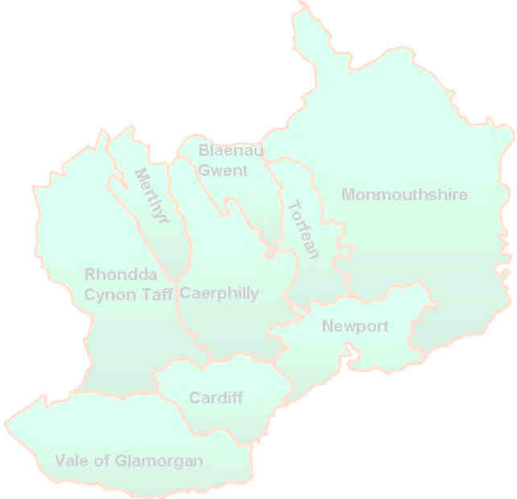
THE DEVELOPMENT OF POTENTIALLY CONTAMINATED LAND



South East Wales Land Contamination Working Group

Guidance for Developers

2009

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1. INTRODUCTION

Land contamination or the potential for land contamination is likely to arise from a previous use of a site, or an adjacent site, that has had an industrial, commercial or land filling activity.

This guidance document is intended for developer's who are involved in the assessment, management and remediation of land contamination within the local authority boundaries represented by the South East Wales Land Contamination Working Group (SEWLCWG). This guide provides details of our information requirements in order to assess planning applications and the future discharge of associated land contamination conditions applied to approved applications.

At all times, it is the responsibility of the developer to identify the nature, scale and extent of the land potentially affected by contamination and, if necessary, undertake remediation work to ensure the suitability of the proposed development. The LPA does not have a duty of care to the landowner.

2. OUR APPROACH

Land contamination, or the potential for the presence of contamination, is a material element when a new planning application is considered by the Local Planning Authority. The responsibility is upon the developer to ensure the development of the site is suitable for its proposed use.

The Local Planning Authority (LPA) has a duty to consider potential land contamination when determining individual planning applications. The LPA is responsible for decisions made under the planning system. However, the LPA is minded to consult statutory consultees, including Pollution Control/ Environmental Health through Contaminated Land Officers (CLO) or Environmental Health Officers (EHOs) for advice on applications where potential land contamination is suspected.

When considering planning applications on sites where known or suspected land contamination exists the CLO/EHO/ has to be satisfied that the development will remove existing unacceptable risks to the end users of the site and not introduce new ones by developing the site. In doing this, the CLO/EHO will consider the existing use and current circumstances of the land, the proposed end use and the potential for unsuspected contamination to be encountered during development works. In addition the CLO/EHO will ensure appropriate proposals and investigations are undertaken by the developer and their associated consultants.

The assessment and remediation of land affected by contamination through the granting of planning permission (with the attachment of conditions) should ensure the removal of those unacceptable risks, including those covered by the Contaminated Land regime under Part 2A of the Environmental Protection Act 1990, and make the site suitable for its new use. As a minimum, after the new development has been completed the land should not be capable of being determined as contaminated land under the Part 2A regime.

3. DEFINITION OF CONTAMINATED LAND

As land contamination has the potential to cause significant harm to a number of receptors (including human health, controlled waters, ecosystems, animals, crops and property) arising from one or more substances being present in, on or under the land then it is important to address all associated risks so that the land is suitable for use. The legal definition of contaminated land (from Section 78A (2) of the Environmental Protection Act 1990) is:

"…any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

(a) significant harm is being caused or there is the significant possibility of such harm being caused; or

(b) pollution of controlled waters is being, or is likely to be, caused…"

The Contaminated Land regime under Part 2A of the Environmental Protection Act 1990 requires all local authorities to produce an Inspection Strategy and then to implement this strategy by:

- investigating sites and identifying those which are in need of immediate remediation work
- ensuring remediation by identifying those responsible person(s) for implementing the remediation and taking enforcement action where appropriate

Under the Part 2A regime, the assessment is undertaken for the existing use of the land. Under the planning system, the assessment is based upon the new or intended use of the land, rather than the existing use. However, the principles and information requirements for both regimes are much the same.

4. LAND CONTAMINATION PROCEDURE

This section aims to inform developers of the information requirements based upon the risk-based approach to land contamination, as defined in current UK legislation and guidance.

Where it is suspected that one or more former uses of the site may have given rise for potential land contamination then the CLO/EHO will recommend to the LPA that appropriate condition(s) be applied should planning permission be granted.

The land contamination condition(s) are pre-development condition(s) which ensures that all of the steps of the investigation, assessment and, if necessary, remediation of the site are undertaken prior to the commencement of construction works at the site. Where significant land contamination issues arise, the CLO/EHO will require the investigation and risk assessment prior to the determination of the application.

The contaminated land condition(s) include site investigation, risk assessment,

remediation strategy, unforeseen contamination, imported materials, gas monitoring and verification reporting. The CLO/EHO will recommend appropriate condition(s) be applied to a planning application depending on the individual circumstances of the site.

4.1 EARLY CONSULTATION

It is important that the developer contacts the CLO/EHO for discussions, preferably during the pre-application stage, to ensure that all of the information requirements in respect of land contamination are understood and followed.

In addition, the CLO/EHO may wish to visit the site and this will present an opportunity for further discussions to take place. Early consultation with the CLO/EHO should enable the developer and their associated consultants to devise a strategy and timetable that is agreed with the CLO/EHO.

Developers should submit sufficient information to the LPA with their initial planning application. As a minimum, it is recommended that the developer submits, with their planning application, a Preliminary Risk Assessment (i.e. a desk study and conceptual model) of the site.

4.2 CHOOSING A CONSULTANT

The developer should appoint an appropriately qualified competent professional consultant with relevant environmental experience to provide advice on the assessment, management and remediation of the site. The chosen consultant must have professional indemnity insurance. The SEWLCWG does not make official approval or recommendation of any consultancy however some useful contacts can be found at www.endsdirectory.com or via the yellow pages.

