# 1-9 SANDYCOMBE ROAD
# NORTH SHEEN, RICHMOND TW9 2EP

## PHASE 1 PRELIMINARY RISK ASSESSMENT

**FOR**

***GOLDCREST LAND***

November 2016

**Our Ref:** HLEI34438/001R

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|---|---|---|
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| **Project Reference:** | HLEI34438 | |
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| **Technical Reviewer:** | Jim Lightbown | |
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*This report has been prepared in the RPS Group Quality Management System to British Standard EN ISO 9001:2008*

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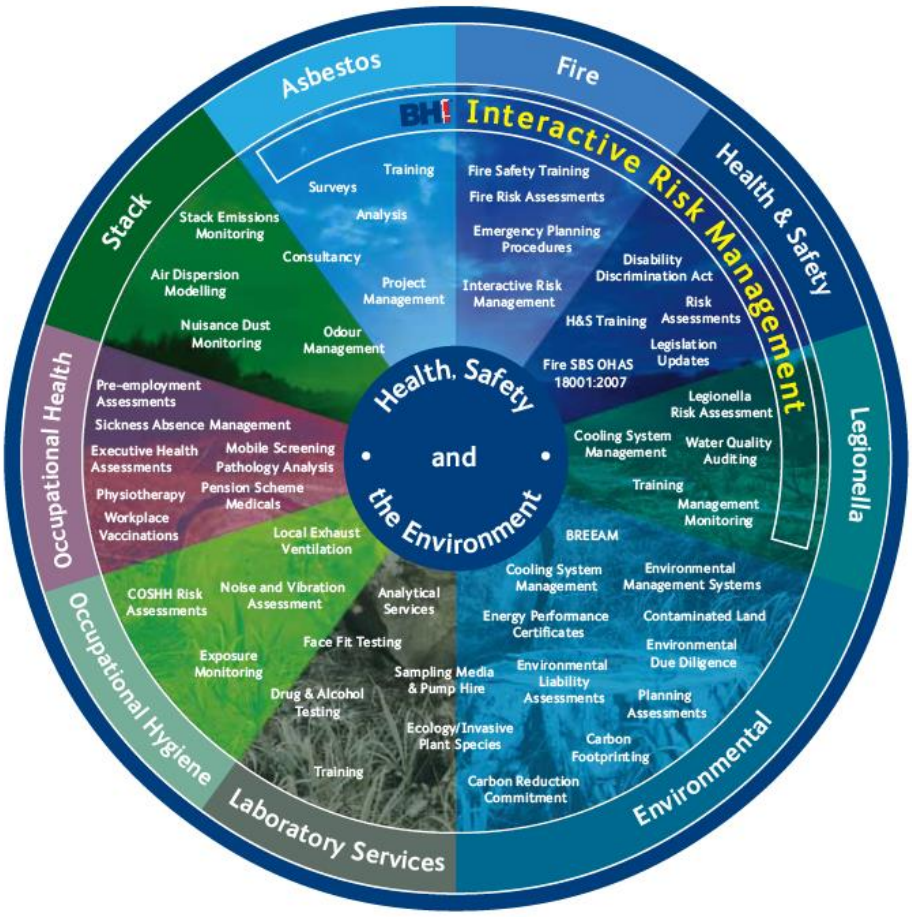
*RPS Health, Safety & Environment (London office) is certified to Environmental Management Standard ISO 14001.*



# CONTENTS

# EXECUTIVE SUMMARY

*RPS Health, Safety & Environment (RPS) was commissioned by Goldcrest Land to undertake a Phase 1 Preliminary Risk Assessment of 1-9 Sandycombe Road, North Sheen, Richmond TW9 2EP. The report has been commissioned in support of a planning application for the proposed redevelopment of the site for mixed office and residential end use.*

***Site History***

*Former potentially contaminative land uses identified on site include buildings of unspecified use located in the north of the site, the likely use of the site as railway land and the recent use of the site for light industrial / commercial purposes.*

*Former potentially contaminative land uses in the immediate vicinity of the site include a commercial printers (1993 to 2003) located approximately 25m to the north of the site; a works of unspecified use (c.1960 to c.1991) located approximately 40m to the east of the site; a timber yard located approximately 50m to the south (c.1896 to c.1934), latterly a pulp and paper manufacturing works (1954 to 1958); and gas works / gas holder depot approximately 60m to the southeast (c.1868 to c. 2006).*

***On Site and Surrounding Land Use***

*The only current potential on site source of contamination relates to Made Ground that is considered likely to directly underlie the site.*

*Current potentially contaminative land uses in the immediate vicinity of the site include a railway line located adjacent to the east of the site, a garage / petrol filling station located approximately 30m southwest of the site, a car showroom located approximately 40m to the east of the site and a gas valve compound located approximately 60m to the southeast.*

***Environmental Setting***

*The site is located within an area of mixed residential and commercial use.*

*The site is situated on a Secondary A Aquifer, relating to the Kempton Park Gravel Formation. The site is not located within a SPZ and there are no licensed groundwater abstractions within 1km of the site.*

*Ordnance Survey mapping indicates that there are no surface water features within 500m of the site.*

***Outline Conceptual Site Model***

*Current and historical potentially contaminative land uses have been identified on site and in the surrounding area.*

*In any areas of proposed soft landscaping, the pathways of dermal contact, ingestion of soil and the inhalation of soil / dust could be active for future site users. There would also be potential for ground gas and volatile contaminants of concern in soil and / or groundwater (if present) beneath the site to impact future site users via the inhalation pathway in indoor areas.*

*Groundwater within granular horizons of the Made Ground and the Kempton Park Gravel Formation (a Secondary A Aquifer and itself, considered a potential receptor) may facilitate the lateral migration of contaminants (if present) off-site or on site. Potential pollutant linkages associated with off-site human health receptors could therefore also be active.*

***Recommendations***

*The outline Conceptual Site Model produced upon completion of the desk study assessment has identified a number of potential pollutant linkages that may be active upon the redevelopment of the site. It is therefore recommended that the potential for these linkages to be active is assessed through Phase 2 Environmental Site Investigation. Where necessary, this assessment will outline any recommendations necessary in order to remediate / mitigate any identified risks.*

# 1 INTRODUCTION

## 1.1 Preamble

RPS Health, Safety & Environment (RPS) was commissioned by *Goldcrest Land* to undertake a Phase 1 Preliminary Risk Assessment of 1-9 Sandycombe Road, North Sheen, Richmond TW9 2EP. A site location plan is presented as Figure 1.

