Soil Environment Services Ltd

CONTAMINATED LAND RISK ASSESSMENT

DESK TOP STUDY & SITE WALKOVER SURVEY

Tribeka Developments Ltd

The Lundwood
Barnsley

Soil Environment Services Ltd
April 2011

Our Ref: SES/TDL/TL/1#1 **Date: 26th April 2011**

Client:

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The Lundwood
Barnsley

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1. INTRODUCTION AND OBJECTIVES

The purpose of this assessment is to examine specifically the current and potential risks to human, ecological and ground and surface water receptors associated with possible contamination of the ground at the site located at:

The Lundwood
Pontefract Road
Lundwood
Barnsley
S71 5JH

Grid Ref. 437470, 407480

The site is to be developed for residential purposes.

The site was visited on 7th April 2011 to undertake a site walkover survey in order to assess current site conditions, particularly with respect to potential sources, pathways and receptors.

Evaluation of the risks are given and subsequently, if needed, further investigation or remediation recommendations made with regard to risk reduction and or evaluation.

General guidance used:

BS 10175:2001 Investigation of potentially contaminated sites. British Standards Institution, London.

CLR 11: Model procedures for the management of land contamination (2004). Environment Agency.

Environment Agency guidance on requirements for land contamination reports. (2005). Environment Agency.

2. SITE CHARACTERISATION AND FORMER INVESTIGATIONS

Current setting and condition (Drawing 1)

The site assessed for this investigation currently comprises an area of land located on Pontefract Road, Barnsley. An MOT garage is situated to the north of the site (Photo 8) with roads bounding the east and south and residential properties and gardens to the west (Photo 1). A former public house building occupies the site (Photo 2). The surface of the site is covered in concrete and tarmac to the north and grass to the south (Photo 1 and 3). The site is set approximately 3 m above the land surface (Darrington Place Road and residential properties) to the south (Photo 3).

Photo 1.



Photo 2. (View SE to NW)



Photo 3. (View of grass NE to SW)



A barrel chute to the pub cellar was located on the east side of the building (Photo 5)

Photo 4. (View NE to SW)



Photo 5. (See Drawing 1 for location)



Photo 7. (Rear of building S to N)



Photo 8. (View of the garage the N of the site)



Appendix B details a petrol filling station bounding the north of the site (Photo 8), however, information gained from the site walkover revealed that the petrol station ceased operations a number of years ago and the underground fuel and diesel tanks were in-filled with concrete. This site now operates as an MOT inspection garage.

Published newspaper articles and local information has revealed possible asbestos in the pipes in the cellar of the former public house. The client has informed that an asbestos survey has been undertaken however no access to this information has been made available.

John Scott from Barnsley Council has referenced a former local landfill issue as previous gas readings at one of the landfills a number of years ago did indicate gas generation. Further information has been requested. No response has been received at the date of this reponse.

The site walk-over revealed no significant visual or olfactory evidence of potential contamination on the site.

Site history (see Historical maps – Appendix A)

Prior to 1890, the site was located on unused land with a road bounding the east of the site and a railway marked 90 m east.

The 1929-30 map indicated residential development had occurred south and west of the site and by 1948, a building was marked on the site.

The 1907 map indicates the building on site was labelled as a public house and hotel and allotment gardens were marked 35 m south-west and 80 m north-west.

By 1970, the allotment gardens west of the site had been extended to the north and south and residential development had occurred to the north.

Between 1970 and 1974, a building had been constructed north of the site and the railway east of the site was indicated as dismantled.

Between 1992 and 1995, residential development had occurred to the west and north-west of the site and the composition of the buildings bounding the north of the site had changed.

Between 2002 and 2011, a building ceased to be marked 10 m north of the site.

No significant changes have occurred on or surrounding the site since 1995.

Current soils, geology and hydrology

The site is indicated (BGS Map 1:50,000) to be located on the Till from the Mid Pleistocene age over Pennine Middle Coal Measures consisting of mudstone, siltstone and sandstone.

Flow to groundwater may occur through the soils finding a possible route to the aquifer at depth.

Surface water flow could find a possible route via surface water drains and channels to south leading to the drains 230 m south-east and subsequently to the River Deane 940 m south-east of the site.

The site is on a Secondary A Bedrock aquifer zone and is not in a groundwater source protection zone.

Former investigations

No former investigations have taken place.

