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Report No 2872/01-1

THE WHEELHOUSE, ELMSLEY ROAD
MOSSLEY HILL, LIVERPOOL, L18 8AY

PHASE 1 SITE INVESTIGATION REPORT

Carried out for: Elmsley Homes Ltd

Lead Consultant: Interim Consultancy Solutions



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DISCLAIMER

This report should be read with the Service Constraints Report Limitations & Planning Requirements set out in Appendix A.



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1. INTRODUCTION

1.1 Background Information

1.1.1 TerraConsult Limited was instructed by Interim Consultancy Solutions acting on behalf of Elmsley Homes Ltd to carry out a preliminary site investigation for an area of land at The Wheelhouse, Elmsley Road, Mossley Hill, Liverpool, L18 8AY. The purpose of the report is to provide preliminary information on conditions for a proposed residential development at the site.

1.1.2 This report has been devised to generally comply with the relevant principles and requirements of a range of guidance including:

- Part IIA of the Environment Protection Act, 1990;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (HCA, March 2012);
- BS5930:2015: “Code of practice for site investigations”;
- BS10175: 2011 +A1:2013 “Investigation of Potentially Contaminated Sites - Code of Practice”;
- DEFRA/Environment Agency (2004) Report CLR11 “Model Procedures for the Management of Land Contamination”;
- Environment Agency (2011) Report GPLC1 “Guiding Principles for Land Contamination”;
- Environment Agency (2013) Report GP3 “Groundwater protection: Principles and Practice” Version 1.1.

1.1.3 TerraConsult’s service constraints and report limitations are presented in Appendix A and a description of environmental risk assessment methodology and terminology is presented in Appendix B.

1.2. Development Proposals

1.2.1 The proposed development of the site is understood to comprise:

- the demolition of all existing buildings;
- the removal from site or the treatment of any contaminated material encountered during demolition; and;

- the construction of three detached apartment blocks with 23 separate properties within each block. In addition the development will include access roads, parking areas and service provision.



Figure 1: Proposed Development Plan – Drawing AL(00)03 – Mersey Design Group

- 1.2.2 The findings and conclusions of the risk assessments have been set out and recommendations given for the proposed residential end use. If there is a subsequent change in the proposed end land use, then the risk assessments and conclusions should be reviewed to determine whether they are still applicable for the revised end use.

1.3. Planning Status & Requirements

- 1.3.1 This report is designed to comply with the requirements of The National Planning Policy Framework (NPPF, 2012).
- 1.3.2 It is understood that draft planning conditions have been issued by Liverpool City Council. There are two planning conditions (No.16& 17) relating to ground conditions and potential contaminated land which requires to be discharged. These are as follows:

Condition 16

No part or phase of the development hereby permitted shall commence until;

- a) An investigation and assessment methodology, including analysis suite and risk assessment methodologies has been completed and submitted to and approved by the LPA in writing, prior to any site investigations.*
- b) A site investigation and assessment has been carried out by competent persons to determine the status of contamination including chemical, radiochemical, flammable or toxic gas, asbestos, biological and physical hazards at the site and submitted to the LPA. The investigations and assessments shall be in accordance with current Government and Environment Agency recommendations and guidance and shall identify the nature and*

extent of any contaminants present, whether or not they originate on the site, their potential for migration and risks associated with them.

The assessment shall consider the potential risks to:

- i. human health,*
 - ii. controlled waters,*
 - iii. property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes,*
 - iv. adjoining land,*
 - v. ecological systems, and*
 - vi. Archaeological sites and ancient monuments.*
- c) A detailed remediation scheme (if required), has been submitted to and agreed in writing with the LPA. This scheme shall include an appraisal of remedial options, implementation timetable, works schedule, site management objectives, monitoring proposals and remediation validation methodology. The scheme once completed must ensure that the site will not qualify as contaminated land under Part IIA of the Environmental Protection Act 1990 in relation to its intended use.*

Condition 17

After development commences and prior to occupation;

- a) Following completion of the measures identified in the approved remediation scheme and prior to occupation of any part of the development, a verification report which shall confirm the adequacy of remediation must be prepared and submitted to and approved in writing by the LPA before this condition will be discharged.*

If a phased approach to the development is being proposed, then a validation/completion report for an agreed number of plots within each of the proposed phases shall be submitted to the Local Planning Authority and approved in writing before the condition relating to the phase in question shall be discharged.