Developers should be mindful that:

Failure to provide sufficient information early in the planning process may result in significant delays and increased costs to the developer;

and,

Failure to address the risks arising from land affected by contamination at the proposed development may result in enforcement action being taken under Part 2A of Environmental Protection Act 1990.

4.3 ASSESSMENT PROCEDURE

This section aims to inform the developer of the assessment procedure to a risk based approach to land contamination. It is recommended that developers follow the risk management technical framework as detailed within the guidance document, Land Contamination: A Guide for Developers (WLGA 2006) when dealing with land affected by contamination. This guidance is consistent with the guidance document, CLR 11 Model Procedures for the Management of Land Contamination (DEFRA/EA 2004).

Each of the key stages of the land contamination assessment procedure is summarised as follows:

- Phase I: Preliminary Risk Assessment (Desk Study & Conceptual Model)
- Phase II: Quantitative Risk Assessment (Site Investigation)
- Remediation Options Appraisal
- Remediation Strategy
- Verification Report

A flowchart outlining the planning procedure with regard to land contamination can be found in Appendix A.

A copy of *Land Contamination: A Guide for Developers (WLGA 2006)* is available to download from Cardiff Council's web site by following the web link:

http://www.cardiff.gov.uk/content.asp?nav=2870%2C3142%2C4060%

4.3.1 Phase I: Preliminary Risk Assessment (Desk Study)

The aim of a preliminary risk assessment is to develop an outline conceptual model. This should identify all plausible source-pathway-receptor pollutant linkages at the site by collecting all available information in a desk study of the site (information such as historical maps). A site walkover survey is also usually undertaken at this stage to verify this data and identify if there are any obvious signs of contamination at the surface of the site.

The conceptual model is a representation of the site characteristics (usually expressed through text and/or a visual representation) and the interaction between the contamination source(s), pathway(s) and receptor(s) taking into account the current and proposed use of the site. The development of the conceptual model is an iterative process which should be re-assessed and refined with each subsequent phase of assessment.

Further assessment will be required if there are any gaps in the preliminary risk assessment or if the preliminary risk assessment identifies any potential unacceptable risks at the site. Where the preliminary risk assessment does not identify any potential unacceptable risks then further assessment may not be required.

Refer to Checklist1 in Appendix B when submitting information in regard of a Phase I Preliminary Risk Assessment.

4.3.2 Phase II: Quantitative Risk Assessment (Site Investigation)

A Phase II site investigation should be undertaken to reduce any uncertainty that has been identified in the initial conceptual model and where potential unacceptable risks have been identified by quantifying potential contamination at the site. This should identify and characterise those plausible source-pathway-receptor linkages at the site and provide information to refine the outline conceptual model. Usually an intrusive site investigation is designed and undertaken together with a risk

assessment of the findings of that site investigation.

The scope of work for the site investigation should be designed to provide data that is representative of the site and be based around the outline conceptual model. The scope of work for the site investigation should also be agreed with the CLO/EHO in advance of the works taking place. The site investigation design and works should meet the requirements of the Code of Practice for Investigation of Potentially Contaminated Land BS10175 (British Standards 2001). In addition, written justification for the chosen sampling regime and laboratory analysis suite must be detailed in the site investigation report. An MCERTS accredited laboratory must be used for analysis of soil samples.

The site investigation findings and the refined conceptual model should be presented in a report and evaluated using generic and/or site-specific assessment criteria. Prior to running risk assessment models (such as CLEA v1.04 and the EA Remedial Targets methodology) the key input parameters must be agreed in advance with the CLO/EHO.

The Environment Agency has developed the Science Report SCO50021 series of guidance documents on assessing the risks to human health as set out in documents SR2 to SR7 listed below. The SR documents are authoritative and have a published scientific basis, and therefore meet the requirements of the risk assessment framework set out in DETR (2000). The SR guidance is currently considered 'best practice' in the assessment of contaminated land in the UK.

SR2 - Human Health Toxicological Assessment of Contaminants in Soil

SR3 – Updated Technical Background to the CLEA Model

SR4 - CLEA Software (Version 1.04) Handbook

SR7 - Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values

Refer to Checklist 2 in Appendix B when submitting information in regard of a Phase II risk assessment.

4.3.3 Remediation Options Appraisal

Where the quantitative risk assessment identifies that the level of contamination is unacceptable for its intended end use then remediation works will be required.

The remediation works are required to remove those pollution linkage(s) that represent unacceptable risk(s). The first stage is to undertake a remediation options appraisal to identify site specific remediation objectives that must be agreed with the CLO/EHO.

A list of feasible remediation options should be produced for evaluation to establish which are most appropriate for addressing each pollutant linkage. The merits of each option should be assessed by compiling detailed technical information for each option. In addition, the evaluation should take into account best practicable environmental option, cost benefit, environmental outcomes and have agreed timescales with the CLO/EHO. The options appraisal should establish which option or combination of options will best achieve the remediation objective(s).

Refer to Checklist 3 in Appendix B when submitting information in regard of a Remediation Options Appraisal.

4.3.4 Remediation Strategy

The Remediation Strategy should set out how the selected option(s) will be undertaken at the site together with verification works. The implementation of the remediation of the site should be undertaken according to an implementation plan. The implementation plan should translate the Remediation Strategy into a clear set of activities for the site. It should set out all aspects of the design, preparation, implementation, verification and long-term monitoring and maintenance of the remediation works.

It is essential to demonstrate to the CLO/EHO that these activities will be capable of achieving the agreed remediation objectives. In addition, appropriate permits and licenses should be obtained together with contingency plans being put in place.

Refer to Checklist 4 in Appendix B when submitting information in regard of a remediation Strategy.