The report has been commissioned in support of a planning application to redevelop the site as a part four / part five-storey property (without basement), with associated car parking areas and some areas of soft landscaping.

## 1.2 Scope of Work

The scope of works for this assessment was as follows:

- To undertake a site inspection;
- To review the historical land uses to assess the potential for ground contamination;
- To review the environmental setting to assess the sensitivity of the surrounding area to contamination/pollution;
- To undertake a qualitative environmental risk assessment of the site's current and proposed use; and
- Produce an outline Conceptual Site Model (CSM) detailing potential pollutant linkages associated with the redevelopment of the site.

## 1.3 Legislation and Guidance

This report has been produced in general accordance with:

- Environment Agency (EA) Contaminated Land Report 11 (CLR 11): *Model Procedures for the Management of Land Contamination;*
- *Contaminated Land (England) Regulations 2006 (as amended);*
- *DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012);*
- *National Planning Policy Framework (2012)*;
- British Standard requirements for the *'Investigation of potentially contaminated sites - Code of practice' (ref. BS10175:2011)*; and

- British Standard requirements for the *'Code of practice for ground investigations' (ref. BS5930:2015)*.

Where appropriate, consideration has also been given to the following:

- The potential for environmental liabilities to occur under other associated regimes, for example the *Water Resources Act (1991)* and the *Environmental Damage Regulations (2009)*; and
- Key constraints on site redevelopment.

Details of the limitations of this type of assessment are described in Appendix A.

# 2 SITE RECONNAISSANCE AND DESK STUDY

## 2.1 Site Reconnaissance

This section of the report is based upon observations made during site visits carried out on 15th December 2014. A site boundary plan is shown as Figure 2. Selected photos are shown in Appendix B.

***General view of the site. For further photos see Appendix B.***

### *2.1.1 The Site*

**Table 1 – Summary of Site Reconnaissance**

| Section | Description |
|---|---|
| Background: | The site is located at National Grid Reference 519010, 175770. It is triangular in shape and occupies an area of approximately 0.15ha. |
| Site Layout: | At the time of the visit, the site comprised a small row of commercial units with an access road, associated car parking areas and limited soft landscaping. |
| Activity / Operations: | Access into the units was not permitted at the time of the walkover, however, it was understood that tenants at the time included a wood furnishers, a pet food company and a hardwood flooring company.* |
| Building Structure(s): | The site was occupied in the east by a steel clad, two storey, commercial building (approximately 320 $m^2$) split into five units and numbered as 1-9 Sandycombe Road.<br><br>A (likely) gas meter was observed in the southeast of the site. |
| Topography and Surface Cover: | The topography of the site appeared to be relatively level, with only a gentle downward slope toward the east. A rise of approximately 2 to 3 metres was observed up to the adjacent Sandycombe Road in the southeastern part of the site.<br><br>The site was predominantly surfaced with hardstanding, with only limited soft landscaping in the southern tip and along the western boundary. The hardstanding surfacing adjacent to the west of the building comprised brick paviour and was in use for car parking, whilst the remaining access road and turning areas were surfaced with tarmacadam. The surfacing was observed to be of good quality with no obvious signs of cracking or staining. A narrow passage was observed adjacent to the east of the building which was surfaced with loose gravel / hardcore. |

| Section | Description |
|---|---|
| Drainage: | No oil / water inceptors were readily identified as the site, although a (likely) drainage outlet was observed in the northeast of the site; discharging directly onto the gravel / hardcore surfacing below. |
| Bulk Storage / Tanks: | No above or below ground bulk storage tanks were identified.<br><br>Several small containers of unconfirmed contents were observed to be stored directly onto gravel surfacing to the rear (east) of the building (see Appendix B, Photo 1). |
| Electricity Sub-stations /Transformers: | No electricity sub-stations were observed on site. |
| Visual Evidence of Contamination: | No visual evidence of contamination was observed during the site walkover. |
| Other Issues: | No Japanese knotweed or Giant Hogweed (invasive plant species) were readily identified on the site at the time of the site walkover. However, it should be noted that due to the obscured view of the rear of the property, its presence in that area cannot be ruled out. |

** RPS understands that the building is currently disused.*

### *2.1.2 The Surrounding Area*

The site is located in an area of mixed residential and commercial land use. At the time of the site inspection, neighbouring land consisted of the following:

**Table 2 – Neighbouring Land Uses**

| Direction | Description |
|---|---|
| *North* | *Westgreen Construction Ltd* (it is understood that this site has planning permission for redevelopment to a mixed residential / commercial use). |
| *East* | Railway line beyond which is North Road with residential properties and a car showroom (approximately 40m to the southeast). |
| *South* | Lower Richmond Road beyond which were commercial and residential properties and a Gas Valve Compound (approximately 60m to the southeast). |
| *West* | Sandycombe Road with residential properties and a petrol filling station (approximately 30m to the southwest). |

## 2.2 Proposed Development

The proposed development will comprise a part four / part five-storey property (without basement), with associated areas of car parking and some areas of soft landscaping. It is understood that the ground floor of the property is proposed to be occupied by office accommodation, with the upper floors in use as residential apartments. It is understood that trees in the south of the site will be retained as part of the proposed development and planting in this area will be enhanced. New trees will be planted along the western boundary of the site and a planted buffer will be located along the eastern boundary. A proposed development plan is included as Figure 3.