- b) If any potentially contaminated (unusual/suspect) material or flammable/toxic gas not previously identified is discovered, this must be reported in writing to the LPA and a further assessment and a revised remediation scheme will be required by the LPA. If no contamination is found then this should be detailed in the remediation verification report.*

- 1.3.3 This report has been designed to discharge Condition 16a. Condition 16b will require an intrusive investigation and 16c may not be required depending on 16b. Condition 17 will have to be discharged following completion of the remediation and verification works, if they are required.

1.4 Scope of the Investigation

- 1.4.1 The scope of the investigation were to meet the requirements to provide information for planning purposes and for design of the development. The specific activities carried out are as follows:

- undertake a desk study of available information to include a review of existing reports, history of the site and geo-environmental data;
- carry out a site walk over;

- develop a preliminary conceptual site model and refine this according to the findings of the investigation; and;
- recommend scope for the intrusive investigation;

1.5. Previous Investigations

1.5.1 No previous reports have been made available for review.

2. SITE LOCATION AND DESCRIPTION

2.1 Site Location

2.1.1 The site is indicated in Figure 2 and 3 below and the site location is summarised in Table1:

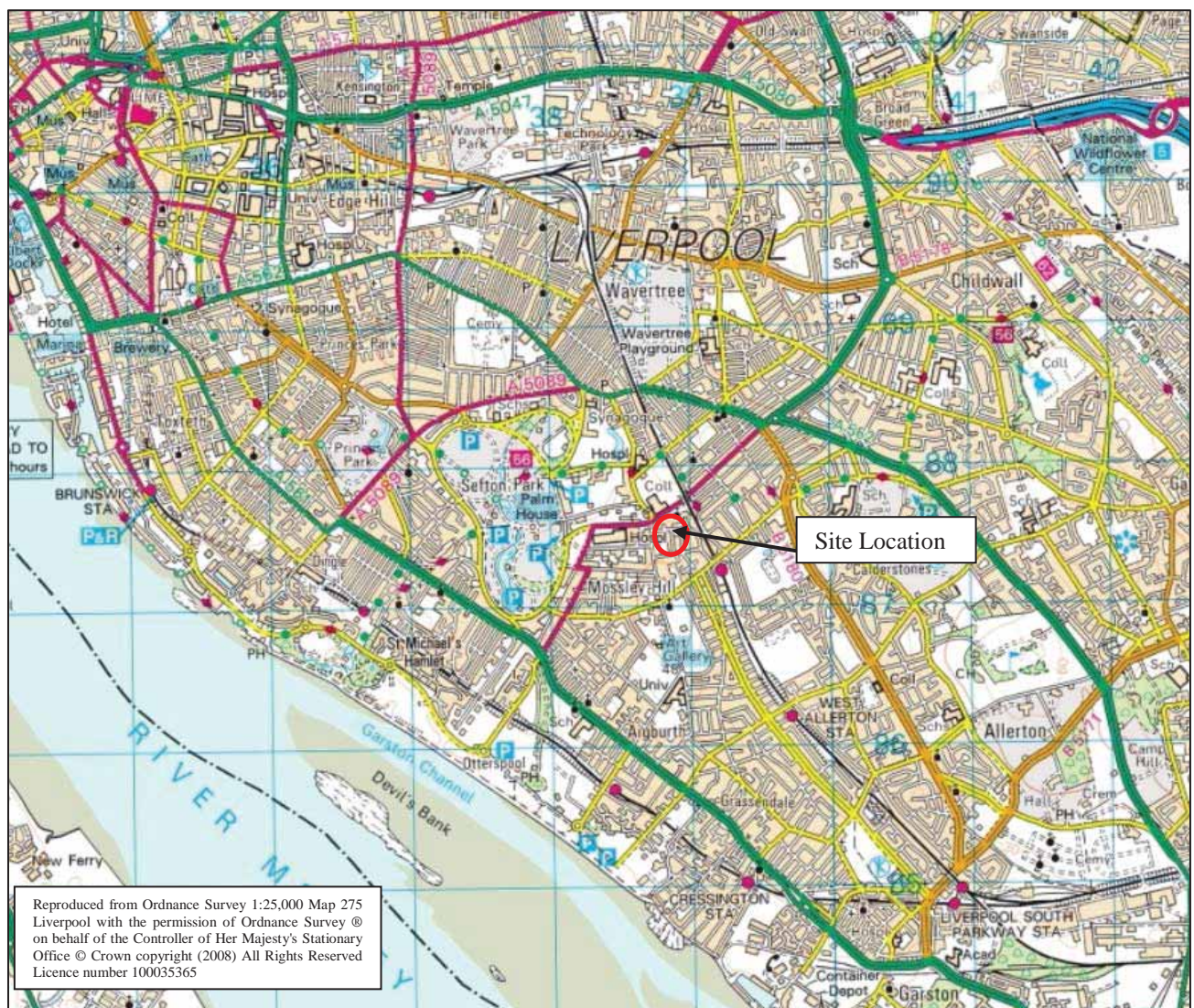


Figure 2: Site Location

Table 1: Summary of Site Location	
Location	Located in the south part of Liverpool. Bordered by Elmsley Road to the north, Drewell Road to the west and Lydhurst Road to the east.
Grid Reference	338927, 387495
Post Code	L18 8AY
Site Area	0.63 ha (approx.)
Site Shape	The site has maximum plan dimensions of 115m by 50m and is roughly rectangular in shape.
Topography	The elevation is at approximately 40mOD. The site slopes gently from south to north by approximately 1.0m.

2.2 Site Description

2.2.1 A site visit was undertaken on 7th June 2016. Photographs of the site are presented in Appendix C and overall current site layout can be seen below.