4.3.5 Unsuspected Contamination

During development, the CLO/EHO should be notified immediately under circumstances where contamination not previously identified is found to be present at the site. No further development (unless otherwise agreed in writing) shall be carried out until the developer has submitted, and obtained written approval from the LPA for a remediation strategy detailing how this unsuspected contamination shall be dealt with.

4.3.6 Verification Report and Certificate

Upon completion of the remediation works, a Verification Report must be submitted to the LPA and the CLO/EHO for review and approval. The verification report should demonstrate that the agreed site remediation objectives have been achieved. The developer should ensure that the verification certificate in Appendix C is completed and returned to the CLO/EHO together with the verification report. Only upon approval of the verification report can construction works take place.

Refer to Checklist 5 in Appendix B when submitting information in regard of a Verification Report.

4.3.7 Long-term Monitoring and Maintenance

Following completion of remediation works where there is a requirement for long term maintenance and/or continued monitoring to demonstrate the effectiveness of those works, a separate Monitoring and Maintenance plan should be developed and submitted to and approved by the CLO/EHO via the LPA.

4.4 Discharge of Contaminated Land Condition

The CLO/EHO will make a recommendation to the LPA to discharge relevant condition(s) only upon receipt and approval of a satisfactory verification report and verification declaration certificate. If at any stage of reporting, should the CLO/EHO consider the assessment or findings of the report to be unsatisfactory then the CLO/EHO will reject the report and will make a request for further information.

On those sites where a phased remediation approach of the site is proposed, it may be acceptable to provide verification reports to the LPA for each phase of remedial work at the site provided that a phased approach has been agreed in advance with the CLO/EHO.

In cases of non-compliance, the council can take legal action to enforce the contaminated land condition(s)

5. GROUND GAS

Ground gas is a contaminant and should be considered as a potential source in the preliminary risk assessment on sites where gas generation and/or migration is suspected.

The first stage is to provide the LPA with a qualitative (descriptive) assessment of risk (i.e. desk study). As detailed in Section 4, this preliminary risk assessment should enable an appropriate site investigation and monitoring programme to be designed should a potential pollutant linkage be identified.

The gas monitoring programme must be designed to enable data to be gathered over a sufficient period of time with a suitable number of monitoring visits and at varying periods of atmospheric pressure. In addition, the numbers and position of monitoring locations, response zones and type of gas must be justified. CIRIA Report 150 provides guidance in relation to the position and selection of appropriate grid patterns.

It is recommended that the gas monitoring programme is undertaken as outlined in Tables 5.5a and 5.5b in CIRIA 665 (p.60). The monitoring programme must be agreed in advance with the CLO/EHO.

Where a comprehensive characterisation of chemical contamination of the soil and/or groundwater has identified a vapour risk then appropriate risk assessment is required. The monitoring of vapours should be carried out in accordance to the

following guidance, CIRIA Report C665 and British Standards 10381.

Following the completion of the agreed monitoring programme, an appropriate report must be forwarded detailing the results of the monitoring, appropriate gas risk assessments and recommendations for any gas protection measures, if required. Guidance is provided in CIRIA C665 for assessing gas data. A large degree of the advice regarding monitoring for gases provided within CIRIA C665 can also be applied to vapour data.

A variety of gas protection measures are available and it is commonplace to use a combination of measures at a development (as no one single measure may adequately protect the development). It is essential to provide the CLO/EHO with details and justification of the proposed gas protection measures in advance of installation. Once approved by the CLO/EHO, the gas protection measures can be installed but will require Building Control inspection to ensure satisfactory standard of installation as per Building Regulations (2000) (in which gas protection is included).

Upon completion of installation the CLO/EHO will require the developer to verify that the measures have been satisfactorily installed as per the agreed designs. In addition written approval of the satisfactory installation from the Building Control Officer should also be provided.

All aspects of the monitoring regime should be discussed and agreed in advance with the CLO/EHO. The proposed gas monitoring scheme must be submitted to the CLO/EHO via the LPA and provide sufficient detail and justification of the pro-

6. IMPORTED MATERIALS

The following guidance is applicable for developments where the importation of soil stones or any other similar materials to the development, for the purposes of garden, landscape or engineered cover systems. This also covers any site won materials which are to be reused on site.

For cover systems to protect end users it is typical that a minimum 600mm cover will be required. In circumstances where the proposed depth is to be shallower than 600mm then the developer must justify this by submitting a risk assessment to demonstrate that receptors are protected with this shallower cover system. The proposal can only be undertaken with written approval from the CLO/EHO via the LPA.

Details regarding the source material to be imported must be provided to the CLO/EHO via the LPA in advance of importation. Details must include sampling number, analytical results and written justification. Appendix D outlines the

minimum requirements for the chemical testing of materials prior to their importation to a development.

The process for ensuring all information is submitted in relation to the relevant planning condition is outlined in Appendix D in a series of step by step actions. Adherence to these will greatly assist the CLO/EHO/EHO to make a recommendation for discharge of the condition and will also ensure that contaminative risks from imported materials are avoided.

Appendix D presents the specific sampling frequencies for imported materials which are dependent upon the quantities to be imported and their proposed use at a development .

Topsoils to be imported must comply with British Standards Institution, 2007, BS3882:2007, Specification for Topsoil and Requirements for Use.

All verification reports should contain trial pit log details and photographic evidence of the capping depth. The declaration of compliance certificate/form Appendix D must be completed and returned to the CLO/EHO.

Under no circumstances should controlled waste be imported. It is an offence under Section 33 of the Environmental Protection Act 1990 to deposit controlled waste on a site which does not benefit from an appropriate waste management license. The following must not be imported to a development site;

- Unprocessed / unsorted demolition wastes.
- Any material originating from a site confirmed as being contaminated or potentially contaminated by chemical or radioactive substances.
- Japanese Knotweed stems, leaves and rhizome infested soils. In addition to section 33 above, it is also an offence under the Wildlife and Countryside Act 1981 to spread this invasive weed.