## 2.3 Site History

### *2.3.1* Historical Map Review

The following review is based on past editions of readily available Ordnance Survey (OS) maps and historical building plans dated 1868 to 2014. Extracts from selected historical maps and plans are given as Figures 4 to 8.

**Table 3 – Historical Site Uses**

| On site Land Use and Features | Dates | |
|---|---|---|
| The site is shown as vacant land (likely agricultural use). | 1868 | c.1896 |
| A number of small adjoining buildings of unspecified use are indicated in the north of the site, with vacant land shown in the south. | 1896 | c.1913 |
| The site is vacant of buildings. It is considered likely that the site is in use for purposes associated with the adjacent railway. * | 1913 | c.1991 |
| A (likely) commercial unit is indicated in the east of the site. The site resembles a similar layout to present. ** | 1991 | Present |

**Land registry records indicate that the site was formerly owned by the British Railway Board until the 1980's.*

***Two active contemporary trade directory entries are indicated to be registered at the site. These are Q Pet Co (Pet Food and Animal Feed at Unit 7) and Woodfinish Ltd (French polishing at Unit 6).*

**Table 4 – Historical Neighbouring Site Uses**

| Surrounding Land Uses (250m radius) | Orientation | Distance | Dates | |
|---|---|---|---|---|
| Railway line | East | Adjacent | 1871 | Present |
| Garage (current petrol filling station)* | Southwest | 30m | 1960 | Present |
| Works of unspecified use<br>*Then* Garage (current car showroom) | East | 40m | 1960<br>1991 | c.1991<br>Present |
| Timber Yard** | Southwest | 50m | 1896 | c.1934 |
| Gas Works<br>*Then* Gas Holder Station and Depot with tanks<br>*Then* Gas Valve Compound | Southeast | 60m | 1868<br>1960<br>2006 | c.1960<br>c.2006<br>Present |
| Works of unspecified use | Southwest | 60m | 1960 | c.2006 |
| Likely Depot | South | 60m | 1913 | c.2006 |
| Likely industrial buildings<br>*Then* labelled as Works of unspecified use | Southwest | 140m | 1960<br>1974 | c.1974<br>c.2006 |
| Timber Yard<br>*Then* Fuel Depot and Timber Yard<br>*Then* Timber Yard | South | 170m | 1934<br>1960<br>1991 | c.1960<br>c.1991<br>c.2006 |
| Smithy | Southeast | 210m | 1913 | c.1934 |
| Likely industrial estate | Southeast | 210m | 1976 | Present |
| Fire Station | Southeast | 230m | 1976 | Present |
| Likely industrial units<br>*Then* labelled as Builder's Yard | Southwest | 250m | 1960<br>1974 | c.1974<br>c.2006 |

**This petrol filling station (BP Express) is registered as an active contemporary trade directory entry. Information provided by the London Borough of Richmond Upon Thames indicates that this has been in use as a garage from 1940. Reference is made to a historical tank and substation data for 1960.*

*** Information provided by the London Borough of Richmond Upon Thames indicates that was in use as a pulp and paper manufacturing works from 1954 to 1958.*

Additional information provided by the London Borough of Richmond Upon Thames indicates that a commercial printers was located approximately 25m to the north of the site from 1993 to 2003.

### *2.3.2 Site Planning History*

Relevant planning records for the site, obtained from London Borough of Richmond Upon Thamesô planning website are summarised below:

- 0214/81 - Erection of workshop. No further information regarding this application was provided;
- 81/710 ï Erection of prefabricated building for repair and servicing of vehicles in connection with haulage and furniture removal business. 9th September 1981. Application approved;
- 84/1163 ï Demolition of existing buildings and erection of five nursery/studio/workshop units with ancillary car parking and turning areas. 17th December 1984. Application approved;
- 85/1062 ï Retention of building comprising five units for light industrial use. 18th November 1985. Application approved; and
- 89/0202/FUL ï Single storey rear extension. 20th March 1989 ï Decision not provided.

The three above planning applications which were approved had conditions attached to their decision notices. However, it is not known if any of these conditions related to contaminated land as the decision notices could not be accessed *via* the planning website.

## 2.4 Environmental Setting

### *2.4.1 Geology*

Based on British Geological Survey (BGS) mapping (1:50,000-scale) and the EA Groundwater Vulnerability mapping (1:100,000-scale), the stratigraphic sequence and aquifer classifications beneath the site are indicated to be as follows:

**Table 5 – Descriptions of Geological Strata**

| Strata | Description & approximate thickness | Aquifer Classification |
|---|---|---|
| Kempton Park Gravel Formation | Sand and gravel. Likely to be a few metres in thickness in the vicinity of the site. | Secondary A Aquifer |
| London Clay Formation | Clay and silt. Likely to be up to 100 metres in thickness beneath the site. | Unproductive Stratum |

In addition to the strata detailed above, Made Ground is likely to be present beneath the site as a result of previous construction and demolition activities.

There is one BGS record of a borehole (ref: TQ17NE/144) drilled approximately 70m to the southeast of the site. The borehole log indicated approximately 2.30m of Made Ground, underlain by approximately 5.75m of sandy gravel and then 0.05m of London Clay Formation (unproven depth). The rest groundwater level was recorded at 4.35m below ground level (bgl).

### *2.4.2 Hydrogeology*

The EA classifies the Kempton Park Gravel Formation as a Secondary A Aquifer. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers. The London Clay Formation is classified as an Unproductive Stratum. These formations have a low permeability and have negligible significance for water supply or base flow.

According to EA data, the site is not located in a designated groundwater Source Protection Zone (SPZ).

Information provided by the EA indicates that there are no active licensed groundwater abstractions within 1km of the site.

Groundwater chemical and quantitative quality beneath the site has not been classified under the EAôs local River Basin Management Plan.

### *2.4.3 Surface Water*

There are no surface water features readily identifiable on OS mapping within 500m of the site.

