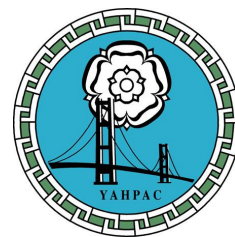


# Development on Land Affected by Contamination

## Technical Guidance for Developers, Landowners and Consultants



**Yorkshire and Humberside  
Pollution Advisory Council**

**Version 3.2 – March 2011**

The purpose of this guidance is to promote consistency and good practice for development on land affected by contamination. Please see below for a list of local authorities in Yorkshire, Lincolnshire and the North East of England who have adopted this guidance:



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### Disclaimer

This guidance is intended to serve as an informative and helpful source of advice. It is intended to review this guidance annually, but readers must note that legislation, guidance and practical methods are inevitably 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.

### Acknowledgments

The authors would like to acknowledge the assistance provided by the following organisations: City of York Council, City of Lincoln Council, Harrogate Borough Council, Hull City Council, Leeds City Council, Darlington Borough Council and Hambleton District Council.

### Consultation

39 Local Authorities and 15 Environmental Consultants were consulted over a four week period during the production of this guidance. Consultation comments were considered by the review panel and a number of revisions were made to the guidance to reflect these comments.

## Introduction

Land may be affected by contamination if substances present in, on or under the land are actually or potentially hazardous to people or the environment. Much of today's land contamination originates from polluting industrial processes from the 19<sup>th</sup> and 20<sup>th</sup> centuries, but the problem it creates has only recently been appreciated.

The purpose of this guidance is to assist developers, landowners and consultants who intend to introduce a vulnerable end use (e.g. a residential development) to land, or wish to re-develop or significantly change the use of land or buildings which could potentially be contaminated.

The guidance specifies 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 (Environment Agency, 2004), in line with current best practice.

**Failure to comply with this guidance is likely to result in delays in your planning application being processed or in your planning application being refused.**

### **Why Bother with Contamination?**

Certain types of contamination are known to be hazardous to people 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 vulnerable receptor (e.g. people, 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, people can be affected by contaminants in soil by ingesting vegetables grown in that soil. Contamination may be present in various forms, including chemical, biological or radioactive. Development can create risk by introducing new pathways and also by introducing new receptors e.g. by introducing residents to a site affected by contamination.

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

### **The Council's Responsibility**

The Council's responsibility with respect to land contamination lies through both Part 2A of the Environmental Protection Act 1990 and the planning process.

### **Part 2A**

Land contamination issues that are not dealt with through the planning process are dealt with through Part 2A of the Environmental Protection Act 1990. This legislation places a duty on Councils to investigate all potentially contaminated sites within their

districts and to secure clean-up if the contamination is deemed to be causing unacceptable risks to people, property, or the environment.

### **Planning**

The role of the planning process is to ensure that land is made suitable for its proposed future use.

All planning applications have to be considered for potential contamination issues to ensure compliance with the Town and Country Planning Act 1990 and with Planning Policy Statement 23 (PPS23) which states that *'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.'*

On any site where there is the potential for contamination to influence the site, or where the proposed development is vulnerable, the Planning Officer will consult with the Council's Contaminated Land Officer. The Officer will then assess the application and may recommend that further information be submitted, or planning conditions be imposed upon the development to ensure that the site will be suitable and safe for the end users, the environment and the public.

### **The Developer's Responsibility**

Where a development is proposed, it is the responsibility of the developer to ensure that issues of land contamination are appropriately considered, that remediation takes place (where necessary) and that 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.

It is the developer's responsibility to ensure that the investigation and remediation of land contamination (Phases 1 to 4) is carried out by a suitably qualified person with experience in contaminated land i.e. an environmental consultant. Carrying out unacceptable/insufficient work or submitting unsuitable reports to the Local Planning Authority will lead to delays, as work may need to be redone.

Please note that each phase, including the Local Planning Authority's review of each report and subsequent approval, may take considerable time to complete. These timescales should be factored into the overall development plan.