Should the developer introduce a receptor (e.g. residential houses/human receptor) without undertaking necessary remedial work, then they may find themselves as an appropriate person and liable for subsequent remedial costs should the Local Authority later designate the site Statutory Contaminated Land under the Part 2A regime.

7. CONTROLLED WATERS

The LPA is minded to consult the Environment Agency on development proposals where a risk to controlled waters (surface waters and groundwater) is suspected. The LPA can consult the Environment Agency about work that is intended to be undertaken at all stages of the application process, including the recommendation of planning conditions for the permission.

8. SUBMISSION OF REPORTS TO THE LPA

All formal submissions of reports and/or supporting information should be sent to the LPA. We accept only original and complete versions of reports. In addition, an electronic copy (on a CD ROM) of the report and any supporting information is required to be sent to the CLO/EHO. The CLO/EHO will reject any report that does not conform to these requirements or where there is incomplete or missing information.

9. CONTACT DETAILS

Developers and their associated consultants are welcome to contact the relevant CLO or EHO for the authority they are undertaking work in via the following:

Blaenau Gwent CBC Municipal Offices, Civic Centre, Ebbw Vale, Gwent NP23 6XB Tel: 01495-355960	Caerphilly County Borough Council Directorate of Environment Council Offices, Pontllanfraith, Blackwood, NP12 2YW Tel: 01495 235026
Cardiff County Council Pollution Control City Hall, Cardiff CF10 3ND T. 02920 87189	Merthyr Tydfil County Borough Council Director of Environmental & Consumer Services Civic Centre, Castle Street Merthyr Tydfil. CF47 8AN Tel: 01685 725395
Monmouthshire County Council, Environmental Health, Coed Glas, Coed Glas Lane, Abergavenny, NP7 5LE Tel:01873 735449	Newport County Borough Council Public Protection Civic Centre Newport NP20 4UR Tel: 01633-232405
Rhondda Cynon Taff CBC Public Health & Protection Ty Elai Williamstown Tonypandy Tel: 01443 425570	Torfaen County Borough Council Environmental Management County Hall, CWMBRAN NP44 2WN Tel: 01633 648560
Vale of Glamorgan Council Environmental & Consumer Services Civic Offices, Holton Road, Barry CF63 4RU Tel: 01446 709786	Environment Agency Wales Tŷ Cambria 29 Newport Road Cardiff CF24 0TP Tel: 029 20466094

10. REFERENCES AND RECOMMENDED GUIDANCE

1. British Standards Institution, 2001, BS10175:2001, Investigation of Potentially Contaminated Sites – Code of Practice
2. British Standards Institution, 2007, BS3882:2007, Specification for Topsoil and Requirements for Use
3. British Standards Institution, 2002, BS 10381:2002 Soil quality. Sampling. Guidance on Sampling Techniques
4. Chartered Institute for Environmental Health, 2008, The Local Authority Guide to Ground Gas
5. CIRIA Report C665, 2007, Assessing Risks Posed by Hazardous Ground Gases to Buildings
7. Contaminated Land: Applications In Real Environments & Chartered Institute for Environmental Health, 2008, Guidance on Comparing Soil Contamination Data with a Critical Concentration
8. Department of Environment, 1989, Waste Management Paper No 27, Landfill Gas
9. Department of the Environment, Industry Profiles (Various – identifies priority contaminants for a number of current or former industries)
10. Department of Environment, transport and the Regions, 1997, A Quality Approach for Contaminated Land Consultancy
12. Environment Agency, 2004, Contaminated Land Report 11: Model Procedures for the Management of Contaminated Land
13. Environment Agency, National House Building Council & Chartered Institute for Environmental Health, 2008, R&D Publication 66, Guidance for the Safe Development of Housing on Land Affected by Contamination
14. Environment Agency, 1999, R&D Publication 20, Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources

15. Environment Agency, 2005, Science Report P5-080/TR3, The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons for Soil

16. Environment Agency, 2003, MCERTS Performance Standard for Laboratories Undertaking Chemical Testing of Soil

17. Environment Agency, 2004, Environment Agency Guidance on Requirements for Land Contamination Reports

18. Environment Agency, 2001, Guide to Good Practice for the Development of Conceptual Models and the Selection and Application of Mathematical Models of Contaminant Transport Processes in the Subsurface

19. Environment Agency, 2002, GasSim – Landfill Gas Risk Assessment Tool

20. Environment Agency, 2009, Science Report – Final SC050021/SR2, Human Health Toxicological Assessment of Contaminants in Soil

21. Environment Agency, 2009, Science Report SC050021/SR3, Updated Background to the CLEA Model

22. Environment Agency, 2009, CLEA Software Handbook version 1.04

23. Health & Safety Executive, 1991, Protection of Workers and the General Public during the Development of Contaminated Land