Information provided by the EA indicates that there are no records of active licensed surface water abstractions within 1km of the site.

### *2.4.4 Fluvial / Tidal Flood Risk*

According to the EA flood map, the site is not located within an indicative fluvial floodplain.

### *2.4.5 Ecologically Sensitive Sites*

Natural England data indicates that there are no ecologically sensitive sites that constitute environmental receptors as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012), located within a 1km radius of the site.

### 2.4.6 Radon

The site is indicated to be in a lower probability radon area, as less than 1% of homes are above the action level. No radon protective measures are necessary in the construction of new dwellings or extensions.

### 2.4.7 Coal Authority

The site is not indicated to be located within a coal mining area.

## 2.5 Authorised Processes and Pollution Incidents

### 2.5.1 Landfills and Waste Sites

Data provided by the EA, Local Authority and BGS indicates that there are no known licensed waste transfer sites or historical landfill sites within 500m of the property.

### 2.5.2 Environmental Permits

EA and Local Authority data indicates that there are three processes regulated by an active Environmental Permit (under the Environmental Permitting Regulations 2010) located within 500m of the subject site. These are summarised in the table below:

**Table 6 – Environmental Permits**

| Licence Holder | Approx. Distance and Direction from Site | Permitted Activity |
|---|---|---|
| BP Express Shopping | 30m Southwest | PG1/14 Petrol filling station |
| Sainsburys Service Station | 130m Southeast | PG1/14 Petrol filling station |
| Tcs Richmond | 305m East | PG1/14 Petrol filling station |

### 2.5.3 COMAH Sites

There is one record of an operation under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 500m of the site. This is registered under Transco Plc as a Lower Tier Operation and is located approximately 160m to the southeast of the site.

### 2.5.4 Pollution Incidents

EA data indicates that there is a record of one significant pollution incident to controlled waters within 500m of the site. This relates to the release of oil from a garage approximately 100m to the southeast

in 1989, however, the nature of controlled waters impacted is unconfirmed. This is considered likely to be associated with the Sainsburys petrol filling station indicated in Table 6 above.

### 2.6 Regulatory Consultations

The Scientific Officer at the London Borough of Richmond Upon Thames was contacted regarding any known contamination issues at the site. The Council advised that based on the site's current use and other information held, they have no intention of investigating the site under Part 2A of the Environmental Protection Act 1990. As far as they are aware, the Council does not have any specific concerns regarding ground conditions at the site. They were aware of a site investigation having been undertaken on an adjacent site.

# 3 OUTLINE CONCEPTUAL SITE MODEL

## 3.1 Background

An outline CSM consists of an appraisal of the *contaminant-pathway-receptor* 'contaminant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- ***Contaminant*** *referring to the source of contamination (Hazard).*
- ***Pathway*** *for the contaminant to move / migrate to receptor(s).*
- ***Receptor*** *(Target) that could be affected by the contaminant(s).*

Receptors include human beings, other living organisms, crops, controlled waters and buildings / structures. The National Planning Policy Framework, used to address contaminated land through the planning process, follows the same principles as those set out under Part 2A. See Appendix C for further details on the Part 2A regime.

## 3.2 Potential Pollutant Linkages

Each stage of the potential pollutant linkage components has been considered individually on the basis of information obtained during the site reconnaissance and desk study exercise and is discussed in the following section.

### *3.2.1 Potential Contaminant Sources*

There is considered to be a potential for contaminants of concern to be present beneath the site associated with the former buildings of an unspecified use located in the north of the site (1896 to c.1913) and the likely use of the site as railway land (1913 to c.1991). In addition, it is understood that until recently the site has been used for light industrial / commercial purposes.

There is potential for Made Ground to be present beneath the site as a result of past construction and demolition activity, which may represent both a source of contamination and ground gas.

A number of historical and current potentially contaminative land uses have been identified in the immediate surrounding area including a railway line located adjacent to the east of the site (1871 to Present)); a commercial printers located approximately 25m to the north of the site (1993 to 2003); a garage / petrol filling station located approximately 30m southwest (1960 to Present); a works of

unspecified use (1960 to c.1991) located approximately 40m to the east, latterly a car showroom (c.1991 to Present); a timber yard located approximately 50m to the south (1896 to c.1934), latterly a pulp and paper manufacturing works (from 1954 to 1958); and a gas works / gas holder depot approximately 60m to the southeast (1868 to c. 2006), latterly a gas valve compound (2006 to Present).

### *3.2.2 Potential Pathways*

Following redevelopment, surface cover at the site will likely comprise mainly building cover and hardstanding with some areas of communal soft landscaping. In areas of the site covered by buildings or hardstanding, the risks to future on site human health receptors *via* the dermal contact and ingestion pathways will be mitigated. In areas of soft landscaping, the pathways of dermal contact, ingestion of soil and the inhalation of soil / dust could still be active.

There is the potential for ground gas and volatile contaminants of concern in soil and / or groundwater (if present) beneath the site to impact future site users *via* the inhalation pathway in indoor areas.

Groundwater within granular horizons of the Made Ground and the Kempton Park Gravel Formation may constitute a potential pathway for the off-site migration (*via* groundwater) of contaminants of concern. Pathways of dermal contact, ingestion and vapour inhalation to neighbouring human health receptors from potential contaminants of concern originating from the site may therefore be active.

Potential contaminants of concern associated with current and historical land uses in the vicinity of the site also have the potential to migrate onto site and impact future site users *via* the pathways of dermal contact, ingestion and vapour inhalation.

### *3.2.3 Potential Receptors*

Potential human health receptors include future site users and off-site residential and commercial occupants. Provided construction workers adopt appropriate levels of hygiene and personal protective equipment, they are not considered to be at significant risk from potential contaminants of concern and have not been considered further as part of this assessment.

The site is situated on a Secondary A Aquifer, relating to the Kempton Park Gravel Formation. The site is not located within a SPZ and there are no licensed groundwater abstractions within 1km of the site.