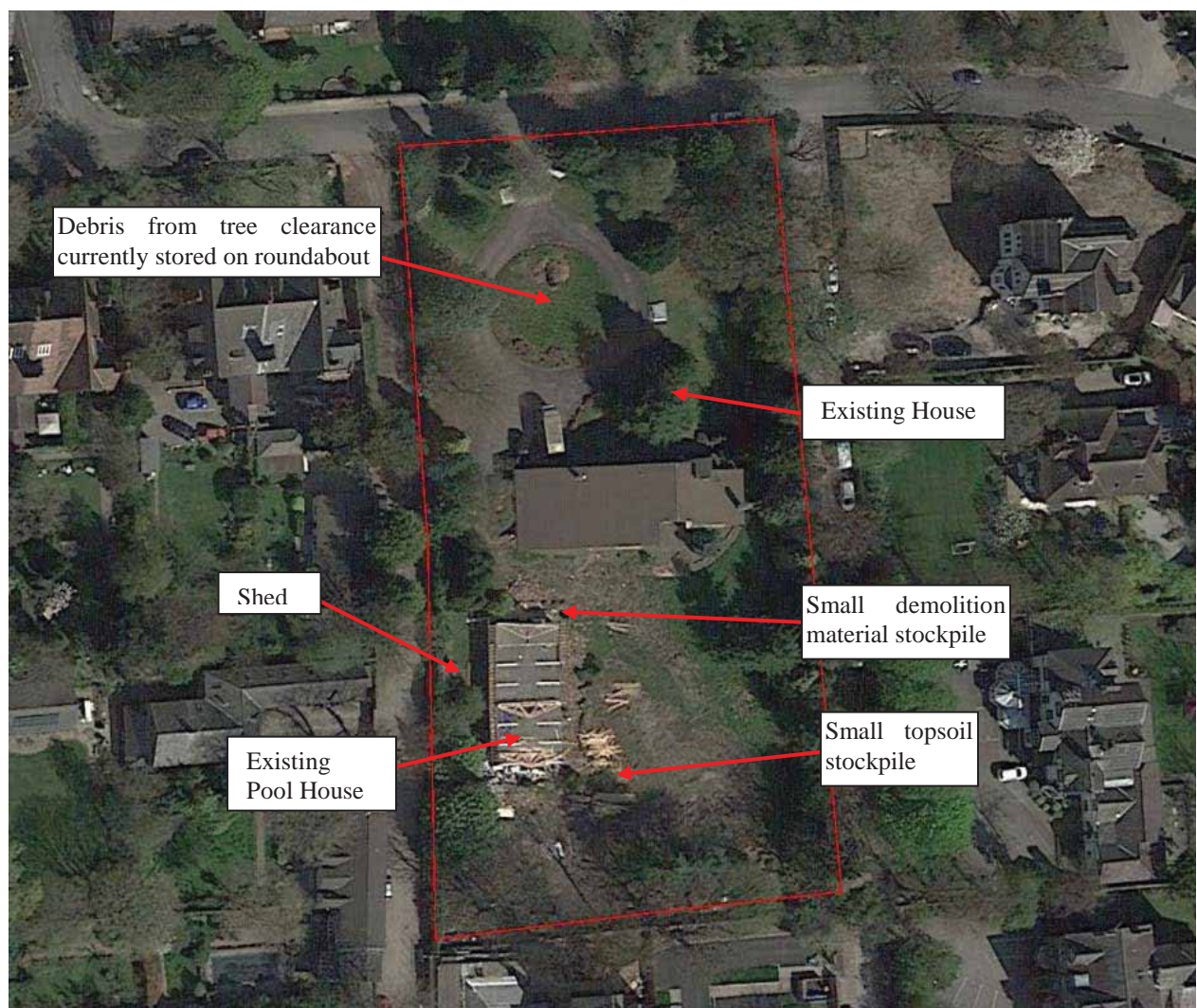


Figure 3: Google Earth image of the site

Table 2: Summary of Description of the Site and its Environs	
Current Use:	Derelict residential property.
Access	Direct from Elmsley Road from the northern boundary.
Existing Buildings & Structures	Large detached residential property in centre of site. Rectangular pool house building in the southwest part of the site and small brick and slate roof shed along western boundary of the site. It is understood the existing buildings have had an asbestos survey and there are ACM (Asbestos Containing Material) in part in the buildings which will be removed by a specialist prior to demolition.
Site Surface	Asphalt road around the roundabout (see Figure 3 above) and for parking in the north part of the site. Small areas of paving slabs adjacent to buildings. There are small grassed areas to north of the existing house and predominantly rough grassed areas to the south of the house.
Vegetation	Mature & semi-mature trees surround the site around its perimeter, particularly along the eastern site.
Storage Tanks	Below Ground Tanks: No evidence/none suspected. Above Ground Tanks: None present.
Asbestos	No potential ACMs noted on the ground surface.
Waste Disposal/ Materials Storage	Electronic and other waste material stored adjacent to the western part of the house. Debris from tree clearance is currently stored on the centre of the roundabout. There are small stockpiles of demolition material and topsoil adjacent to pool house. The old boiler from the pool is located adjacent to pool house. There are remnants of two small bonfires on the ground adjacent to the pool house.
Surrounding Area	Surrounded by residential properties on all sides, predominantly large Victorian type villas.
Ecology	There is no evidence of protected burrowing animals (e.g. badgers) or habitats suitable for protected amphibians (e.g. Great Crested Newts). The disused buildings on site could be suitable habitats for bats. Trees are present on the site and these should not be cut down during the nesting season. No evidence of invasive plant species were noted. <i>These comments on the ecology are for initial preliminary assessment. They are based on the assessment of personnel who are not trained ecologists and does not constitute a Phase I Habitat Survey or similar.</i>

2.3 Site Ownership

2.3.1 TerraConsult have not been advised of the ownership of the site.

2.4 History

2.4.1 The following information in Table 3 has been gathered to detail relevant land use changes for the site and its surroundings. The maps used are previous editions of the County Series and Ordnance Survey dating back to 1850. These maps are presented in Appendix C.

