required. This involves the formulation of SSAC using risk modelling. The Contaminated Land Exposure Assessment (CLEA) methodology is a government supported methodology that can be used to estimate the risks to people from contaminants in soil. A number of alternative risk assessment models are available including RISC and RBCA. All models should be in line with UK policy and include all site specific pollutant linkages. All risk-modelling assumptions and uncertainties must also be presented and referenced.

Assessing Risk to Controlled Waters

Controlled waters include, but are not limited to, groundwater, rivers, streams and estuaries. In relation to land contamination and the planning regime, the Environment Agency may be asked by the Local Planning Authority to act as a consultee and provide advice on risks to controlled waters. The Environment Agency's main aim is to protect and improve controlled waters.

The developer/applicant should provide sufficient information to assess the risks to controlled waters. As part of the site investigation the observed levels of contaminants should be compared to water quality standards, for example environmental quality standards (EQS), drinking water standards (DWS) and further risk assessment or remediation may be required.

Further advice and documents are available on the Environment Agency website (www.environment-agency.gov.uk).

Assessing Risk to Other Receptors

These may include risks to buildings, structures, crops, livestock or ecological systems. In situations where such receptors have been identified in pollutant linkages, early consultation with the appropriate authoritative body (e.g. Natural England, English Heritage) is advised.

In September 2008 the Environment Agency launched it's Ecological Risk Assessment Framework. This framework provides a tiered approach to assessing the risks from land contamination to organisms, animals or whole ecosystems. Further information is available on the Environment Agency website (www.environment-agency.gov.uk). On completion of the risk assessment process, a recommendation should be made as to whether Phase 3 works will be required to make the site "suitable for use".

A Phase 2 report containing the information listed in Checklist 2 presented in Appendix 2 (page 24) of this guidance must be submitted to, and approved in writing by, the Local Planning Authority BEFORE proceeding to the next phase.

Phase 3 – Remediation

Phase 3 works, known as remediation, involves the 'clean up' of the site to ensure that the finished development is suitable for use. Remediation can take many forms, for example, removal of the source of contamination or by breaking a pathway by inserting a barrier. Remediation is entirely site specific.

Once all investigation and risk assessment work has been completed, if recommended in Phase 2, a remediation strategy is required to be submitted to the Local Planning Authority for approval, prior to remediation work commencing. The strategy must clearly state what is going to happen on site to address the contamination issues with definite undertakings as opposed to option proposals. It must also identify how the works will be verified to demonstrate how each pollutant linkage has been broken or controlled. Remediation proposals must take account of any Local Authority policies relating to remediation and/or verification.

The developer is responsible for producing the Phase 3 report.

Objectives

The remediation strategy should clearly state the objectives of the works to be carried out including a brief justification as to why that particular method has been chosen. A summary of the site investigation/s should be included detailing the nature and extent of the contamination found which is to be addressed through the remedial works.

Works

A detailed explanation of the exact works to be undertaken must be given along with the full methodology of the processes to be used. This should include site plans and drawings to indicate the areas to be remediated. Details of the depths and volumes of the material involved, source of any imported material, volume of remediated material to be re-used on site and waste disposal location must also be given. Any materials to be used within the remediation must also be detailed along with manufacturers specifications e.g. gas membranes, geo-textile barriers. Due regard must also be paid to health and safety requirements. The details of the responsible persons who will be undertaking and supervising the work must be provided.

Verification

Details must be included on how remediation works will be verified to demonstrate that the remediation has been successful. Remedial target criteria are required to state what levels of individual contaminants can remain on site without posing an unacceptable risk to any receptors. The risk assessment package used to derive these criteria must be detailed, including the input and output data sheets. There are a variety of risk assessment tools available, however please ensure that all models are aligned to UK policy and are appropriate for the site. The conceptual model should be revised to demonstrate how all the pollutant linkages present will be addressed.

Where soil verification samples are to be taken, the location of these samples should be identified and included within the remediation strategy. Where ground or surface waters are to be monitored, the locations of sampling points must be clearly stated. The Environment Agency will be involved when agreeing compliance and assessment points.

Some sites may require long term verification monitoring. The exact timescales for achieving the remediation criteria must be clearly stated in the remediation strategy. It would be unreasonable to allow verification to continue for a lengthy period of time without an assessment of the progress. If long term groundwater, surface water or gas monitoring is required, details and timescales of interim reports will also be required including interim verification criteria.