24. Raybould JG, Rowan DL & Barry DL, 1995, CIRIA Report C150, Methane Investigation Strategies

25. Welsh Assembly Government, 2002, Planning Policy Wales

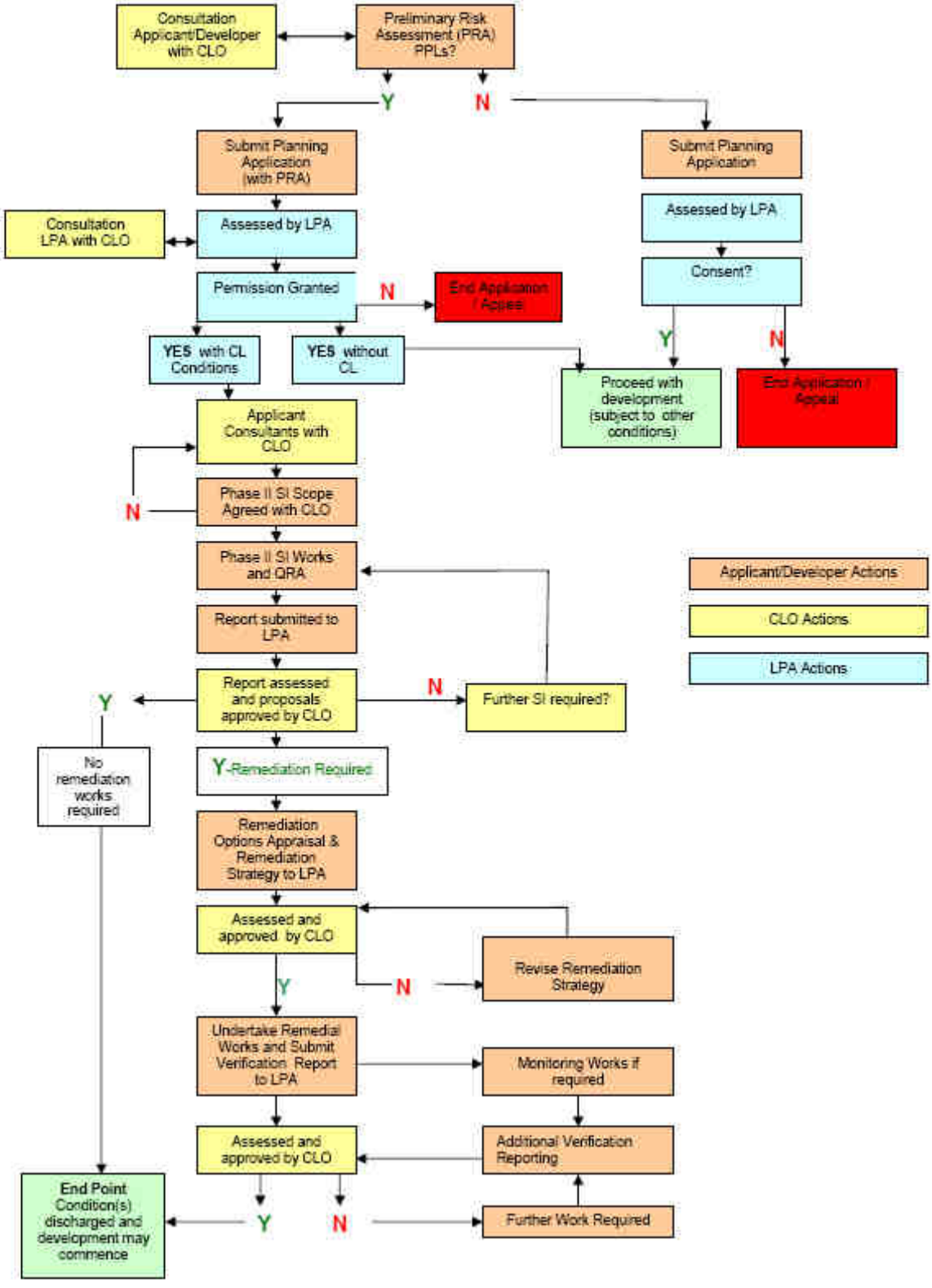
26. Welsh Assembly Government, 2006, Statutory Guidance on Contaminated Land

27. Welsh Local Government Association & Environment Agency Wales, 2006, Land Contamination: A Guide for Developers

28. Wilson S, Oliver S, Mallett H, Hutchings H & Card G, 2007, CIRIA Report C665, Assessing Risks Posed by Hazardous Ground Gases to Buildings

APPENDIX A

Land Contamination under Town & Country Planning Decision Framework



APPENDIX B

CHECK LIST 1

Preliminary Risk Assessment Desk Study Objective: to obtain a good understanding of site history ,setting, current and proposed use. Draw up an outline conceptual model to establish any relevant pollutant linkages(s) in the source-pathway-receptor human health and environmental risk assessment. Indentify if further investigation and or remediation is required. Reporting requirements	Undertaken	Date
• Purpose and aims of the study		
• Credentials of person undertaking the study		
• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Description of site and adjacent land uses		
• Appraisal of site walkover survey		
• Liaison with Snr CLO/EHO		
• Review of site history including appropriately scaled and annotated historical maps and aerial photographs where available.		
• Assessment of the environmental setting including the interpretation and implications of: - the geology, hydrogeology, and hydrology of the area - information from the Environment Agency on abstractions, pollution incidents, water quality classification, landfill sites within 250 metres and flood risk; and - whether there are any archaeological or ecological considerations		
• Review of previous site contamination studies (desk based, intrusive, or IPPC investigation where relevant) and remediation works		
• Review of local authority planning records, building control records, drainage and service plans.		
• Identification of potential contaminants of concern and source areas.		
• Preliminary (qualitative) assessment of risks to include: • Outline conceptual model to show the nature and extent of the potential contamination and • An appraisal of the potential relevant pollutant linkages (contaminant sources, pathways and receptors)		
• Identification of information gaps and uncertainties, recommendations for intrusive contamination investigations (if necessary) to include the identification and justification of target areas for more detailed investigation		

Adapted from WLGA 2006

CHECKLIST 2

Quantitative Risk Assessment/ Site Investigation Objective: to refine and update the conceptual model, provide detailed site-specific information on substances in, on or under the ground, geology and groundwater, confirm relevant pollutant linkages, evaluate potentially unacceptable risks through generic or detailed quantitative risk assessment and provide the basis for the Remedial Options Appraisal	Undertaken	Date
• Purpose and aims of the study		
• Credentials of person undertaking the study		
• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Review and summary of any previous reports with references.		
• Results of preliminary risk assessment and summary of the outline conceptual model.		
• Liaison with Snr CLO/EHO		
• Site Investigation methodology to include: • Any preparatory enabling works e.g., breaking out concrete and demolition; • An appropriately scaled and annotated plan showing exploration locations, samples points, site structures , above/ below ground storage tanks and existing services, infrastructure etc. al photographs where available.		
• Justification of both targeted and grid-based sampling strategies, including the location, depth and number of samples taken: • Method of forming exploratory holes e.g., boreholes/ trial pits and borehole/ trial pit logs, showing water strikes and installation details as appropriate • Details of surface / groundwater monitoring programmes according to relevant Environment Agency methodology • Methods of collecting, storing and transporting samples to laboratory • Description of site works and observations.		
• Justification of analytical strategies, including the selection of parameters and the selection of samples for additional tests such as leach ability .		
• Analysis of samples to be carried out b an MCERTS accredited laboratory for soils and must included: • All contaminants of concern identified in the preliminary risk assessment; • Where relevant, the speciation for grouped determinants to allow for quantitative risk assessment , e.g., polyaromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs) polychlorinated biphenyls (PCBs) etc.		
• Results and findings of investigation to include • Description of ground conditions (made ground/ soil and perched/ groundwater regimes, including interactions between them) • Flood risk		

Checklist 2 Cont...