This guidance addresses land contamination only, but please be aware that investigation and remediation work can sometimes require permits or consents.

### **Completing the 'Existing Use' Section of the Planning Application Form**

Some of the national planning application forms (1APP) include a section on land contamination. The 'Existing Use' section is either Question 15, 16, or 19, depending on the relevant 1APP form used. This section requires the applicant to identify if there is a potential for land contamination at the site or if a vulnerable use is being introduced. Applicants must address the questions in the 'Existing Use' section (shown overleaf) when preparing a planning application.

**Land which is known to be contaminated**

This includes a development on land which has known contamination, or on land which is known to be affected by contamination.

**Land where contamination is suspected for all or part of the site**

This includes a development on or near land, which has had a potentially contaminative use. Further information on potential contaminative activities can be found in Appendix 1B. It should be noted that contamination is not restricted to land with previous industrial use; it can occur on greenfield sites as well as on previously developed land.

**A proposed use that would be vulnerable (see Appendix 1A) to the presence of contamination**

For residential buildings, this includes any development of one or more dwellings.

**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

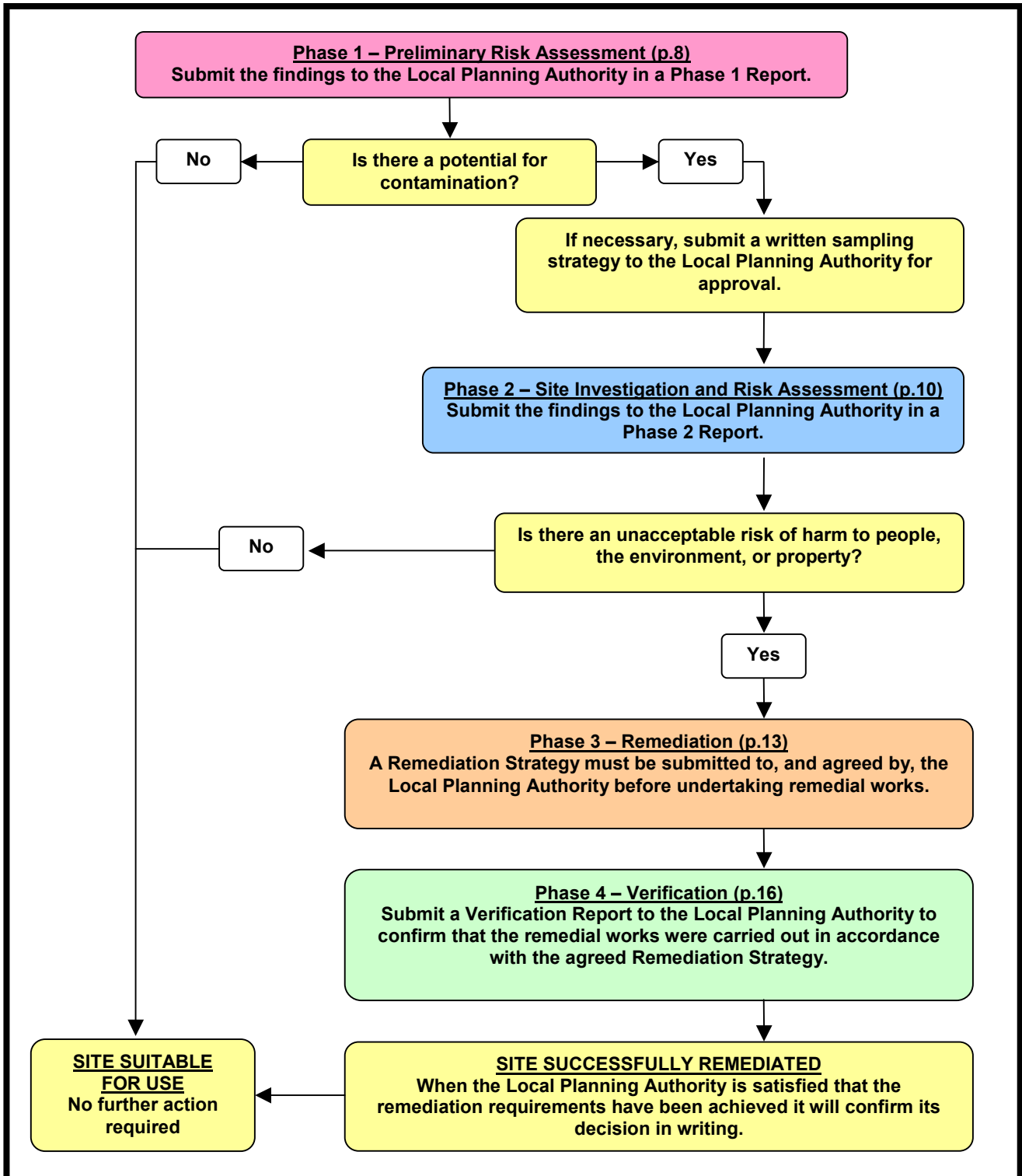
If you have answered Yes to any of the above, you will need to submit an appropriate contamination assessment.