There are no surface water features within 500m of the site.

### 3.3 Outline Conceptual Site Model

An outline CSM has been developed based on each of the stages discussed above and the proposed use of the site. The CSM details the potentially active pollutant linkages identified between each of these components and is presented below:

**Table 7 – Outline Conceptual Site Model**

| Potential Source | Contaminants of Concern | *Via* | Potential Pathways | Linkage Potentially Active? | Receptors |
|---|---|---|---|---|---|
| **On site – historical:** Buildings of an unspecified use in the north of the site, the likely use of the site as railway land and light industrial / commercial use of the site.<br><br>**On site – current:** Made Ground. | Hydrocarbons, metals and asbestos | Soil | Direct contact/ingestion | ✓ | Future site users |
| | | | Inhalation of volatiles | ✓ | |
| | | | Airborne Migration of soil or dust | ✓ | Off-site users |
| | | | Leaching of mobile contaminants | ✓ | Secondary A Aquifer |
| | | Groundwater | Direct contact/ingestion | ✓<br>✓ | Future site users<br>Off-site users |
| | | | Inhalation of volatiles | ✓<br>✓ | Future site users<br>Off-site users |
| | | | Vertical and lateral migration in permeable strata | ✓ | Secondary A Aquifer |
| **Off-site – historical:** A timber yard, a pulp paper manufacturing works, a commercial printers and a gas works / gas holder depot and works of unspecified use.<br><br>**Off-site – current:** Railway line, garage / petrol filling station, car showroom and a gas valve compound. | Hydrocarbons, solvents and metals | Groundwater | Direct contact/ingestion | ✓ | Future site users |
| | | | Inhalation of volatiles | ✓ | Future site users |
| **On and off-site –** Made Ground / natural strata or bio-degradation of contamination. | $CO_2$, $CH_4$ | Ground Gas | Inhalation of ground gas | ✓<br>✓ | Future site users<br>Off-site users |
| | | | Explosive risks | ✓<br>✓ | Future site users<br>Off-site users |

The outline CSM is based upon the available information relating to the site. Should ground conditions inconsistent with those outlined in this report be encountered, RPS should be contacted to enable further assessment.

# 4 CONCLUSIONS AND RECOMMENDATIONS

The outline CSM produced upon completion of the desk study assessment has identified a number of potential pollutant linkages that may currently be active or become so upon the redevelopment of the site.

It is therefore recommended that the potential for these linkages to be active is assessed through Phase 2 Environmental Site Investigation of the site. The scope of this investigation should include the following:

- Drilling of a number of boreholes across the site targeting identified potential sources and pollutant linkages;
- Installation of groundwater and gas monitoring wells in selected boreholes;
- Collection of soil and groundwater samples from beneath the site with chemical analysis of these samples for contaminants of concern;
- Ground gas monitoring from wells installed at the site;
- Assessment of ground conditions and generic quantitative risk assessment of soil and groundwater chemical analysis results to determine the potential for the identified potential pollutant linkages to remain active upon redevelopment of the site; and
- Provision of recommendations (where necessary) for remediation / mitigation measures to ensure that any identified potential pollutant linkages are not active upon redevelopment of the site.

It would be prudent to combine any site investigation undertaken for environmental purposes with geotechnical testing, in order to facilitate preliminary foundation, floor slab and pavement design.