• Discussion of the nature and extent of contamination-sensory field evidence and analytical, a summary of the phases (solid, dissolved, free and the potential mobility and leachability of contamination); • Meaningful comparison (i.e., to include statistical tests as per UK Guidance) of the analytical results to appropriate standards, with full justification of the standards chosen; • To include the consideration of ground gas an the presence of asbestos.		
• Evaluation of site investigation results against conceptual model		
• Site specific risk assessments for both human health and environmental receptors. To include: •Objectives and details of proposed site use •Details of the models selected and justification of choice for the site; •Justification for input parameters with source reference for literature values and additional calculation for field derived parameters, assumptions, safety factors; •Any model printouts that have been generated (e.g., CLEA 1.04 out put sheets and Remedial Target Methodology, a copy of the model and the data worksheets should be included.); •Parameter sensitivity analysis and validation reports to show the model is performing accurately; •Note, where non UK models are used, modifications to make them UK com-		
• An interpretation and discussion fo the findings of the investigation and risk assessment within identification of pollutant linkages that present unacceptable risk and discussion of uncertainties.		
• Recommendations, description and uncertainties for further investigations or next steps as appropriate. ports with references.		

CHECKLIST 3

Remediation Strategy Options Appraisal Objective: to establish which remediation option, or combination of options, provides the best approach to remediating all pollutant linkages that resent an unacceptable risk at the site, whilst meeting best practice and current technical guidance. Reporting requirements	Undertaken	Date
• Purpose and aims of the report		
• Credentials of person undertaking the study		
• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Review and summary of any previous reports with references.		
• Liaison with Snr CLO/EHO		
• Outline of remediation objectives—what remediation needs to achieve for each pollutant linkage.		
• Outline of remediation criteria—against which compliance for each pollutant linkage can be measured and statement of overall site remediation criteria.		
• Identification of feasible remediation options Detailed		
• Detailed evaluation of remediation options		
• Description of remediation strategy, including •Justification for selection and how remediation strategy will deliver overall site remediation criteria; •Technical and scientific basis, effectiveness of combining remedial options , constraints, and limitation, expected durability •Site plan/ drawings (appropriately scaled and annotated) •Preparatory works, phasing of remedial works and timescales; •Consents and licenses (e.g., discharge consents, part B authorisation for mobile plant, waste management licenses/ exemptions, asbestos waste removal license) •Site management measure to protect neighbours, environment and amenity during works, including where appropriate health and safety procedures, discharges to air, land and water, including dust, noise, odour surface water runoff, discharges to groundwater with environmental controls and monitoring.		
• Outline how remedial strategy will be verified and future monitoring requirements		
• Details on the lifespan of the remediation strategy		
• Note: if changes are made to the remediation strategy the must be agreed with the LPA before they are implemented. Justification will be required, with a description of how the amended strategy will meet the agreed remediation criteria		

CHECKLIST 4

Remediation Strategy Implementation Plan Objective: to clearly translate the remediation strategy into a clear set of remediation activities for the site. It should set out all aspects of the design, preparation, implementation, verification , and long-term monitoring and maintenance of the remediation strategy. Reporting requirements **Implementation Plan**	Undertaken	Date
• Purpose and aims of the study		
• Credentials of person undertaking the study		
• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Review and summary of any previous reports with references.		
• Liaison with Snr CLO/EHO		
• Description of ground conditions including geology, hydrogeology, and hydrology		
• Remediation objectives; criteria for relevant pollutant linkages and overall site criteria		
• Remediation methodology		
• Site specific management procedures and emergency contingency plans • Site management measures to protect neighbours, environment and amenity during works, including where appropriate; health and safety procedures, discharges to air, land and water including dust, noise, odour, surface water runoff, discharges to groundwater with environmental controls and monitoring.		
• Location and construction details of monitoring activities e.g., dust gauges, vapour monitoring and groundwater monitoring from boreholes		
• Detailed site plans/ drawing (appropriately scales and annotated) showing areas requiring remediation, locations and phasing of works, stockpiling, monitoring and sampling points		
• Details of what constitutes completion of remedial works and how completion will be verified.		
Verification Plan		
• Details of the Verification Plan in order to demonstrate that the remediation criteria has been met for each relevant pollution linkage, including details of: •The sampling and monitoring strategy, methods and frequency •Validation testing of excavation to remove material, treated material, imported material, effectiveness of gas management systems etc; •Water quality testing of background groundwater and proximal surface waters, plus treated waters; •The use of on-site observations, visual/olfactory evidence •Schedule of chemical analysis, demonstrating accordance with MCERTS for soils QA/QC.		

Checklist 4 Cont...

• **Performance testing methods e.g., for containment barriers (cut off wall, gas membrane) and capping layers.** • **Confirmation by independent consultant that remedial measures proposed, i.e., for gas, soil or water contaminants are incorporated into the design as planned or as per manufacturer's specification. Any deviation to this being justified.** • **Proposed action in the event that variation shows failure of remediation**		
Monitoring and Maintenance Plan		

• Details of future monitoring and maintenance requirements in a Monitoring and Maintenance Plan (where necessary) once remediation has been completed, including details of:
  • Explanation as to why work is required.
  • Scope of sampling and monitoring and/or maintenance , methods, frequency and type of equipment to be used.
  • Statement and justification for end point for monitoring programme.
  • Proposed assessment criteria and justifications for selection
  • Schedule fo chemical analysis, demonstrating accordance with MCERTS for soils and laboratory QA/QC.
  • Measure for ensuring required monitoring and maintenance in undertaken.		

• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Review and summary of any previous reports with references.		
• Liaison with Snr CLO/EHO		
• Description of ground conditions including geology, hydrogeology, and hydrology		
• Remediation objectives; criteria for relevant pollutant linkages and overall site criteria		
• Remediation methodology		

CHECKLIST 5

Verification of Completion Objective: to clearly demonstrate that the remediation activities have been completed satisfactorily, have not caused harm to third parties and the environment and that the remediation criteria for each of the relevant pollutant linkages have been met. Reporting requirements	Undertaken	Date
• Purpose and aims of the report		
• Credentials of person undertaking the study		
• Site location and current layout plans (appropriately scaled and annotated with North point, National Grid Ref., (min 6 figures) and site area in hectares)		
• Review and summary of any previous reports with references.		
• Liaison with Snr CLO/EHO		
• Information as detailed in the remediation strategy including description of relevant pollutant linkages assessed i.e., •Description of ground conditions including geology, hydrogeology, and hydrology •Remediation objectives; criteria for relevant pollutant linkages and overall site criteria •Remediation methodology.		
• Details of remedial work undertaken and by whom, with justification for any changes from the original remediation strategy		
• Results of verification, validation, performance testing and monitoring as specified in the **Verification Plan**; to include substantiating data: •Laboratory and in-situ test results, monitoring results for groundwater and gases during remediation •Trial pit logs and photographic evidence •Summary data plots and tables relating to remedial criteria •Plans showing treatment areas nad details of any difference from the original remediation strategy. •Details of permits, licences, waste management documentation etc., and demonstration of compliance.		
• Description of reinstatement works		
• Description of final site conditions at completion with details of any permanent installation that form part of the remedial strategy and are to be left intact.		
• Confirmation that remediation objectives have been met and confirmation of post-completion monitoring/ maintenance requirements		
• Verification Certificate		

APPENDIX C

Verification Certificate

The purpose of this Certificate is to collate the investigation and remediation undertaken during the development in order to achieve discharge of the planning condition. Please complete each section below as appropriate:

Site Name/ Address

Planning Permission :.....

Was carried out between the dates
of:.....and.....

Phase I: Preliminary Risk Assessment / Desk Study

Confirmation that an acceptable Phase I Preliminary Risk Assessment has been undertaken for the development

Title	*Reference No*	*Author*	*Date*

Phase II: Site Investigation

Confirmation that an acceptable Phase II assessment has been undertaken for the development

Title	*Reference No*	*Author*	*Date*

Remediation Implementation

Confirmation that the proposed remedial measures were satisfactory implemented as per the agreed and detailed in the validation report/s

Title	*Reference No*	*Author*	*Date*

Ground Gas assessment

Confirmation that an acceptable Ground gas assessment has been undertaken for the development.

Title	*Reference No*	*Author*	*Date*

Ground Gas Controls

Confirmation that the proposed ground gas controls were satisfactory implemented as per the agreed. If a membrane has been installed on site, please submit certification from the supplier that the membrane has been correctly installed.

Title	*Reference No*	*Author*	*Date*

Imported Soils Information

Confirmation that the appropriate imported soils analysis and associated information was submitted for the development

Title	*Reference No*	*Author*	*Date*

Completed by: the Applicant / developer

Signed:.....Date:.....

Name:.....

Position:.....

Company Name and
Address:.....

On behalf of if different from Above

Signed:.....Date:.....

Name:.....

Position:.....

Company Name and
Address:.....

APPENDIX D

Requirements for Chemical Testing of Imported Materials for Various Development End Uses.

This guidance is primarily for property owners, developers, environmental consultants, architects and surveyors who require information to assist their submissions to LPA in support of planning conditions applicable to the importation of soils, stones or any other similar materials to a development, for the purposes of garden, landscape or engineering use.

The process for ensuring all information is submitted in relation to the relevant planning condition is outlined in **TABLE 1** in a series of step by step actions. Adherence to these will greatly assist the CLO/EHO to effectively make final recommendation for discharge and will also ensure that contaminative risks from imported materials are avoided.

STEP 1.

Please use **Table 2,** below as an initial screening tool to use when assessing what testing requirements will be required when considering importing material for use at a development site. The Colour Coding is explained as follows:

Green – Usually no testing required go to **Step 3** –
Amber – Chemical testing required. **Go to Step 2** for specific requirements.
Red – **Importation of such materials prohibited.**

Step 2.

Please refer to Table 3. This details the specific sampling frequencies and analytical requirements, which are dependent on the required quantities and the proposed end use of the development

Step 3.

Please complete and sign the attached declaration form with all necessary information in support of the relevant planning condition number. Failure to complete all sections of this form will result in delays when discharging the condition

Requirements for Chemical Testing of Imported Materials for Various Development End Uses.