**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 desktop study, a site walkover and a conceptual site model (see page 8 for further details). Depending on the nature of the site, you may wish to contact the Council's Contaminated Land Officer for advice.

**If you are developing an individual residential property (i.e. one house in a garden), the Screening Assessment Form in Appendix 2 can be used as a basic contamination assessment.** The form guides you through the development proposal and previous uses of the site to aid in the decision as to whether land contamination is an issue. If no potential sources of contamination are identified, then no further work is required (dependant on review and agreement by the Council's Contaminated Land Officer). If potential sources of contamination are identified, then further investigation will be required and you should contact the Council's Contaminated Land Officer for advice. Please ensure that the screening assessment form is submitted with your planning application where it will then be passed on to the Contaminated Land Officer for consideration.

# Flow Chart for the Phased Investigation of Land Affected by Contamination

The investigation, assessment and clean up (remediation) of land contamination can be split into a series of four phases, which are presented in the flow chart below. These phases should be followed in order to identify contamination and provide a basis for deciding what actions need to be taken to make a site “suitable for use”. **Please note that not every site will require every phase to be carried out.**



## Phase 1 – Preliminary 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 affected by contamination. Failure to demonstrate this may result in the Local Planning Authority refusing a planning application, as important information could be missed.

Phase 1, which is sometimes referred to as a contamination assessment, consists of a desktop study, a site walkover and a conceptual site model with the findings compiled in a Phase 1 report. The results of a Phase 1 assessment will determine if further investigation is required.

### **Desktop Study**

A desktop 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.
- Historic 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.
- Groundwater and surface water, including abstraction and discharge licences.
- Ground gases.
- Licensed, unlicensed and exempt waste sites (landfill sites).
- Environmental Permits

### **Site Walkover**

A site walkover survey should be undertaken to confirm and build upon the information gathered by the desktop 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.

### **Conceptual Site Model**

After carrying out a detailed desktop study and site walkover survey, a preliminary conceptual site model should be developed. A conceptual site model is usually a diagram or table that illustrates the potential pollutant linkages at a site. It should include the following, together with details of limitations and assumptions/uncertainties:

- **Sources** of any potentially significant contamination e.g. historic industrial activity (see Appendix 1B), 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. future residents or groundwater.

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

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

**A Phase 1 report containing the information listed in the checklist below must be submitted to, and approved by, the Local Planning Authority BEFORE proceeding to the next phase. If you have any queries please contact the Council's Contaminated Land Officer.**

