

SITE INVESTIGATION SCHEME

7ABC Bayham Street, Camden, London



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Approval for issue		
Jim Lightbown	J. byku_	7 August 2020

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1 INTRODUCTION

1.1 Preamble

- 1.1 RPS Consulting Services Ltd (RPS) was commissioned by Camden Lifestyle (UK) Limited to provide a Site Investigation Scheme for 7ABC Bayham Street, Camden, London NW1 0EY. A site location plan is provided as Figure 1. The scheme has been commissioned to support the planning application for a proposed mixed-used hotel and office scheme on the site comprising:
 - Demolition of existing buildings on (530 sqm GIA of B1a office space).
 - Erection of a new part 3, part 4 and part 5 storey building, and 2 basement levels.
 - 691 sqm (GIA) of new co-working office floorspace (B1a Use Class).
 - 61 No. of hotel bedrooms (including 8 accessible rooms).
 - An ancillary café/bar at ground floor open to both guests, office workers and the public.
- 1.2 The site is located in central London in the London Borough of Camden, to the southern end and western side of Bayham Street. Bayham Street is a wide one-way route which runs parallel to the east of Camden High Street (A400).
- 1.3 It has a regular shape and currently comprises three existing buildings 7A, 7B and 7C and contained on three sides with access only being achievable from Bayham Street.
- 1.1.1 This report is to be submitted towards the discharge of Condition 17 of planning permission reference 2018/3647/P for the proposed redevelopment, which states:

'Prior to commencement of any development other than works of demolition, site clearance & preparation, a written programme of ground investigation for the presence of soil and groundwater contamination and landfill gas shall be submitted to and approved by the local planning authority in writing.

Site investigation shall be carried out in accordance with the approved programme and the results and a written scheme of remediation measures [if necessary] shall be submitted to and approved by the local planning authority in writing.

The remediation measures shall be implemented strictly in accordance with the approved scheme and a written report detailing the remediation shall be submitted to and approved by the local planning authority in writing prior to occupation'.'

1.2 Legislation and Guidance

- 1.2.1 This scheme has been produced in general accordance with:
 - Contaminated Land (England) Regulations 2006 (as amended);
 - DEFRA Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
 - DEFRA and Environment Agency (2004) Contaminated Land Report 11 (CLR 11): Model Procedures for the Management of Land Contamination;
 - National Planning Policy Framework (2019);
 - CIRIA Document C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings;
 - CIRIA Document C682: VOCs handbook: investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination;

- British Standard requirements for the 'Investigation of potentially contaminated sites Code of practice' (ref. BS10175:2011+A1:2017);
- British Standard requirements for the 'Code of practice for ground investigations' (ref. BS5930:2015); and
- British Standard requirements for the 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' (ref BS8485:2015+A1:2019).
- 1.2.2 Details of the limitations of this type of assessment are described in Appendix A.

2 PREVIOUS ASSESSMENT

2.1.1 RPS was provided with the third party report detailed below for review as part of the preparation of this site investigation scheme. RPS cannot vouch for the accuracy or validity of the information provided within third party reports and the following opinion is based solely upon the reports. Legal reliance on these reports should be sought by the client from the original authors of these reports where their content is considered material to the characterisation of the site.

Phase I Non-Intrusive & Phase II Intrusive Site Investigation for 7 A,B,C Bayham Street (Risk Management Limited reference RML6698, dated June 2018)