Table 3: Summary of Examined Ordnance Survey Historical Mapping

OS Map Edition	On-site Features	Off-site Features
1850 County Series Plan 1:10,560 map	The site is undeveloped and part of a large agricultural field.	The surrounding areas are generally agricultural land. The London and North Western railway runs generally north to south alignment, 150m to the east of the site. There are a number of ponds located 300m to the north and east.
1893 County Series Plan 1:2,500 & 1891 1:10,560 map	The site has been developed with the large detached property called Elmsley located at the northwest corner of the site. The southern third of the site appears to be separated and contains a 'T' shaped glass building.	The surrounding area has been developed predominantly with large detached residential properties with large gardens. The site is surrounded by Elmsley Road to the north, Drewell Road to the west and Lyndhurst Road to the east. Another detached property is located to the south. There was one allotment garden located 100m to the north and another 100m to the south. There is a Brick works located approximately 300m to the northeast of the site.
1908 County Series Plan 1:2,500 & 1905 1:10,560 map	No significant changes noted.	There is a Brick works located approximately 300m to the northeast of the site. The brick works were built over a number of ponds identified in the previous mapping.
1927 County Series Plan 1:2,500 & 1925 1:10,560 map	No significant changes noted.	The start of extensive residential housing developments (predominantly terraced) have been built to the north and to the east (of railway), including over the brickworks. The allotments to the south have been changed to football / tennis grounds. Part of the allotment to the north has had a RC church built upon it. A hospital is now located approximately 400m to the west.
1937 County Series Plan 1:2,500 & 1938 1:10,000 map	No significant changes noted.	Residential properties developments (urban sprawl) continued to south.
1953 County Series Plan 1:2,500 & 1956 1:10,000 map	The detached house (Elmsley) appears to have small additions to the north part of the building. The 'T' shaped glass house has been replaced with two small glasshouses and at least four shed type buildings.	No significant changes noted in the immediate surrounding areas.
1971 County Series Plan 1:2,500 & 1967 1:10,000 map	The 1:2,500 mapping is split between 1971 in the northern and 1968 in the southern part of the site. The 1971 plan shows the absence of 'Elmsley' and the construction of an access road / roundabout. The southern part of the site shows no changes.	No significant changes noted.
1979/80 County Series Plan 1:2,500 & 1978 1:10,560 map	In the centre of the site there is a large detached house. In the SW part of the site there is a rectangular building, which is known to be the swimming pool house. There is a small shed located adjacent to the pool along the western boundary.	No significant changes noted
1990/93 County Series Plan 1:2,500 & 1989 1:10,000 map	No significant changes noted	No significant changes noted
2002-2014 1:10,000 map	No significant changes noted	No significant changes noted

2.5 Services Search

2.5.1 No service information has been provided.

3. ENVIRONMENTAL SETTING

3.1 Data Summary

3.1.1 A summary of the environmental background information (geology, hydrology, hydrogeology, database information etc.) and regulator consultation information has been tabulated and presented below. The source information for this table is presented in Appendix D or is referred to in Table 4 below. The table below represents the base data used to formulate the conceptual ground model.