### **Checklist for a Phase 1 Report**

	<b>Desktop Study, Site Walkover and Conceptual Site Model</b>	<b>Included?</b>
1	Purpose and aims of study	
2	Site location and layout plans	
3	Appraisal of site history and previous surrounding land uses for at least the last 150 years, where possible (to include copies of historic plans where possible). Note: The availability of maps may differ in different Local Authority areas.	
4	Assessment of the environmental setting, including: <ul style="list-style-type: none"> <li>- Geology, hydrogeology, hydrology</li> <li>- Information on coal workings and other mining or quarrying activities</li> <li>- Information from the Environment Agency on water abstractions, pollution incidents and landfill sites etc</li> <li>- Information from the Council on former landfill sites, private water supplies and land contamination etc</li> </ul>	
5	Assessment of the current and proposed site uses, and surrounding land uses	
6	Assessment of any previous land contamination reports (desk-based or intrusive) or remedial works	
7	Conceptual site model (visual/tabular)	
8	Risk assessment based on proposed development, including an appraisal of actual and/or potential contaminant sources, pathways and receptors	
9	Recommendations for intrusive investigation works if necessary, detailing rationale behind the proposed design of the investigation.	

**Please note that the submission of a commercial environmental search (produced by Sitecheck, Envirocheck, Homecheck or Groundsure etc) on its own is not sufficient to meet the requirements of a Phase 1 report. These reports may contribute useful factual information about the site but do not contain the level of interpretation required for a full phase 1 assessment.**

## 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.

### 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 British Standards BS10175 and BS5930, relevant Euro Codes and CLR11 (Environment Agency, 2004).

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 British Standard BS8485, CIRIA C665 and NHBC Guidance on Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present (NHBC, 2007).

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, leachate 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) should be submitted to, and agreed by, the Local Planning Authority before the commencement of site investigation works. Early consultation with your Local Planning Authority is particularly encouraged for large or complex sites with serious contamination issues.**

## **Risk Assessment**

After approval of the Sampling Strategy, if necessary, and completion of the site investigation works, the preliminary 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 People (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 other values 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 may be 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. Please ensure that the current version of the CLEA software is used at the time of submission (check the Environment Agency website for details). A number of alternative risk assessment models are available including RISC and RBCA. Please ensure that all models are in line with UK policy and include all site specific pollutant linkages. All risk-modeling 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](http://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. English Nature, English Heritage) is advised.

In September 2008 the Environment Agency launched its 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](http://www.environment-agency.gov.uk)).

**On completion of the risk assessment process, a recommendation should be made as to whether Phase 3 works (remediation) will be required to remove unacceptable risks and to make the site “suitable for use”.**

**A Phase 2 report containing the information listed in the checklist below must be submitted to, and approved by, the Local Planning Authority BEFORE proceeding to the next phase. If you have any queries please contact the Council’s Contaminated Land Officer.**

### **Checklist for a Phase 2 Report**

	<b>Site Investigation and Risk Assessment</b>	<b>Included?</b>
1	Review of any previous land contamination reports or remedial works	
2	Site investigation methodology, including: <ul style="list-style-type: none"> <li>- Methods of investigation and justification</li> <li>- Plan showing sampling locations and justification of locations</li> <li>- Sampling and analytical strategies</li> </ul>	
3	Results and findings of the investigation, including: <ul style="list-style-type: none"> <li>- Ground conditions (soil, gas and water regimes, inc made ground)</li> <li>- Borehole/trial pit logs</li> <li>- Discussion of soil/gas/water contamination (inc visual, olfactory, analytical and monitoring data)</li> </ul>	
4	Updated conceptual site model, including comments on the revisions from Phase 1	
5	Risk assessment based on contaminant-pathway-receptor model. Should take account of severity of consequences and likelihood of occurrence. Justification of any risk assessment models used. A detailed quantitative risk assessment may be required	
6	Recommendations for further investigation if necessary	
7	Recommendation as to whether remediation is required.	

## Phase 3 – Remediation

If Phase 2 identifies any unacceptable risks, then Phase 3 (known as remediation) will be required. Remediation involves the 'clean up' of a site to ensure that the finished development is "suitable for use". Remediation can take many forms (e.g. removal of the source of contamination or breaking a pathway by inserting a barrier) and is entirely site specific.

A remediation strategy should be produced and submitted to the Local Planning Authority for approval prior to commencement of remedial work. A remediation strategy should comprise an options appraisal, remediation objectives, details of the proposed remediation and verification works, mitigation measures, licences/consents and contingency measures.