- 2.2 A Phase I Non-Intrusive & Phase II Intrusive Site Investigation was undertaken at the site by Risk Management Limited.
- 2.3 The Phase I desk study indicated that the site originally comprised a wooded area or orchard until it was gradually developed from c.1896 in various stages to resemble its present day layout. No potentially significant on site potential sources of contaminants of concern were identified as part of the desk study.
- The surrounding area was indicated to have historically comprised predominantly residential land use. Recent potentially contaminative land uses in the vicinity of the site comprised a dry cleaners and a petrol filling station (records indicating that this was now obsolete), located approximately 70m and 130m to the west, respectively.
- 2.5 No outline conceptual site model was provided as part of the Phase I desk study.
- 2.6 The Phase II Intrusive Site Investigation comprised the drilling of two cable percussion boreholes (BH1 & BH2) at the site. Borehole BH1 was terminated at 25.5m below ground level (bgl) and borehole BH2 was terminated at 4m bgl.
- 2.7 In addition to the cable percussion boreholes, four drive-in-sampler boreholes (DIS1-DIS4) were drilled across the site. Boreholes DIS1 and DIS3 were terminated at a depth of 5m bgl and boreholes DIS2 and DIS4 were terminated at a depth of 3m bgl.
- 2.8 Made Ground was encountered to depths of between 1.4m and 2.1m beneath the site overlying the London Clay Formation, proven to a maximum depth of 25.5m bgl.
- 2.9 Groundwater was not encountered during boring, however, perched groundwater was encountered at depths between 1.6m and 3.7m bgl within monitoring standpipes installed within boreholes BH1, DIS1 and DIS3 during subsequent monitoring visits.
- Of the eight soil samples tested for contaminants of concern, three were found to contain determinands at concentrations exceeding the CLEA Soil Guideline Values (SGV) or the ATRISK Contaminated Land Screening Values (SSV) for Commercial usage. No asbestos was identified in the eight samples screened. Recommendations were that Made Ground should be removed to a minimum depth of 600mm in any proposed areas of soft landscaping at ground level and replaced with some 300mm-400mm of "clean" imported material overlain by 200mm-300mm of "clean" Topsoil as necessary.
- 2.11 No groundwater was analysed as part of the assessment.
- 2.12 No methane was detected and a maximum carbon dioxide level of 0.2% was recorded during the six return gas/groundwater monitoring visits. The assessment therefore concluded that the current site would be classified as being "Characteristic Situation 1" and no gas remedial measures would be required.

3 SITE INVESTIGATION SCHEME

3.1 RPS is, at the time of writing, preparing a Phase 1 Preliminary Risk Assessment at the site.

Although considered unlikely, the final scope of the site investigation scheme may be subject to change on the basis of the findings of the Phase 1 Preliminary Risk Assessment report. A site investigation scheme based on the information reviewed to date is detailed below.

3.2 Service Clearance

- 3.2.1 Clearance of all exploratory hole positions will be carried out by a qualified services clearance contractor prior to intrusive works commencing.
- 3.2.2 A Preliminary Unexploded Ordnance (UXO) Risk Assessment completed for the site (RPS reference EES1110 R-01-00, dated 23rd July 2020) indicated that the site is located in area at low risk of unexploded UXO. No specialist UXO clearance is therefore considered necessary as part of the site investigation works. RPS should be contacted immediately should any evidence of UXO be encountered or suspected as part of the works

3.3 Cable Percussion Boreholes

- 3.3.1 To comprise the following:
 - Drilling of one cable percussion boreholes to a depth of up to 20m (bgl), or refusal, using demountable cut-down cable percussion techniques (borehole BH101).
 - Drilling of one cable percussion boreholes to a depth of up to 25m bgl, or refusal, using demountable cut-down cable percussion techniques (borehole BH102).
 - Installation of a groundwater and ground gas monitoring standpipes in both boreholes BH101
 and BH102. Monitoring well construction will be determined upon confirmation of ground
 conditions. For the purpose of this scheme the preliminary well construction for each
 installation is to comprise 1m plain well pipe from ground level followed by slotted well pipe to
 the top of the London Clay Formation.

3.4 Hand Held Window Sample Boreholes

- 3.4.1 To comprise the following:
 - Drilling of up to four boreholes to depths of up to 4m bgl, or refusal, using hand held window sample techniques (boreholes WS101 to WS104).
 - Installation of a groundwater and ground gas monitoring standpipe in boreholes WS102.
 Monitoring well construction will be determined upon confirmation of ground conditions. For the purpose of this scheme the preliminary well construction for each installation is to comprise 1m plain well pipe from ground level followed by slotted well pipe to the top of the London Clay Formation.