Table 4: Data Summary: Environmental Setting & Regulator Contact		
	Data Source	Data Summary
Regional Geology	1:50,000 BGS Sheet 96.	The site was shown to be underlain by drift deposits comprising Glacial Till (Boulder Clay) over Triassic Chester Pebble Beds Formation - Sandstone.
Mining	BGS Maps & Coal Authority Website	The site is not located in a Coal Authority Referral or Standing Advice Area. The site is not in an area affected by historic brine or salt extraction.
Quarrying	Historic OS Plans	From the historic maps, there is no evidence of mineral extraction or quarrying at the site (e.g. brick pits, sand and gravel extraction etc.).
Hydrogeology	NRA Groundwater Vulnerability Map Sheet . 1:100,000 scale, 19 GroundSure Report HDM Environment Agency Web Site, 09/06/2016	Source Protection Zone – none underlying the site or within the surrounding area. Aquifer (drift) – Secondary Aquifer -Undifferentiated Aquifer (solid) – Principal Aquifer Soil Leaching Potential – Soil of high leaching potential Groundwater Abstractions – No groundwater abstractions in the area of the site (closest 1329m NW).
Hydrology	Ordnance Survey 1:25,000 scale map of the area, Pathfinder 8, 19.	Nearest watercourse – the River Mersey is approximately 2 km south of the site.
	Environment Agency Web Site, 09/06/2016	The site is in Flood Zone 1, where the risk of flooding from rivers is classified as low. Water quality: No information within 1500m of the site. Pollution Incidents – none within 250 m of the site. Abstractions (surface & groundwater) – nearest located 1329m. Discharge Consents – none within 500 m of the site
	Drainage Plans	None currently identified
	Buried Culverts	None currently identified

Radon Potential	Building Research Establishment, 2015, 'Radon: Guidance on protective measures for new buildings'	Site in an area where neither basic nor full protection measures are required and a geological assessment is not required. Therefore no radon protection measures required at this location.
Other Radiation	Historic land use (see below) GroundSure Report HMD-1473012763	No reasonable grounds for believing land to be radioactively contaminated (in accordance with 2005 extension of Part IIA of The Environment Protection Act 1990).
Ordnance	Zetica Bomb Risk Map	Liverpool was a target for heavy bombing during the Second World war and the city is designated as being at High risk of unexploded ordnance. Historical maps of the local area that pre and post-date the Second World War show that no changes to the layout of residential development occurred within proximity to the study site during this period. Accordingly, the risk of unexploded ordnance at the site it is considered to be low.
Environmental Database Information	GroundSure Report HMD 1473012763, appended to this report.	Full reference should be made to the report, however a brief summary follows. The site has historically had two large detached properties. The first constructed in the late 1800s, occupied the northwest corner of the site with a large greenhouse in the southern part of the site. The house was demolished and a new detached property occupied the centre of the site from the late 1960s. A pool house also was building in the SW part of the site. The site has remained relatively unchanged to the present day.
	Industrial Processes (from GroundSure Report)	There are no registered Integrated Pollution Control (IPC) Sites, Registered Radioactive Substances sites, Control of Major Accident sites (COMAH), Explosives Sites or Notification of Installations Handling Hazardous Substances (NIHHS) within 250m of the site
	Environment Agency Web Site, 09/06/2016	No landfill sites are recorded within 1500m from the site. Waste Treatment & Transfer sites – none recorded within 500m Consented Discharges - closest 496m to southeast – revoked in 1987 Pollution Incidents - closest 489m to southwest – dated 14/08/2001 Inorganic Chemicals/Products – no impact
Landfill Search	Ordnance Survey Historical Mapping (from GroundSure Report) HMD 1473012763	Copies of the historical maps examined, and a detailed summary is given in Table 3. There is no evidence of historical landfills within the area of the site.
Trade Directories	Trade Directory Entries recorded in 250m radius (from GroundSure Report)	There are six recorded entries – all are related to electricity substations. The closest is 21m to the north, located in the grounds of the 'Greyfriars' – a large detached property. None are considered to be a significant potential contaminative source.
Fuel Stations	Fuel Stations recorded in 250m radius (from GroundSure Report)	There are two recorded fuel stations; the closest is 415m to the northeast of the site. Both stations status are indicated as obsolete.
Ecology	Sites of Ecological Importance (from GroundSure Report) MAGIC website 09/06/2016 http://magic.defra.gov.uk/website/magic/	There are no sites of Special Scientific Interest (SSSI), Special Protection Areas, Conservation Areas, National Nature Reserves, National Parks, Areas of Outstanding Natural Beauty or RAMSAR (wetlands) within 1km of the site/ Greenbelt land The site is located within a Community Forests area.
Archaeological & Building Heritage	Liverpool City Council 08/06/2016	There are no buildings on the site that have been recorded as being of "local interest."
	Natural England Web Site 09/06/2016	The site/buildings are not within areas of outstanding natural beauty or a national park.
	Historic England Web Site 09/06/2016	There are no scheduled ancient monuments buildings in historic parks and gardens on site or buildings within the curtilage of scheduled ancient monuments.