### **Options Appraisal**

An options appraisal considers the advantages and disadvantages of different remediation techniques, in order to establish the best overall approach to remediate a site. It is important to ensure that the chosen remediation option breaks all of the pollutant linkages that have been shown through the risk assessment to present unacceptable risks. Please be aware that some remediation options can take months/years to complete. Please see CLR11 (Environment Agency, 2004) for details on how to undertake an options appraisal.

A brief justification as to why a particular remediation technique has been chosen should be included in the remediation strategy.

### **Objectives**

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. Clearly state the objectives of the remediation works to be carried out.

### **Proposed Remediation 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.

Remediation proposals must take account of any Local Authority policies relating to remediation and/or verification.

### **Proposed Verification Works**

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 site model should be revised to demonstrate how all the pollutant linkages present will be addressed.

Where soil verification samples are to be taken, details of these samples should be identified and included within the remediation strategy. Please note that independently accredited laboratories and analytical methods should be used (e.g. UKAS, MCERTS). Further guidance specifically relating to cover systems can be found in the YAHPAC guidance 'Verification Requirements for Cover Systems' (YAHPAC, 2010).

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 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 and specific types of drinking water pipes. All such requirements should be clearly detailed in the remediation strategy.

### **Licences**

Details of the consents and licences/permits 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 and Unexpected Contamination**

Contingency measures may be required if remediation is unsuccessful or if unexpected contamination is found during the works. 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. Please note that any unexpected contamination should be reported immediately to the Local Planning Authority.

**Remediation works can only commence once the remediation strategy has been submitted to and agreed by the Local Planning Authority. The remediation strategy should include the information listed in the checklist below. If any information cannot be included, please provide details of when the outstanding information will be submitted. If you have any queries please contact the Council's Contaminated Land Officer.**

### **Checklist for a Phase 3 Report**

	<b>Remediation Strategy</b>	<b>Included?</b>
1.	Summary of the options appraisal	
2.	Objectives of the remediation works and any site constraints	
3.	Detailed outline of remediation works to be carried out, including: <ul style="list-style-type: none"><li>- Description of ground conditions (soil, gas, water)</li><li>- Type, form and scale of contamination to be remediated</li><li>- Remediation methodology</li><li>- Site plans/drawings</li><li>- Phasing of works including approximate timescales</li></ul>	
4.	Consents, agreements, permits and licences (discharge consents, waste management licences etc.)	
5.	Site management procedures to protect site neighbours, environment and amenity during works. Where appropriate include health and safety, dust/noise/odour controls and the control of surface run-off.	
6.	Verification details, including: <ul style="list-style-type: none"><li>- Sampling strategy</li><li>- Chemical analysis/monitoring data</li><li>- Proposed remediation target criteria</li><li>- Any phased timescales for verification, if appropriate</li></ul>	
7.	Contingency measures and procedure for identifying unexpected contamination	

## Phase 4 – Verification

Phase 4 works, also known as verification or validation, are undertaken following remediation. The purpose is to identify the success or otherwise of remediation 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 details of the contingency work must be included, these could comprise further detailed quantitative risk assessment, physical remediation works or mitigation measures etc.

### **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. Evidence of appropriate gas membrane installation (including photographs) should also be included where necessary.

The total volume of material affected by contamination should be included, along with the volume of imported material and the volume of any materials which have been sorted or treated on site for re-use. Full details should be provided of the locations where verification samples were taken, including depths and volumes etc. Further guidance specifically relating to cover systems and imported material can be found in the YAHPAC guidance 'Verification Requirements for Cover Systems' (YAHPAC, 2010).

### **Verification Results**

Analysis results for all 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 will be required to ensure that 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, to agree the extent of work required to make the site 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 site model should also be included.