3.5 Hand Dug Foundation Pits

- 3.5.1 To comprise the following:
 - Excavation of three foundation inspection trial pits (trial pits TP1 to TP3) using hand digging techniques to depths of up to 1.2m bgl. Exposed structures will be documented.

3.6 Soil Sampling and Laboratory Analysis

- On-site screening of soil samples for ionisable volatile organic compounds (iVOCs) using a
 portable photo-ionisation detector (PID) with a 10.6eV lamp. This lamp voltage has been
 selected as it measures a broad range of compounds.
- Collection of up to eight soil samples from exploratory hole locations for chemical analysis by a UKAS/MCERTS accredited laboratory. At least one sample per borehole will be taken from the Made Ground at each borehole location with any secondary samples taken either from the groundwater smear zone or where the most elevated PID readings are recorded in the unsaturated zone.
- Samples will be analysed for contaminants of concern, as appropriate, from a range including asbestos, heavy metals, speciated total petroleum hydrocarbons (TPH-CWG incl. BTEX) and speciated polycyclic aromatic hydrocarbons (PAH).

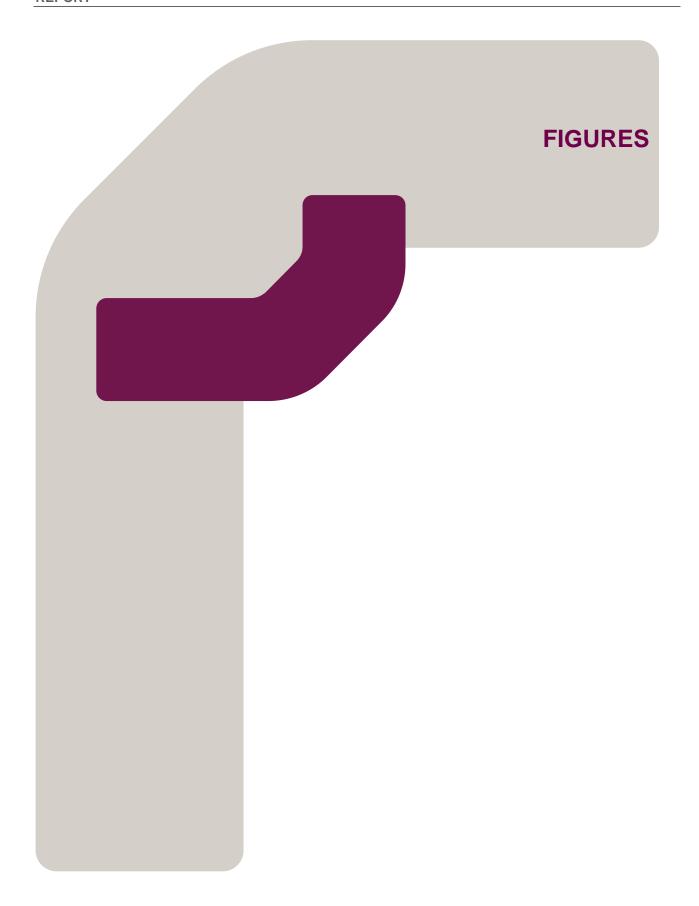
3.7 Groundwater/Ground Gas Monitoring and Groundwater Laboratory Analysis