3.2 Geology

3.2.2 Underlying the drift deposits is the Triassic Chester Pebble Beds Formation consisting of fine- to coarse-grained commonly pebbly cross-stratified Sandstone, with conglomerates and sporadic siltstones.

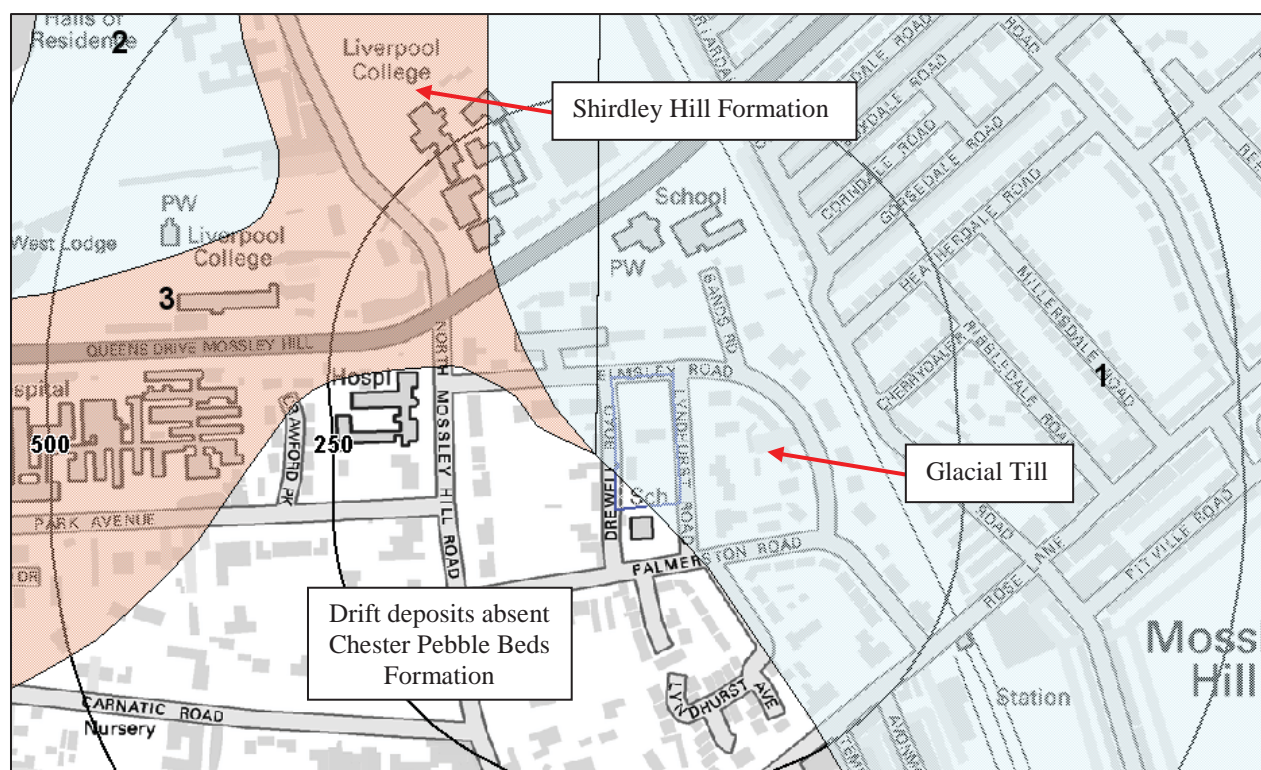


Figure 4: Extract from Groundsure Report -147-3012764 (Superficial Deposits Map)