**On completion of remediation and verification works, a verification report should be submitted to the Local Planning Authority for approval. The verification report should include the information listed in the checklist below. If you have any queries please contact the Council's Contaminated Land Officer.**

### **Checklist for a Phase 4 Report**

	<b>Verification Report</b>	<b>Included?</b>
1.	Objectives for verification	
2.	Detailed outline of remediation works, including: <ul style="list-style-type: none"><li>- Method of remediation</li><li>- Extent of remediation</li><li>- Site plans/drawings</li><li>- Phasing of works, where appropriate</li><li>- Photographs demonstrating that remediation measures have been undertaken.</li></ul>	
3.	Details of who carried out the work	
4.	Details and justifications of any changes to the agreed remediation strategy	
5.	Verification data, including where appropriate: <ul style="list-style-type: none"><li>- Laboratory and in situ test results including original lab data sheets and chain of custody documents</li><li>- Monitoring results for groundwater and gases</li><li>- Comparison and interpretation with remediation criteria</li><li>- Plans showing treatment areas and details of any differences from agreed remediation strategy</li></ul>	
6.	Details and verification of mitigation measures, including where appropriate: <ul style="list-style-type: none"><li>- Details of capping material/imported topsoil and test results</li><li>- Details of membranes, geo-membranes etc</li><li>- Specification of drinking water pipes</li><li>- Capillary break layer</li></ul>	
7.	Consents, agreements and licences	
8.	Details on any ongoing verification or long term management	
9.	Confirmation that remediation objectives have been met and the site is suitable for use.	

### **Discharge of Planning Conditions**

**To discharge land contamination conditions the Local Planning Authority must be satisfied, at all the relevant stages, that satisfactory reports have been submitted to demonstrate that the development is suitable for use.**

## Useful Documents

Please note that this list 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.
- 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 to download from: [www.cieh.org](http://www.cieh.org)).
- Construction Industry Research and Information Association (2007). **CIRIA C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings**. CIRIA, London.
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## Appendix 1 – Examples of Vulnerable End Uses and Potentially Contaminating Land Uses

**A.** This is a list of **vulnerable end uses**. If you are in doubt about the vulnerability of an end use please consult the Council's Contaminated Land Officer:

- All residential developments (houses, flats, nursing homes etc)
- Allotments
- Schools
- Nurseries and crèches
- Children's playing areas and playing fields
- Mixed use developments including vulnerable proposals

**B.** This is a list of **potentially contaminating land uses**, which is derived from Annex 2 of Planning Policy Statement 23 (ODPM, 2004a). Further details are available in the Department of the Environment Industry Profiles (DoE, 1995), 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, including radon
- 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 – Screening Assessment of Land Contamination

**If you are developing an individual residential property (i.e. one house in a garden) this Screening Assessment Form can be used as a basic contamination assessment, which fulfils the requirements of the 'Existing Use' section of the planning application form.**

This Screening Assessment Form is not suitable if you are developing larger housing developments, allotments, schools, nurseries, children's play areas, playing fields, or if there has been a past industrial use on or adjacent to the land. In these instances you will need to submit a Phase 1 (Preliminary Risk Assessment) Report and if appropriate, subsequent Phase 2 (Site Investigation and Risk Assessment), Phase 3 (Remediation Strategy) and Phase 4 (Verification) Reports.

### **Development of Land Affected by Contamination**

Land contamination is land where substances are present in, on or under the land which are actually or potentially hazardous to people or the environment. Some of these substances can be naturally occurring, although in the majority of cases they are present because of some previous human activity such as mining, industry and waste disposal.

In accordance with Government policy and the Council's Contaminated Land Inspection Strategy, the Council wants to encourage the redevelopment of previously used land (brownfield land). However, because of the potential risk of contamination associated with such land there are a number of requirements that must be fulfilled by the developer to ensure that there is no danger to people or the environment. Put simply, the land must be 'suitable for use'.

In order to assess whether a development is 'suitable for use', the Local Planning Authority must be satisfied that there is no unacceptable risk from contamination. The information you provide will allow a fair and reasoned judgement to be made and may dispense with the need for land contamination conditions to be attached to any planning consent. The Local Planning Authority reserves the right to request further information or documents as necessary.