- Groundwater levels will be monitored in each of the three newly installed monitoring wells and on three occasions.
- Groundwater samples will be obtained where groundwater is encountered from each of the
 monitoring standpipes on one occasion and submitted to a UKAS/MCERTS accredited
 laboratory for chemical analysis. These samples will be analysed for contaminants of
 concern, as appropriate, from a range including heavy metals, TPH-CWG (incl. BTEX),
 volatile organic compounds (VOCs) and speciated PAH. Should significantly elevated
 concentrations of contaminants of concern be detected within groundwater samples collected
 as part of the initial round of groundwater sampling, then additional sampling/analysis of
 groundwater will be carried out.
- Each well will be monitored on three occasions for the presence of carbon dioxide, methane, iVOCs and oxygen as well as atmospheric pressure and any detectable flow rates. Monitoring rounds will target periods of low and significantly falling pressure, where practicable. Should significant sources or elevated levels of ground gas be encountered as part of the preliminary monitoring, then additional rounds of ground gas monitoring will be completed, subject to confirmation with the Local Authority.
- 3.7.1 A proposed exploratory hole location plan is provided as Figure 2.
- As no potentially significant on site potential sources of contaminants of concern were identified as part of the previous Phase I Non-Intrusive & Phase II Intrusive Site Investigation, exploratory hole locations have been placed to provide general coverage of the site. Borehole BH101 is located in the westernmost portion of the site to detect any potential on site migration of contaminants of concern from the former petrol filling station (approximately 130m to the west) and dry cleaners (approximately 70m to the west).
- 3.7.1 Locations may be subject to variation based on site access restrictions, the presence of services or any additional findings of the RPS Phase 1 Preliminary Risk Assessment currently being completed.
- 3.7.2 An RPS consultant will be present throughout the duration of the site works to supervise the excavations, log the arisings, and obtain representative samples, as necessary. The normal working hours will be weekdays between 08:00hrs and 18:00hrs.
- 3.7.3 On completion, monitoring wells will be finished with a traffic proof cover and left flush with ground level.

3.8 Reporting

- 3.8.1 The Phase 2 Geo-Environmental Site Investigation will be produced in general accordance (as appropriate) with the references detailed above.
- 3.8.2 The environmental assessment will include an evaluation of ground conditions and the nature of any contamination present.
- 3.8.3 A generic quantitative risk assessment will be carried out in accordance with current guidance and best practice. Chemical analytical data will be compared to published assessment criteria and exceedances will be identified. These will comprise, as appropriate, LQM/CIEH Suitable 4 Use Levels (S4ULs), Category 4 Screening Levels (C4SLs) and the EIC/AGS/CL:AIRE Soil Generic assessment Criteria for Human Health Risk Assessment.
- 3.8.4 The conceptual site model presented as part of the RPS Phase 1 Preliminary Risk Assessment (currently underway at the time of writing) will be developed to identify potential source-pathway-receptor pollutant linkages. If the conceptual site model identifies a potential for significant harm to sensitive receptors, further investigation or more detailed risk assessment may be recommended. If residual risk remains then remediation may be recommended.