Mitigation

Measures may also have to be incorporated within the development itself to protect future users from any potential contamination, e.g. low permeability gas membranes, capillary break layers, capping systems, specific types of drinking water pipes etc. All such requirements should be clearly detailed in the remediation strategy.

Licences

Details of the consents and licences required for the remediation should be included in the remediation strategy e.g. waste management, abstraction/discharge licences. Consideration should also be given to dust, noise and odour controls and the control of any surface run-off from wheel washes, stockpiles etc.

Contingency Measures

Should the remediation be unsuccessful or unanticipated contamination be found during the works, there may be a requirement for contingency measures. The remediation strategy should include an undertaking detailing that if such circumstances arise details of the further works required will be submitted to the Local Planning Authority for approval. A timescale should also be included to state when the contingency details will be submitted.

Remediation works can only commence once the Remediation Strategy has been submitted to and approved in writing by the Local Planning Authority.

The Remediation Strategy should include the information listed in Checklist 3 presented in Appendix 2 (page 25) of this guidance.

Phase 4 – Verification

Phase 4 works, also known as verification, are undertaken following remediation. The purpose is to identify the success or otherwise of these works and to identify whether any further remediation or risk management measures are necessary to ensure the site is suitable for its intended use.

On completion of the remediation works a verification report is required to be submitted to the Local Planning Authority. This will detail the remediation and verification carried out which will have already been agreed with the Local Planning Authority and the results to determine whether the remediation criteria have been achieved. Where longer term monitoring is required, e.g. groundwater or gas monitoring, an interim report should be submitted detailing all the verification work undertaken to date. Where the site's remediation criteria have not been met, the details of the contingency works must be included, this could comprise of further detailed quantitative risk assessment, physical remediation works or mitigation measures for example.

The developer is responsible for producing the Phase 4 report.

Objectives

The verification report should include the details and objectives of the remediation works undertaken on site.

Works

A detailed description of all remediation works carried out on site must be included along with any plans, drawings etc to show the areas remediated. The total volume of material affected should be included along with the volume of any imported material. Volumes of any materials which have been sorted or treated on site to allow some reuse on site should also be detailed. Full details of the locations from where verification samples were taken are required, including depths and volumes etc.

Verification Results

Results of the analysis of all the verification samples should be included within the report with a detailed comparison and interpretation against the remediation criteria, which were agreed in the remediation strategy.

If the remediation criteria have not been met, further work is required to ensure the site is suitable for its intended use. This may involve undertaking further detailed risk assessment, returning to undertake further remediation at the site or installing some form of mitigation method, e.g. a barrier to prevent users being impacted by the contamination. Discussions should be held with the Council as soon as possible once it is known that the remediation works have not met the targets, as to the extent of work required to ensure the site is suitable for its intended use.

Interim Verification

In some cases longer term monitoring will be required on the site to provide verification to remediation works. Where this is required, timescales should have been set when agreeing the remediation strategy as to when interim reports would be submitted to the Local Planning Authority, including any interim remediation criteria. The details similar to those given above should be included in interim verification reports.

Conclusions

The report should detail whether all pollutant linkages have been broken or effectively controlled and whether the site is suitable for its intended use. An updated conceptual model should also be included.

On completion of Remediation and Verification works, a Verification Report should be submitted to the Local Planning Authority to obtain their written approval.

The Verification Report should include the information listed in Checklist 4 presented in Appendix 2 (page 26) of this guidance.

DISCHARGE OF PLANNING CONDITIONS

TO DISCHARGE LAND QUALITY CONDITIONS, THE LOCAL PLANNING AUTHORITY MUST BE SATISFIED THAT AT ALL THE RELEVANT STAGES SATISFACTORY REPORTS HAVE BEEN SUBMITTED TO DEMONSTRATE THAT THE DEVELOPMENT IS SUITABLE FOR USE.