**NOTE: Failure to provide the required information at this stage may result in a delay in the application process and the imposition of land contamination conditions.**

If at any point when completing the form you suspect there is a likelihood that contamination may exist on the site (or on an adjacent site) which could affect the proposed use, it is strongly advised that you contact the Council's Contaminated Land Officer before proceeding, as your findings may necessitate the submission of a more detailed Phase 1 Report.

Contaminated Land Officers are responsible for assessing the suitability of land for its current use. They also provide advice to Planning Officers on the suitability of land for proposed developments. The Officer will therefore be able to advise you on how best to proceed.

# Screening Assessment of Land Contamination (Version 3.2)

Please complete in BLOCK LETTERS and submit to the Local Planning Authority with your completed Planning Application Form.

## APPLICANT / AGENT DETAILS

	Applicant	Agent
Full Name		
Address		
Telephone		
Email		

## DEVELOPMENT DETAILS

Site Name:				
Site Address:				
Site Grid Reference	Easting		Northing	

## SITE HISTORY, LAND AND BUILDING USE

	Domestic	Agricultural	Commercial	Industrial	Other (give details)
<b>Proposed land use</b> (tick all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Current land use</b> (tick all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Past land use – last 150 years</b> (tick all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<b>If the past land use has changed, please give date of change(s)</b> (please use category types from the previous table)	From	To	Land Use

<b>Provide details of any surface water present onsite</b> (including drains, ponds, streams, rivers and springs)	
<b>Provide details of any groundwater or surface water abstractions onsite</b> (including wells and boreholes)	

<b>What have the existing buildings on the site been used for?</b> (please state if applicable)	
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<b>Have any fuels or chemicals been stored on the site?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>Have there been any fuel/chemical spills or leaks?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>If 'Yes' to either of the above, please state fuel/chemical, storage method and location, and details of any spillages including quantities and action taken</b>		

<b>Have any waste disposal activities (including the burning of waste) been carried out on the site?</b> For information on landfill sites please refer to the Environment Agency's 'What's in your Backyard' website or contact the Council's Contaminated Land Officer.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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<b>Have there been any pollution incidents, either reported or unreported?</b> For information on pollution incidents please refer to the Environment Agency website.	Reported		Unreported	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>

## WASTE DISPOSAL ACTIVITIES

Landfill sites can sometimes contaminate surrounding land. For more information and to check if any landfill sites are located near your site, please refer to the Environment Agency's 'What's in your Backyard' website or contact the Council's Contaminated Land Officer.

<b>Have any waste disposal activities been carried out on surrounding land within 250 metres of the site?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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## ADJACENT LAND USE

	Domestic	Agricultural	Commercial	Industrial	Other (give details)
<b>Current land use</b> (tick all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Past land use – last 150 years</b> (tick all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<b>Provide details of any surface water present on adjacent land</b> (including drains, ponds, streams, rivers and springs)	
<b>Provide details of any groundwater or surface water abstractions on adjacent land</b> (including wells and boreholes)	

## SITE DESCRIPTION

<b>Please provide a detailed description of the land being developed, with plans and photographs where possible.</b> Include details of the layout, ground covering, signs of subsidence, evidence of past use (e.g. landfill or railway land), current ground conditions (e.g. made ground/fill, vegetation and discolouration) and flooding.	

## PREVIOUS LAND CONTAMINATION REPORTS

Have any land contamination reports previously been completed for the site?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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If yes, please provide a copy of the land contamination report(s) to support your planning application.

## IMPORTED SOIL

Do you intend to import any soil or soil forming materials onto the site for use in garden areas, soft landscaped areas or to raise ground levels?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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If yes, please refer to the YAHPAC guidance on Verification Requirements for Cover Systems, (available to download from most council websites in the region).

## SUSPECTED CONTAMINATION

Based on the information you have provided in this form, do you think that contamination could be present at the site?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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If yes, please provide details:

**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 .....

OFFICE USE: Please ensure that this form is forwarded to the Council's Contaminated Land Officer for consideration.