Current environmental data search

Environmental data (Appendix B) indicates the following:

The site is on a Secondary A Bedrock aquifer zone
The site is not in a groundwater source protection zone
No active landfill sites within 250 m
Two historical landfill sites within 250 m
No pollution inventory sites within 250 m
No waste treatment sites within 250 m
No pollution incidents within 250 m
No fuel sites within 250 m
Radon is not considered to be a risk. 1-3 % of homes are considered to be above the action level of 200 (Bq m^{-3}). Source: Indicative Atlas of Radon in England and Wales HPA-RPD-033

3. CONCEPTUAL SITE MODEL

The conceptual site model detailed here is by a written and diagrammatical description (Drawing 1, Table 1 Plausible pollutant linkage matrix) of the sources, pathways and receptors. A cross section is included if this will aid interpretation.

3.1 Sources

Possible sources generated on-site

Asbestos

There is possible asbestos in the cellar of the former public house. The client has informed that an asbestos survey has been undertaken however no access to this information has been made available.

Possible sources generated off-site

Former filling station and UST'S/ MOT repair garage (see Appendix B)

The former and current garage operations bounding the north of the site may have generated potential contaminants such as metals, solvents and hydrocarbons. The former USTs have been in-filled with concrete.

Historic landfill sites (see Appendix B)

The landfills 99 m east and 234 m south west of the site may possibly have been backfilled with putrescible material that could generate methane gas and carbon dioxide during decomposition.

3.2 Receptors

Humans

- Residents in the proposed properties
- Residents in adjacent properties

Controlled waters

- Drains 230 m south-east of the site
- River Deane 940 m south-east of the site.
- The site is on a Secondary A Bedrock aquifer zone.
- The site is not in a groundwater source protection zone.

Ecology

- Animals and plants are considered to be possible receptors.

3.3 Pathways and plausible pollutant linkages (See Table 1)

Pathways to and from the site could exist via service channels.

Human health

The main pathways considered possible are:

1. Ingestion of soil
2. Ingestion of dust
3. Ingestion of vegetables and soil attached to vegetables
4. Dermal contact with soil
5. Dermal contact with dust
6. Inhalation of fugitive soil dust
7. Inhalation of fugitive dust
8. Inhalation of vapours outside
9. Inhalation of vapours inside
10. Ingress to water supplies is also considered

Controlled waters

Flow to groundwater may occur through the soils finding a possible route to the aquifer at depth.

Surface water flow could find a possible route via surface water drains and channels to south leading to the drains 230 m south-east and subsequently to the River Deane 940 m south-east of the site.

The site is on a Secondary A Bedrock aquifer zone and is not in a groundwater source protection zone.

4. RISK ASSESSMENT

4.1 Human health

Risks from possible sources generated on-site

Asbestos

The extent of the possible asbestos in the cellar is unknown. Any asbestos located in the building and cellar will need to be removed from the building on site and be disposed of using a licensed asbestos contractor in accordance with the regulations.

Possible sources generated off-site

Former filling station and UST'S/ MOT repair garage (see Appendix B)

The former and current garage operations bounding the north of the site are considered to pose a possible low risk to human health. The site investigations revealed the UST's for the former filling station had been in-filled with concrete however the extent of any possible spillages from the former fuel tanks is unknown and given the topography of the land sloping to the south and the permeable soils, there is potential for the migration of possible contamination.

Historic landfill site (see Appendix B)

The landfill 99 m east of the site is considered to pose a possible risk to human health. Given the waste accepted at the site, it is considered gas migration is a potential risk.

Historic landfill site (see Appendix B)

The landfill 234 m south west of the site is considered to pose no risk to human health. Given the distance from the site, it is considered unlikely gas migration is a potential risk.

4.2 Controlled waters

The site is considered to pose no risk to controlled waters due to no sources existing on the site.

4.3 Ecology

The site is considered to pose a possible risk to the ecology due to sources existing within a significant distance of the site.

TABLE 1. Plausible pollutant linkage/pathway matrix. Y = yes, N = no, Blank = not possible																		CSM	Ref	No.	1	Version	a
SOURCE	**Chemicals**		**RECEPTORS**																				
		Possible present 1 yes, 0 no	**On site**								**Off site**												
	Type		**Current workers**	**Future workers**	**Dev,ment workers**	**Current residents**	**Future residents**	**Ground water**	**Surface water**	**Ecology**	**Current workers**	**Future workers**	**Dev,ment workers**	**Current residents**	**Future residents**	**Ground water**	**Surface water**	**Ecology**
ON SITE																		
Asbestos	Asbestos	1	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N
OFF SITE																		
Former landfills	Methane Gas	1	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA
	Carbon Dioxide	1	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA
Former fuel station	Hydrocarbons	1	N	N	N	N	Y	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA
Notes	**For sources and contaminants see Section 3.1 of the report.**																	
	For receptors and plausible linkages see Sections 3.2 and 3.3 of the report.																	
	For risks from sources on-site and sources off-site see Section 4 of the report.																	