References and Useful Documents

Please note that the list below is not exclusive or exhaustive:

- British Standards Institution (2007). BS 8485:2007: Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments. BSI, London.
- British Standards Institution (2001). BS 10175:2001: Investigation of Potentially Contaminated Sites - Code of Practice. BSI, London.
- British Standards Institution (1999). BS 5930:1999: Code of Practice for Site Investigations. BSI, London.
- Building Research Establishment (2001). BRE Report 414: Protective Measures for Housing on Gas Contaminated Land. BRE, London.
- Chartered Institute of Environmental Health and CL:AIRE (2008). Guidance on Comparing Soil Contamination Data with a Critical Concentration. CIEH and CL:AIRE, London (available from: www.cieh.org.uk).
- Construction Industry Research and Information Association (2007). CIRIA C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings. CIRIA, London.
- Department of the Environment (1995). Industry Profiles (various titles). DoE, London (available from: www.environment-agency.gov.uk/).
- Department for Environment, Food and Rural Affairs (2006). Circular 01/2006: Environmental Protection Act 1990 – Part 2A. DEFRA, London (available from: http://www.defra.gov.uk).
- Environment Agency (2006). Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination. Environment Agency, Bristol (available from: www.environment-agency.gov.uk/).
- Environment Agency (2005). Science Report P5-080/TR3: UK Approach to Evaluating Human Health Risk from Petroleum Hydrocarbons in Soil. Environment Agency, Bristol (available from: www.environment-agency.gov.uk/).
- Environment Agency (2004). CLR11: Model Procedures for the Management of Land Contamination. Environment Agency, Bristol (available from: www.environment-agency.gov.uk/).
- Environment Agency (2000). R & D Technical Report P5-065/TR: Technical Aspects of Site Investigation. Environment Agency, Bristol (available from: www.environment-agency.gov.uk/).
- Environment Agency (2000). R & D Technical Report P5-066/TR: Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination. Environment Agency, Bristol (available from: www.environment-agency.gov.uk/).
- Health & Safety Executive (1991). Protection of Workers and the General Public during the Development of Contaminated Land. HSE, London.
- National House Building Council, Environment Agency & CIEH (2008). R & D Publication 66: Guidance for the Safe Development of Housing on Land Affected by Contamination. NHBC & Environment Agency, London (available from: www.nhbcbuilder.co.uk).
- Office of the Deputy Prime Minister (2004). Planning Policy Statement 23: Planning and Pollution Control. Annex 2: Development on Land Affected by Contamination. ODPM, London (available from: www.communities.gov.uk).
- Office of the Deputy Prime Minister (2004). The Building Regulations 2000: Approved Document C – Site Preparation and Resistance to Moisture. ODPM, London.

Appendix 1 – Examples of Vulnerable End Uses and Potentially Contaminating Land Uses

A. This is a list of potentially sensitive end uses:

- All residential developments (houses, flats, nursing homes)
- Allotments
- Schools
- Nurseries and crèches
- Children's playing areas and playing fields
- Mixed use developments including any of the above

Note, If your use proposed use does not appear on this list and / or you are in doubt then please contact the Local Planning Authority to discuss your application

B. This is a list of potentially contaminating land uses, which is derived from Annex 2 of Planning Policy Statement 23: Planning and Pollution Control (2004). Further details are available in the Department of the Environment Industry Profiles, which are available to download free of charge from the Environment Agency website.

- Smelters, foundries, steel works, metal processing & finishing works
- Coal & mineral mining & processing, both deep mines and opencast
- Heavy engineering & engineering works, e.g. car manufacture, shipbuilding
- Military/defence related activities
- Electrical & electronic equipment manufacture & repair
- Gasworks, coal carbonisation plants, power stations
- Oil refineries, petroleum storage & distribution sites
- Manufacture & use of asbestos, cement, lime & gypsum
- Manufacture of organic & inorganic chemicals, including pesticides, acids/alkalis, pharmaceuticals, solvents, paints, detergents and cosmetics
- Rubber industry, including tyre manufacture
- Munitions & explosives production, testing & storage sites
- Glass making & ceramics manufacture
- Textile industry, including tanning & dyestuffs
- Paper & pulp manufacture, printing works & photographic processing
- Timber treatment
- Food processing industry & catering establishments
- Railway depots, dockyards (including filled dock basins), garages, road haulage depots, airports
- Landfill, storage & incineration of waste
- Sewage works, farms, stables & kennels
- Abattoirs, animal waste processing & burial of diseased livestock
- Scrap yards
- Dry cleaning premises
- All types of laboratories

Other uses and types of land that might be contaminated include:

- Radioactive substances used in industrial activities not mentioned above - e.g. gas mantle production, luminising works
- Burial sites & graveyards
- Agriculture - excessive use or spills of pesticides, herbicides, fungicides, sewage sludge & farm waste disposal
- Naturally-occurring radioactivity (excluding radon as this is covered by Building Regulations)
- Naturally-occurring elevated concentrations of metals and other substances
- Methane & carbon dioxide production & emissions in coal mining areas, wetlands, peat moors or former wetlands.