# FIGURES

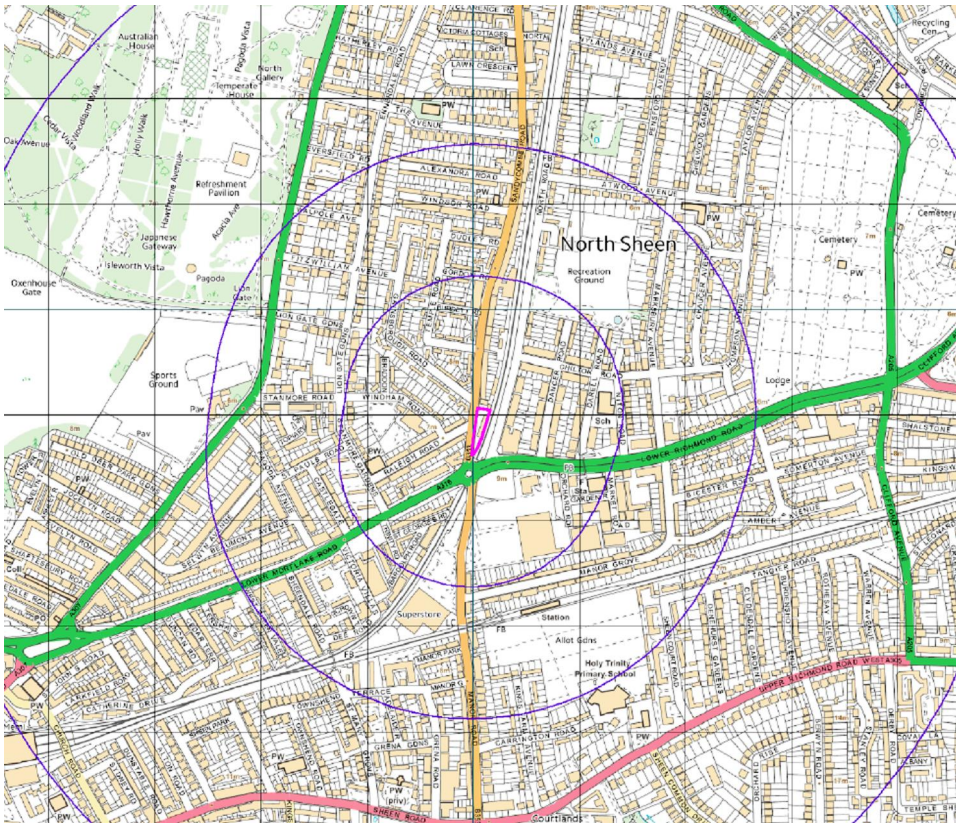



**Figure 1:** Site Location Plan

**Map Date:** 2014

**Scale:** Not to scale

RPS
14 Cornhill
London
EC3V 3ND

☎ 020-7280-3200
www.rpsgroup.com


**Figure 2:** Site Boundary Plan

**Map Date:** Current

**Scale:** Not to scale

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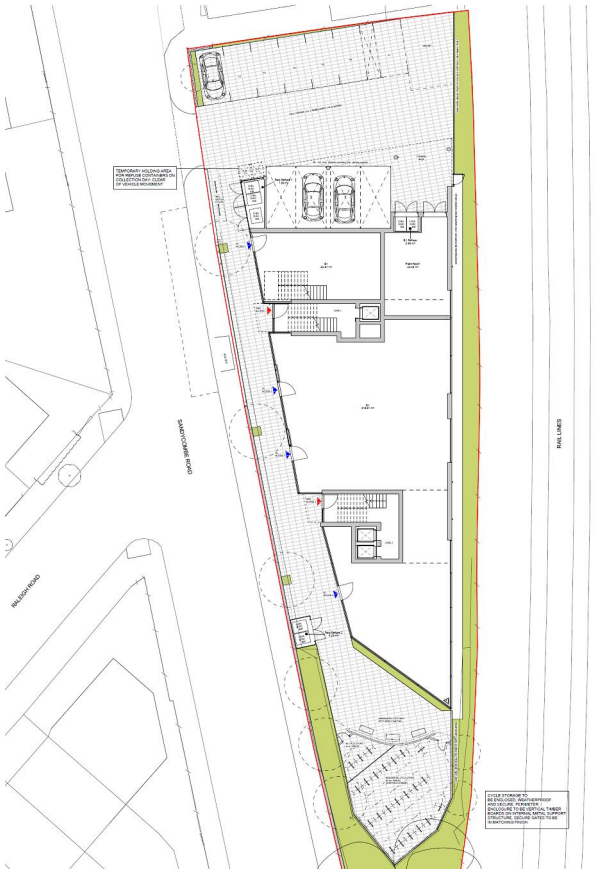

**Figure 3:** Proposed Development Plan (Ground Floor)

**Scale:** Not to scale

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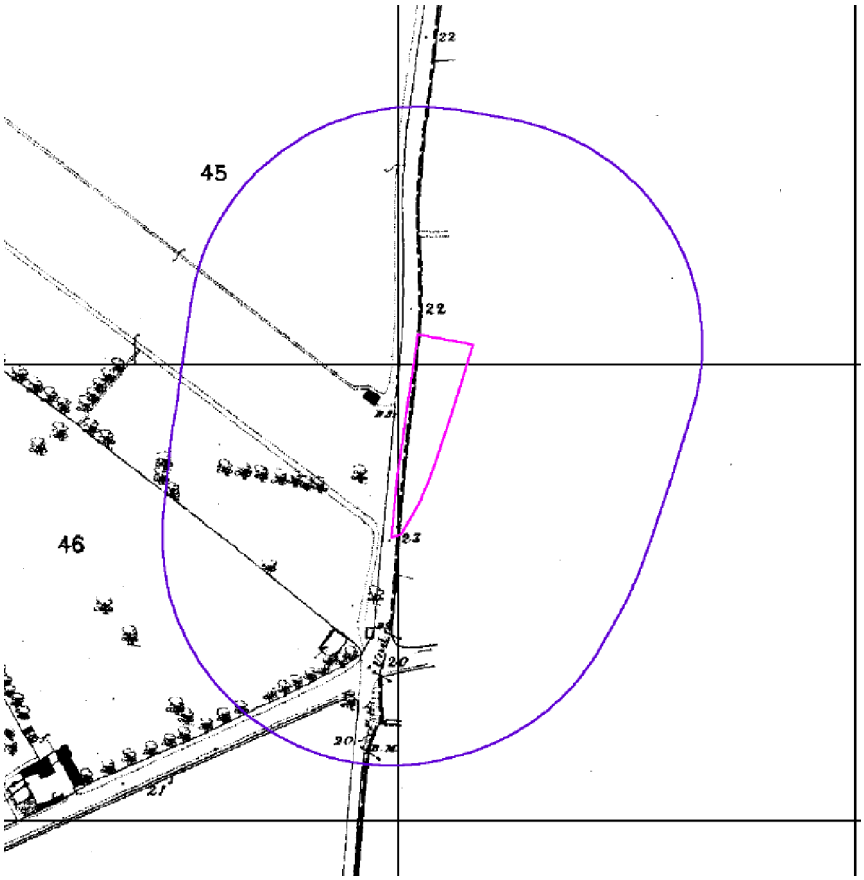