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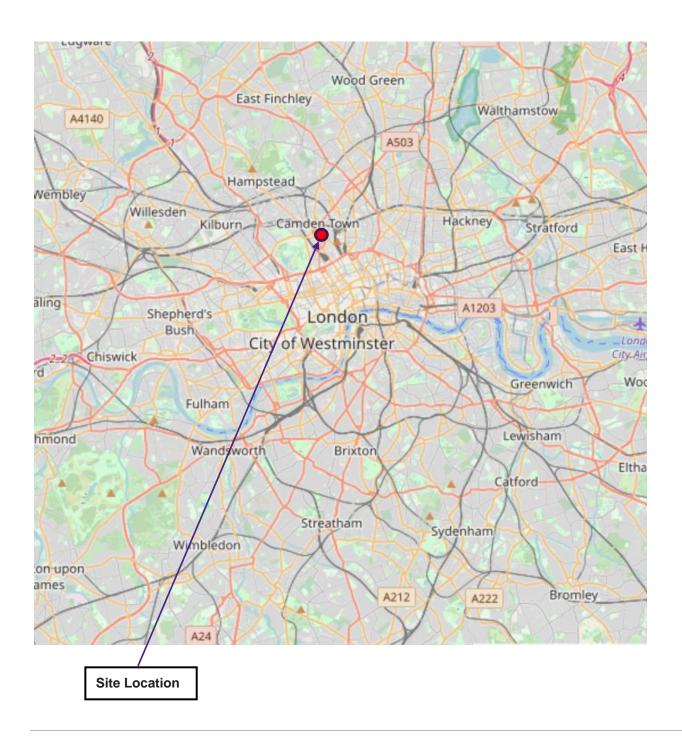
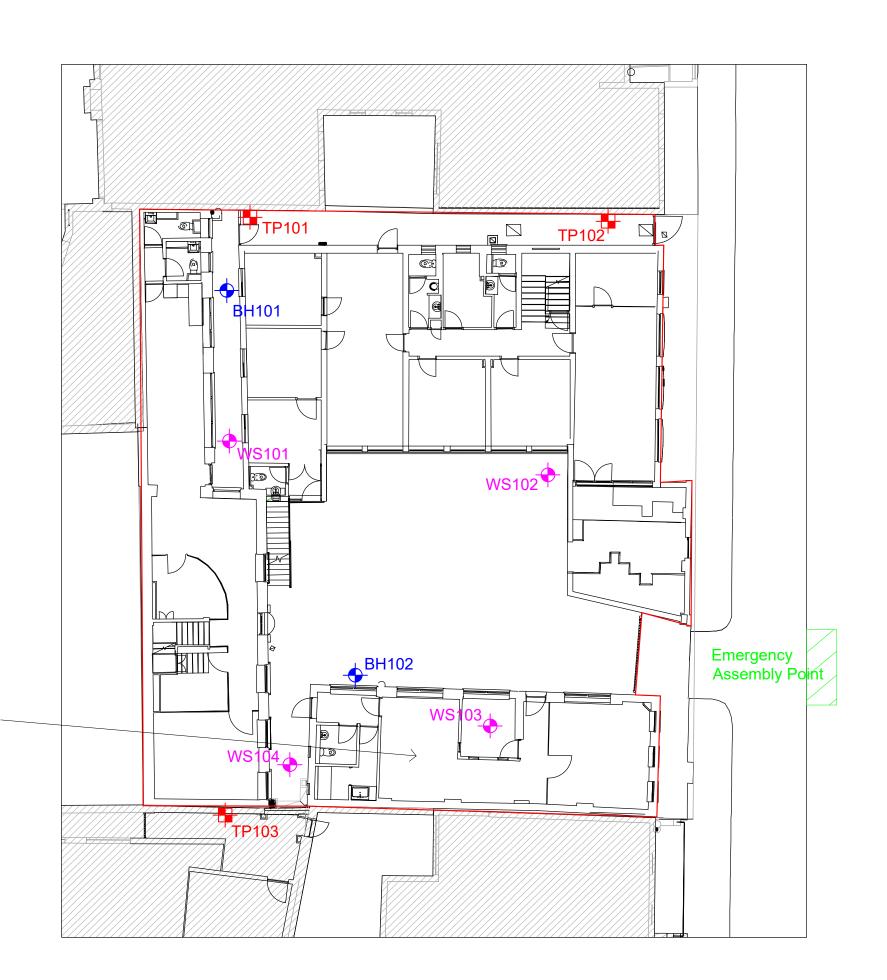


Figure 1: Site Location Plan

RPS Consulting UK & Ireland 20 Farringdon Street	Client:	Camden Lifestyle (UK) Ltd		
London	Project:	7A,B,C Bayham Street, London		
EC4A 4BL	Checked By:	AC		
United Kingdom	Checked by.			
rpsgroup.com	Job Ref:	JER8709	Date:	August 2020



Toilet and Hand Wash Facility are located within

this building. A First Aid kit will also be located

The end room will be

and equipment

used for storage of tools

here.