Appendix 2 – Report Requirements and Making Submissions to the Local Planning Authority

The checklists on pages 23 to 26 of this guidance have been included to provide instruction as to the Local Authority's reporting requirements in respect of each phase of site investigation. They are also a critical part of the process of submitting a planning application or details to comply with a land quality condition as they are required to be completed, signed and dated prior to being submitted with the relevant report in order to demonstrate that the reports have been checked by a suitably qualified person and that they contain the appropriate information to be considered suitable for registration against the appropriate planning application.

Instructions on the Completion of the Checklists

It is expected that developers/consultants use the checklists in this appendix to demonstrate that they have fully met the reporting requirements of the Local Authority for the phase of investigation that is being reported.

The details of the report that is being submitted, including the report title, the authoring company, the date the report was written and the documents reference must be completed on the checklist.

Furthermore, in order to allow for a swift review of submitted reports prior to them being registered against the planning application, all boxes in the right hand column of the appropriate checklist, titled "Location", must be completed with the page number where each of the reporting requirements of the appropriate phase of investigation can be found in the report. Where the developer believes that a reporting requirement for a specific phase is not applicable to investigations at a site "N/A" must be reported in the right hand column and a clearly marked explanation as to why this information is absent must be provided.

Finally, the completed checklist must be signed by the developer or his technical advisor to confirm that they are satisfied with the reports contents and the date of this signature also provided.

It should be noted that where a checklist is completed inaccurately or in part only it is possible that the submission will not be registered as a valid submission and/or it may be refused upon detailed review of the submission, thereby causing delay and potentially additional costs to be incurred by the developer.

Presentation of monitoring results

It is normal practice for site sampling results to be included in the body of the text of a report. In addition to this the developer should also present the information electronically in Microsoft Excel format.

The spreadsheet should include results from the monitoring locations and the criteria against which they were assessed. The spreadsheet should be designed such that it shows where the results have exceeded the assessment criteria. Laboratories will normally supply information in this way.

Wherever possible sample locations should be accurately georeferenced within the spreadsheet.

LPA Action Upon Receipt of a Submitted Report

In the first instance the content of the submission will be reviewed by the planning Technical Support Unit (TSU), who will make a judgement as to whether or not to accept the submission as valid and able to be registered. In making this decision, the TSU will be mindful as to whether the appropriate application form and checklist have been satisfactorily completed and, where necessary, the appropriate fee has been provided.

Where a submission is considered to be invalid it will not be registered and the developer will be required to submit further necessary information.

Where a submission is considered to be valid it will be registered against the relevant original planning application and consultation will commence or advice will be sought.

The Planning Officer will seek advice on the suitability of the report in respect of the phase of investigation. Should it be the case that additional information needs to be reported it will be necessary for either:

- a revised report, with an appropriately completed checklist; or
- an addendum report to be submitted to the LPA; or
- a new submission to be made.

Any addendum report must be clearly marked as such and cite the main report to which it is an addendum.

Combining Reports

It is preferred that reports are not combined and that individual phases of investigation are submitted separately and their approval sought and received in writing from the LPA prior to the submission of the report of the subsequent phase of investigation.

Please note:

A submission of a planning application or details to comply with a land quality condition that is not accompanied by a completed and signed checklist for the appropriate phase of investigation may result in a delay in the registration of your planning application/details submission or their refusal.

The reporting requirements stated in the checklists represent good practice but are not exhaustive to each phase of investigation and further works and reporting may be required to satisfy the Local Planning Authority.

Checklist 1 - Desk Study, Site Walkover and Initial Risk Assessment (Phase 1)

Site Address:			
Report Title:		**Date**	
Report Author:		**Ref.**	

Desk Study, Site Walkover and Initial Risk Assessment	Location in Report
Purpose and aims of study	
Site location and layout plans	
Appraisal of site history and previous surrounding land uses for at least the last 100 years, where possible (to include copies of historic plans)	
Assessment of the environmental setting, including:	
• Geology, hydrogeology, hydrology	
• Information from the Environment Agency on water abstractions, pollution incidents and landfill sites etc.	
• Information from the Council on former landfill sites, private water supplies and land contamination etc	
Assessment of the site walkover findings and the proposed site use	
Assessment of any previous land contamination reports (desk-based or intrusive)	
Risk assessment based on proposed development, including:	
• An appraisal of actual and/or potential contaminant sources, pathways and receptors	
• Conceptual site model (visual/tabular and written discussion)	
Recommendations for intrusive investigation works if necessary, detailing rationale behind the proposed design of the investigation.	