**Figure 4:** Historical Map Extract

**Map Date:** 1868

**Scale:** Not to scale

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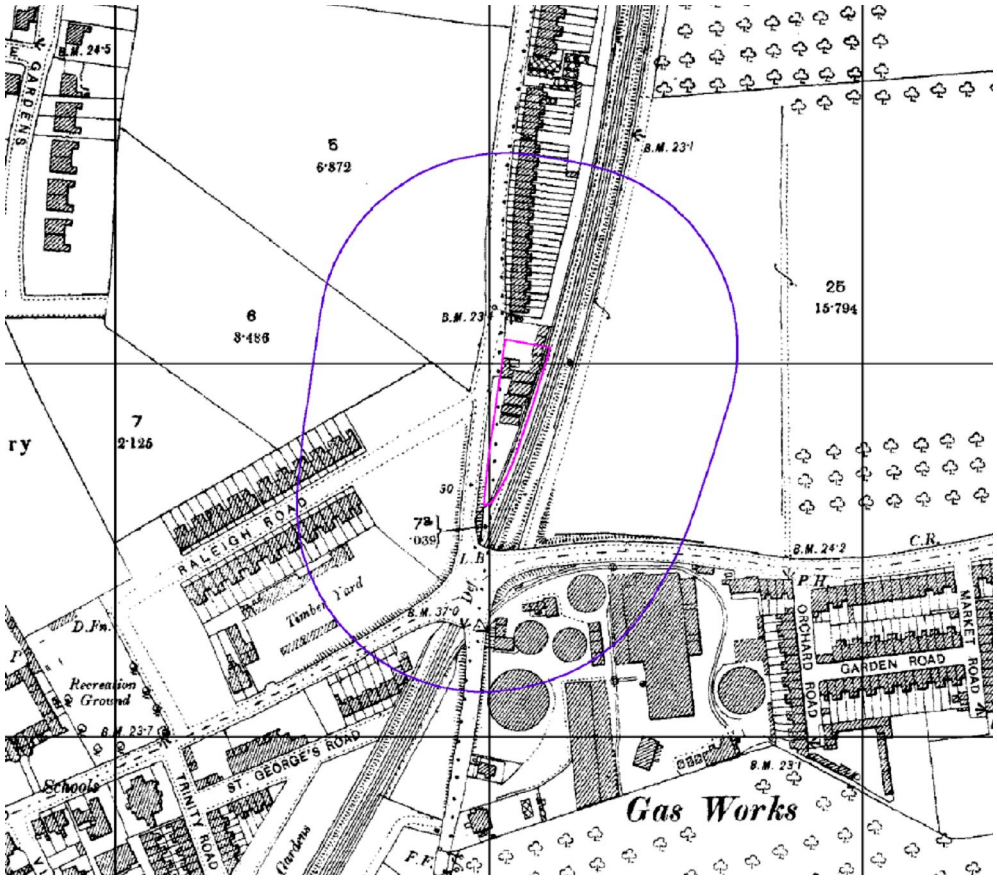


**Figure 5:** Historical Map Extract

**Map Date:** 1896

**Scale:** Not to scale

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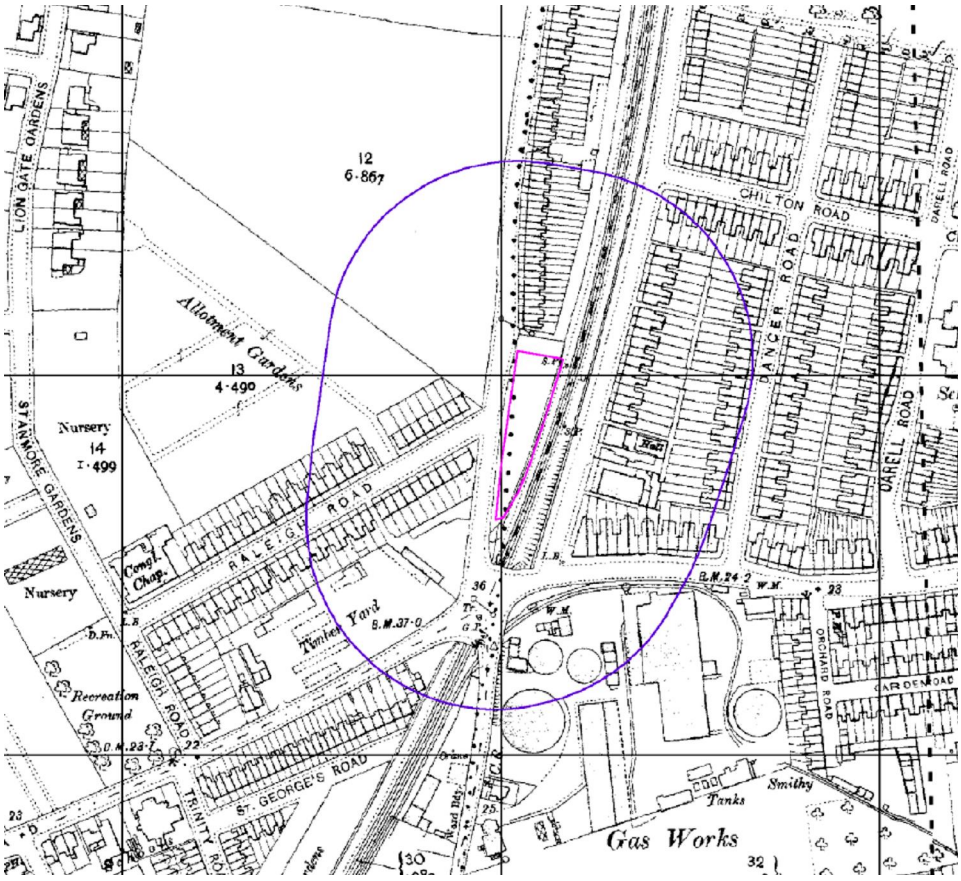