5. UNCERTAINTIES AND PHASE 2 PROPOSALS

Significant uncertainties are considered to exist and therefore a Phase 2 investigation is considered to be needed.

The scope of works for the Phase 2 investigation should consist of boreholes to the north of the site to identify any hydrocarbon migration.

Laboratory testing will need to consist of speciated hydrocarbon analysis.

Risk assessment reporting will assess all pathways in relation to risks to human health and migration to controlled waters.

DRAWING 1

Current site location

NOTES:

Site boundary

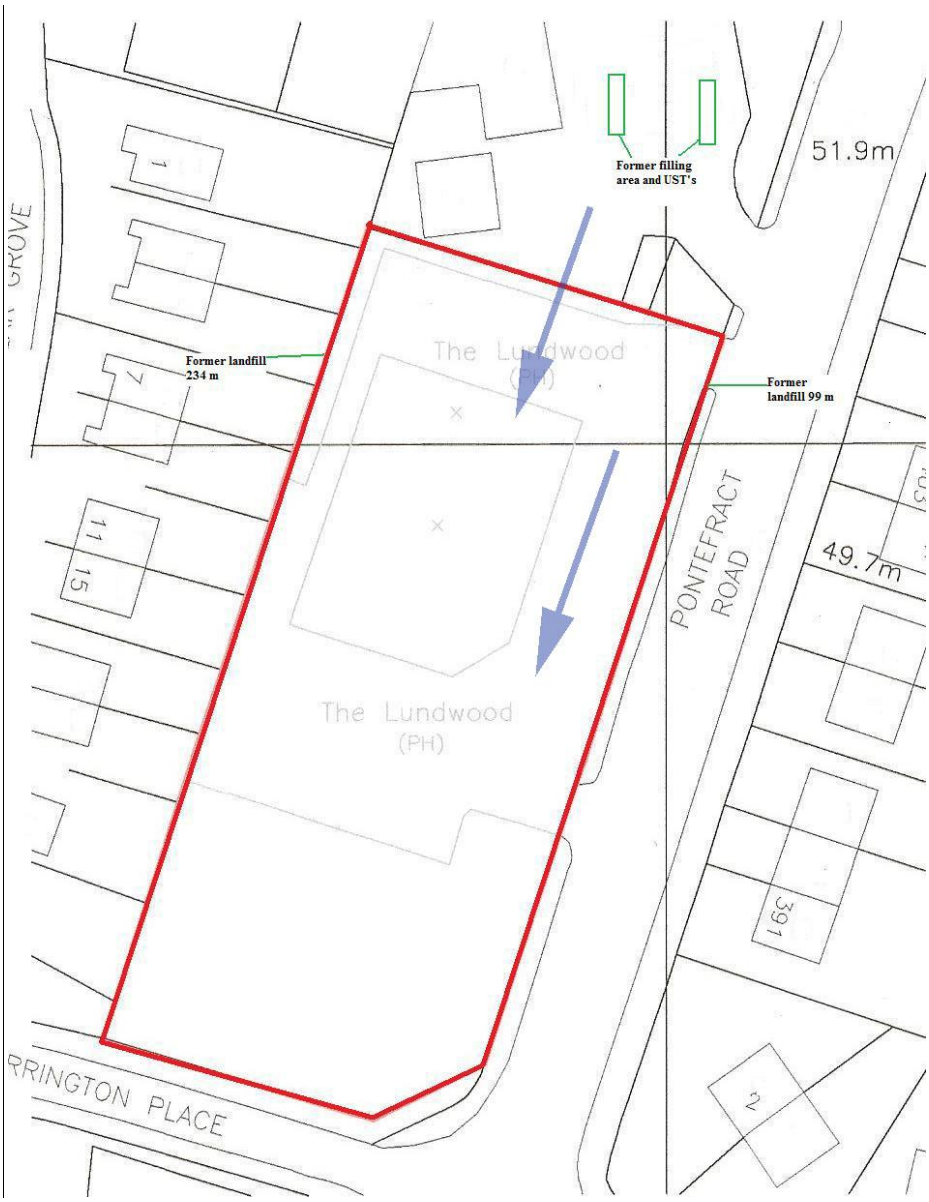
Potential surface water flow

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Drawing Title: Current site location	Drawing No.: 1
Client: Tribeka Developments	Project: The Lundwood
Scale: 1: 525	Date: 26th April 2011

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APPENDIX A

Historical maps

APPENDIX B

Environmental data