Please sign below to confirm that all the information given on this form is correct to the best of your knowledge and belief.

Signed …….. Date ……..

Checklist 2 – Site Investigation and Risk Assessment Report (Phase 2)

Site Address:			
Report Title:		**Date**	
Report Author:		**Ref.**	

Site Investigation and Risk Assessment	**Location in Report**
Review of any previous land contamination reports or remedial works	
Site investigation methodology, including:	
• Methods of investigation and justification	
• Plan showing sampling locations and justification of locations	
• Sampling and analytical strategies	
Results and findings of the investigation, including:	
• Summary of ground conditions (soil, gas and water regimes, inc made ground)	
• Borehole/trial pit logs	
• Presentation and discussion of soil/gas/water contamination (to include visual and olfactory observations and analytical and monitoring data)	
Updated conceptual site model, including comments on the revisions from Phase 1	
Risk assessment based on contaminant-pathway-receptor model. (to include the justification of any risk assessment models used - a detailed quantitative risk assessment may be required).	
Recommendations for remediation. (to include justification that relates to proposed site end use, risk assessment findings, technical and financial appraisal, and long term monitoring requirements).	
Recommendations for further investigation, if necessary	

Please sign below to confirm that all the information given on this form is correct to the best of your knowledge and belief.

Signed …….. Date ……..

Checklist 3 – Remediation Strategy (Phase 3)

Site Address:			
Report Title:		**Date**	
Report Author:		**Ref.**	

Remediation Strategy	Location in Report
Objectives of the remediation works and summary of pollutant linkages to be remediated	
Detailed outline of works to be carried out:	
• Description of ground conditions (soil, gas, water)	
• Type, form and scale of contamination to be remediated	
• Remediation methodology, including remedial, protective or other works	
• Site plans/drawings demonstrating the proposed remediation method at the site	
• Phasing of works including approximate timescales	
Waste management considerations:	
• Consents, agreements, permits and licences (discharge consents, waste management licences etc.)	
• The evidence of satisfactory disposal of site generated waste to be presented	
Site management procedures to protect site neighbours, environment and amenity during works, where appropriate:	
• Level of site supervision provided by technical advisor(s)	
• Health and safety	
• Control of dust, noise, odour and surface run-off.	
Verification details:	
• Sampling/monitoring strategy	
• Proposed remediation target criteria	
• Actions to be taken should remediation fail target criteria	
• Any phased timescales for verification, if appropriate	

Please sign below to confirm that all the information given on this form is correct to the best of your knowledge and belief.

Signed …….. Date ……..

Checklist 4 – Verification Report (Phase 4)

Site Address:			
Report Title:		**Date**	
Report Author:		**Ref.**	

Verification Report	Location in Report
Objectives for verification and pollutant linkages that have been remediated	
Detailed description of remediation works	
• Method of remediation	
• Extent of remediation	
• Site plans/drawings	
• Phasing of works, where appropriate	
• Photographs demonstrating that remediation measures have been undertaken.	
Details of who carried out the work	
Details and justifications of any changes to the agreed remediation strategy	
Verification data including where appropriate:	
• Laboratory and in situ test results including original lab data sheets and chain of custody documents	
• Monitoring results for groundwater and gases	
• Comparison and interpretation with remediation criteria	
• Plans showing treatment areas and details of any differences from agreed remediation strategy	
Details and verification of mitigation measures including where appropriate:	
• Details of capping material and test results	
• Details of membranes, geo-membranes etc	
• Specification of drinking water pipes	
• Capillary break layer	
Waste disposal documentation (logs, transfer notes, consents, agreements and licences)	
Details on any ongoing verification or long term management requirements	
Confirmation that remediation objectives have been met and that the site is suitable for use.	

Please sign below to confirm that all the information given on this form is correct to the best of your knowledge and belief.

Signed …….. Date …….