Table 1 – Process for Submitting Relevant Information on Imported Materials

STEP	RESPONSIBILITY	TASK	POLLUTION CONTROL REQUIREMENT
1	APPLICANT	Submit information relating to proposed materials for import	Application needs to complete an Imported Materials Declaration Form, which found at the end of this document.
2		Sampling of intended material(s) (topsoil, subsoil, stone, aggregates etc)	Either the supplier or importer must arrange for a suitably competent third party to undertake necessary sampling of intended materials prior to their importation to the development in line with the sampling frequency of **TABLE 3**. Imported Materials Declaration form to be completed and returned to Pollution Control.
		Notify intentions to use "Other" Imported Materials (if applicable)	Imported Materials Declaration completed to notify Pollution Control of the type of materials such as by-products of any chemical manufacturing or processing e.g. furnace slag must be submitted. Such products must be subject to additional laboratory testing to those set out in **TABLE 3** to determine for example a product's chemical stability/leachability etc. Additional testing proposals must be submitted to and agreed with Pollution Control prior to importation to ensure that potential contaminative risks are avoided.
3	LABORATORY	Analysis of submitted samples	Analysis of submitted samples for the determinands relevant to the specific development as outlined in **TABLE 3**. All analysis (where applicable) must be subject to MCERTS accreditation(*) at a certified laboratory.
4	APPLICANT	Employ a suitably qualified consultant to review analysis	Submission of a report interpreting the laboratory results and a conclusion on the suitability for the sampled material(s) to be used for the intended purpose at the development site.
5	CLO/EHO	Review the consultant's comments and raw data	If satisfactory partial discharge to be recommended of relevant planning condition.
6	APPLICANT	Notify Pollution Control following import completion	Confirm the total volume and type(s) of material imported to site to Pollution Control.
7	CLO/EHO	Check receipt of all required information	Consideration to be given to discharge planning condition in full.

(*) Further information is available from the Environment Agency at www.environment-agency.gov.uk or by telephone, 08708 506 506.

TABLE 2. Screening Tool to Assess if Chemical Testing is Required

Nature of Materials for Importation	Comments	Chemical Testing required
Bagged or bulk bag quantities of **soils / compost and sand.**	**Applicable only to** materials available from retail outlets such as garden centres, DIY Superstores, builder's merchants. All other sources will require testing in accordance with TABLE 3 overleaf, unless otherwise agreed with a CLO	TESTING NOT REQUIRED
Bagged / bulk quantities of **aggregate, gravel and stone.**	**Applicable only to** material available from retail outlets such as garden centres, DIY Superstores, builder's merchants. All other sources will require testing in accordance with TABLE 2 overleaf, unless otherwise agreed with a CLO	
Naturally sourced materials.	Includes quarry products and peat which have accompanying British Standard certification.	
Recycled, sieved, blended or screened soils, stones or aggregates. Road shavings / tarmacadam.	Testing required regardless of whether these are from one source or several sources / suppliers.	TESTING REQUIRED
By products from industrial processes. Mechanically screened and sorted demolition wastes.	Additional testing to that in TABLE 3 will be required to determine the suitability of these materials for specific uses prior to Pollution Control acceptance for import.	
Any Unprocessed / unsorted demolition wastes	In order to prevent any chemical, biological or radioactive contaminants posing potential hazards and risks to human health	IMPORTATION PROHIBITED
Any materials originating from a site confirmed as being contaminated or potentially contaminated		
Materials containing Japanese Knotweed stems, leaves and rhizome infested soils	It is an offence under the Wildlife and Countryside Act 1981 to spread this invasive weed.	

TABLE 3 – Sampling Frequencies and Analytical Requirements for Imported Materials

	DEVELOPMENT TYPE				
	Residential	Allotments	Parks, Play Areas, & POSs	Commercial & Industrial With Landscaping	Commercial & Industrial Hardstand Only
QUANTITY TO BE IMPORTED	**NUMBER OF SAMPLES REQUIRED**				
Less than 20m³	**Please contact CLO/EHO to agree sampling requirements**				
Between 20m³ - 100m³	**4**	**4**	**3**	**2**	**2**
More than 100m3	4 per every 250m3 or source	4 per every 250m3 or source	3 per every 250m3 or source	2 per every 500 m3 or per source	2 per every 500 m3 or per source
DETERMINAND	**LABORATORY ANALYSIS**				
Arsenic / Cadmium/ Chromium (Total) / Lead / Mercury and Selenium	✔	✔	✔	✔	Optional
Boron / Copper / Nickel and Zinc	✔	✔	✔	Optional	Optional
Speciated PAHs	✔	✔	✔	✔	Optional
Speciated TPH (1) Phenol & Asbestos	✔	✔	✔	✔	✔

(1) **Further testing will be required for BTEX compounds if significantly elevated concentrations are present in the sample(s) tested.**

IMPORTED MATERIALS DECLARATION FORM

1.	Planning Permission Number	2.	Development Address

3.	Proposed use(s) of ALL imported material(s)	4.	Description of material imported	British Standard Certification supplied	
				Yes	No
☐	Engineering use/works (e.g. backfill, sub formation, foundation)	☐	Topsoil	☐	☐
☐	Domestic Garden use (inc. crop growing)	☐	Subsoil	☐	☐
☐	Landscaping (play areas, communal areas, roadside)	☐	Aggregate	☐	☐
☐	Other *Please specify*_____	☐	Quarry stone	☐	☐
		☐	Other *(Please specify)*_____	☐	☐

5.	Origin of Imported Material(s)
☐	Greenfield Site *(Please specify)*_____
☐	Brownfield Site *(Please specify)*_____ Recycling / Process supplier *(Please specify)*_____
☐	Other *(Please specify)* _____

6.	Volume(s) of Material to be Imported	7.	No of samples taken (per source)
☐	Less than 20m^3	☐	2-3
☐	Between 20m^3 - 100m^3	☐	4-6
☐	More than 100m^3	☐	More than 6 *(please specify)* (NB: All analyses (where applicable) must be subject to MCERTS accreditation(*) at a certified laboratory)

8. Suitability of Use

Confirmation that soil imported does not contain any evidence of Japanese Knotweed stems, leaves and rhizomes. YES ☐ NO ☐

Confirmation the imported soil does not contain any unprocessed / unsorted demolition waste YES ☐ NO ☐

Confirmation that the soil imported does not contain contaminated or potentially contaminated by chemical or radioactive substances YES ☐ NO ☐

Confirmation that the soils imported is suitable for use for the intended purpose on site YES☐ NO☐

Signed:.....Date:.....

Name:.....Position:.....

Company Name and Address

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South East Wales Land Contamination Working Group