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- Notes

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Key

Site Boundary



Cut Down Cable Percussion Boreholes



Hand Held Window Sample Boreholes



Foundation Inspection Pits



PM/Checked by

Date Created

Aug 2020

KD

Rev	Description	Ву	СВ	Date



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Meridian Project Management

Project 7abc Bayham Street

Proposed Borehole Location Plan + Site Notes

Status

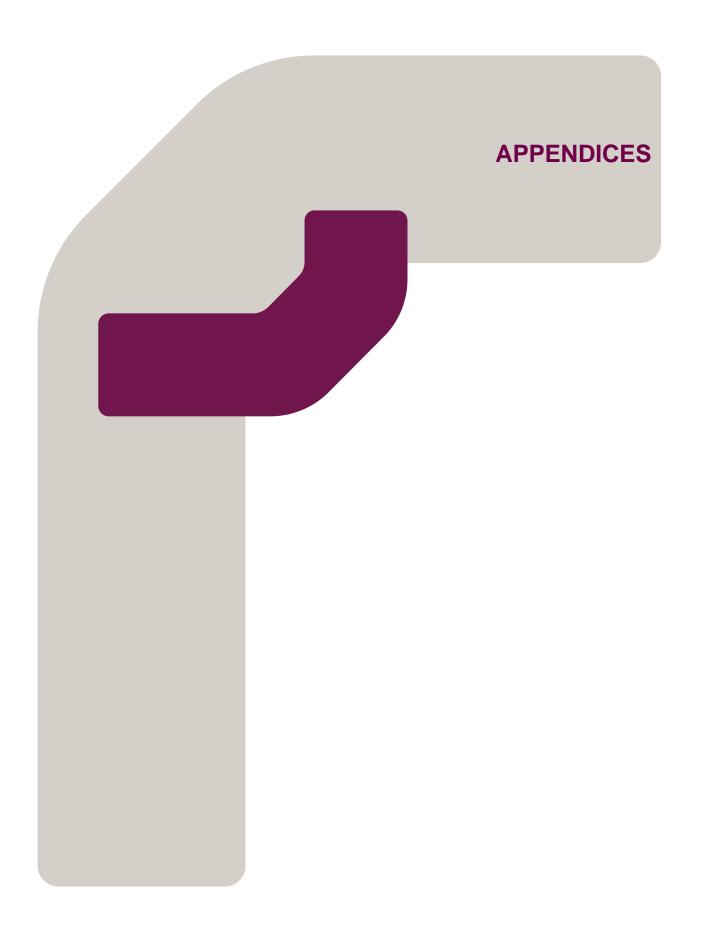
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Appendix A

General Notes

RPS CONSULTING SERVICES LTD

GENERAL NOTES

PHASE 1 - ENVIRONMENTAL RISK ASSESSMENT / DESK STUDY ENVIRONMENTAL REVIEW

- 1. A "desk study" means that no site visits have been carried out as any part thereof, unless otherwise specified.
- 2. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.
- 3. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.
- 4. The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
- 5. No sampling or analysis has been undertaken in relation to this desk study.
- 6. Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
- 7. Where any data supplied by the Client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.
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Appendix B Part 2A (The Contaminated Land Regime)

CONTAMINATED LAND DEFINITION

Under Section 57 of the Environmental Act 1995, Part 2A was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land.

Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 2001¹, providing a definition of 'contaminated land' and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.

According to the Act, contaminated land is defined as 'any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:

- 1. significant harm is being caused or there is a significant possibility of such harm being caused; or
- 2. *significant pollution* of controlled waters² is being caused or there is a significant possibility of such pollution being caused³

The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term 'possibility of significant harm being caused' should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.

The following situations are defined where harm is to be regarded as significant:

- 1. Chronic or acute toxic effect, serious injury or death to humans
- 2. Irreversible or other adverse harm to the ecological system
- 3. Substantial damage to, or failure of, buildings
- 4. Disease, other physical damage or death of livestock or crops
- 5. The pollution of controlled waters⁴.

With regard to radioactivity, contaminated land is defined as 'any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a significant possibility of such harm being caused⁶'.

¹ In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2012; in Scotland by The Contaminated Land (Scotland) Regulations 2000, updated by the Contaminated Land (Scotland) Regulations 2005; and in Wales by The Contaminated Land (Wales) Regulations 2001, updated by the Contaminated Land (Wales) Regulations 2006.

² In Scotland the term "controlled water" has been updated to "water environment" under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

³ The definition was amended in 2012 by implementation of the Water Act 2003.

⁴ Groundwater in this context does not include waters within underground strata but above the saturated zone.

⁵ The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

The Risk Assessment Methodology

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

The Risk Assessment

By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence takes into account both the potential severity of the hazard and the sensitivity of the receptor.

For further information please see the Contaminated Land section on the DEFRA website (www.defra.gov.uk).