**Figure 6:** Historical Map Extract

**Map Date:** 1913

**Scale:** Not to scale

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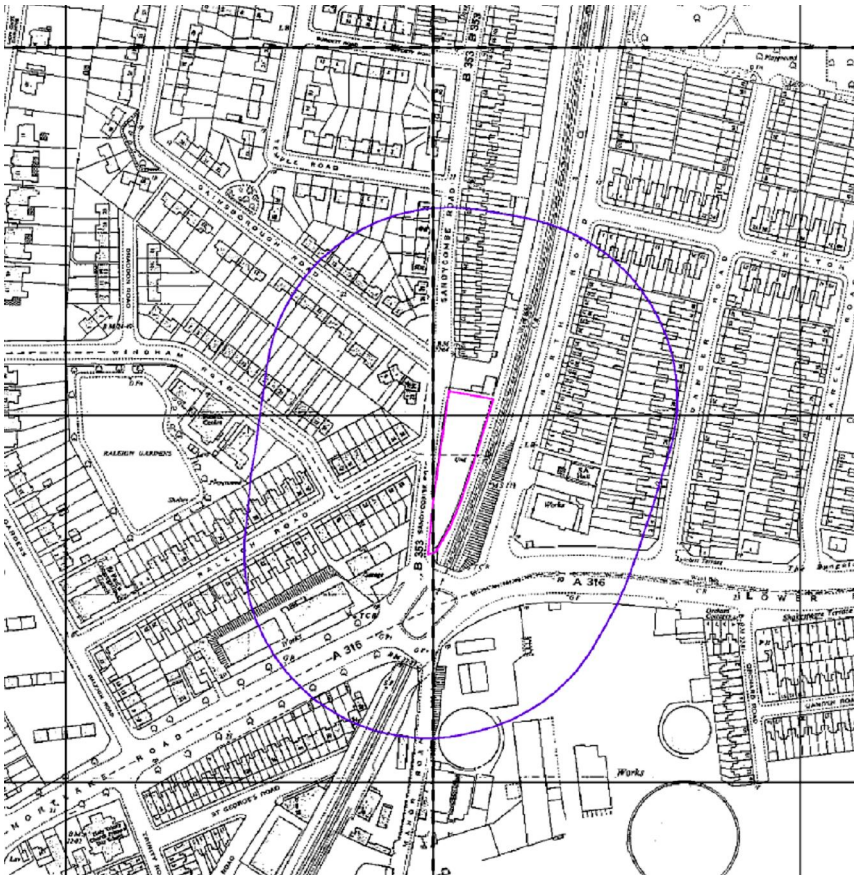


**Figure 7:** Historical Map Extract

**Map Date:** 1960

**Scale:** Not to scale

RPS
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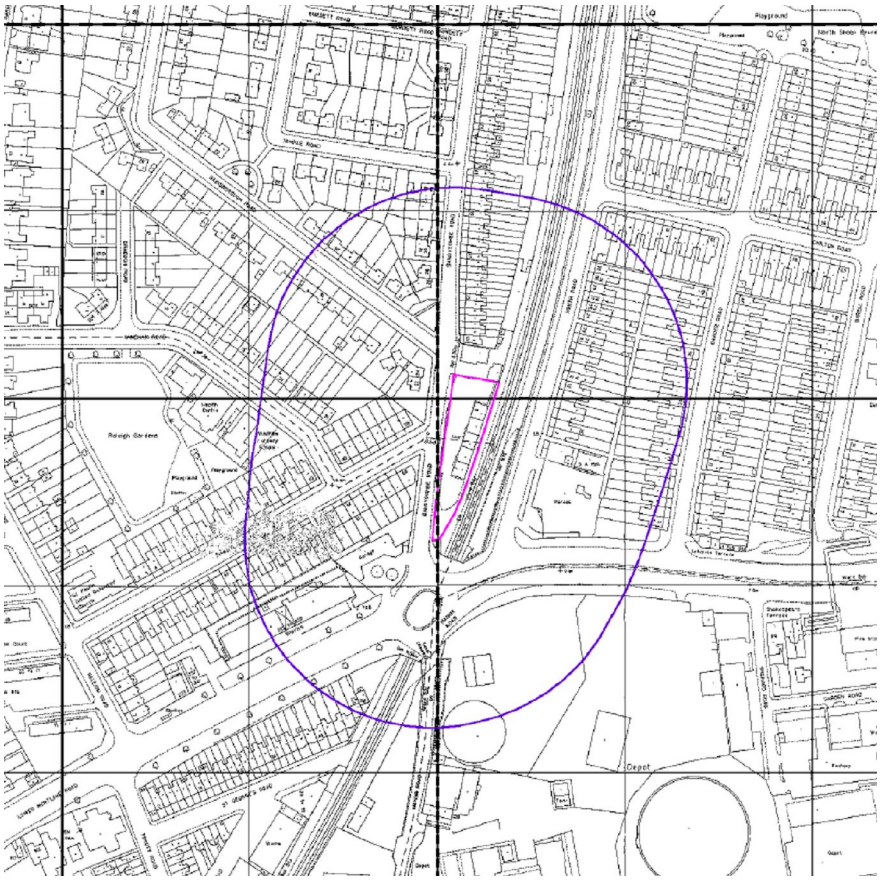

**Figure 8:** Historical Map Extract

**Map Date:** 1991

**Scale:** Not to scale

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# APPENDIX A

General Notes

## RPS HEALTH, SAFETY & ENVIRONMENT

*Phase 1 - Environmental Risk Assessment / Desk Study Environmental Review*

General Notes

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.
8. This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.
9. The copyright in the written materials shall remain the property of the RPS Company but with a royalty-free perpetual licence to the Client deemed to be granted on payment in full to the RPS Company by the Client of the outstanding amounts.
10. The report is provided for sole use by the Client and is confidential to them, their professional advisors, no responsibility whatsoever for the contents of the report will be accepted to any person other than the Client. [Unless otherwise agreed]
11. These terms apply in addition to the RPS HSED "Standard Terms & Conditions" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms & Conditions the said Standard Terms & Conditions shall prevail.) In the absence of such a written contract the Standard Terms & Conditions will apply.

# APPENDIX B

Photographs

Photo 1: Several small containers of unconfirmed contents were observed to be stored directly onto gravel surfacing to the rear (east) of the building.

# APPENDIX C

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 2001[1], providing a definition of ócontaminated landôand 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 ó*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:*

a) *significant harm* is being caused or there is a *significant possibility* of such harm being caused; or
b) *significant pollution* of controlled waters[2] is being caused or there is a significant possibility of such pollution being caused[3]ô

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 ópossibility of significant harm being causedôshould 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:

i. Chronic or acute toxic effect, serious injury or death to humans
ii. Irreversible or other adverse harm to the ecological system
iii. Substantial damage to, or failure of, buildings
iv. Disease, other physical damage or death of livestock or crops
v. The pollution of controlled waters[4].

[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 ñcontrolled waterò has been updated to ñwater environmentò 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.

With regard to radioactivity, contaminated land is defined as ñany 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 caused*[5]ò

**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)

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