3.3 Mining and Quarrying

- 3.3.1 Evidence of mining and quarrying is summarised below and is based on geological maps, existing borehole logs and the historic maps of the area:

Table 5: Summary of Mining and Quarrying	
Is site within an area where past underground mining has taken place?	No
Is site within an area for which a licence for present or future extraction exists?	No
Are shafts / adits recorded on site?	No
Is site within geographical boundary of former opencast workings?	No
Is site within 200m of current or within 800m of future opencast workings?	No
Is there any evidence of quarrying or brick pits or mineral extraction within 100 m of the site	No

- 3.3.2 From the historic maps, there is no evidence of mineral extraction or quarrying at the site (e.g. brick pits, sand and gravel extraction etc.).
- 3.3.3 On the basis of the geology of the area and the historic maps, it is considered that the site is not likely to be at risk from ground movements due to previous mines and quarrying.

3.4 Hydrology, Flooding and Drainage

- 3.4.1 There are no river networks or surface water features within 500 m of the site. On account of this, it is considered that the site is very unlikely to pose a risk to controlled surface waters.
- 3.4.2 The River Mersey is located 2 km to the south west and there is no indicated risk of flooding at the site.

3.5 Hydrogeology

- 3.5.1 The Environment Agency have classified different types of aquifer from which groundwater can be extracted (see Appendix D for definitions). The bedrock (Chester Pebble Beds Formation) is classified as a Principal Aquifer. Drift deposits are secondary aquifer (undifferentiated) on the site except for the south west corner where drift deposits are anticipated to be absent. The drift deposits may have permeable layers within the unit. Therefore, proposed development will be in contact with the bedrock.
- 3.5.2 The Environment Agency have defined Source Protection Zones (SPZs) for over 2000 groundwater sources such as wells, boreholes and springs used for public drinking water and industrial water supply. Where these SPZs are present there is an increased risk of contamination from any activities on site that might cause pollution of groundwaters and water supply in the area. The site lies further than 1 km from the nearest SPZ.
- 3.5.3 The Environment Agency has also designated a number of surface water features and groundwater bodies with additional protective status and has highlighted areas where the groundwater may be at risk. At this site the site is:

- Not in a Surface Water Safeguard Zone
- Not in a Groundwater Safeguard Zone
- Groundwater Drinking Water Protected Areas – Groundwater probably at risk

4. HAZARD ASSESSMENT & PRELIMINARY CONCEPTUAL SITE MODEL

4.1 Hazards Identified with the Proposed Development

4.1.1 The hazard identification is based on the assumptions presented below:

- the site will be a residential development;
- the residential development will include some domestic gardens, and residents may choose to grow their own vegetables. Landscaped communal areas will be present; and;
- drinking water will be from mains supply.

4.2 Potential Sources of Contamination

4.2.1 For the purpose of this assessment the potential contaminants of concern have been considered according to whether they are likely to have originated from on-site or off-site sources.

Potential On-site Sources of Contamination

4.2.2 The history of the site shows there has been no industrial or commercial landuse. The site has previously had a large detached residential property in the north west corner of the site from the late 1800s to 1960s. It is assumed that the house would have originally been heated by coal fires. There is potential that coal ashes could have been spread onto the garden areas. It is considered very unlikely that the house would have been heated by oil. Contamination is not expected to be at high concentrations or extensive at the site.

4.2.3 The current house and swimming pool house was constructed in the late 1960s, in the centre and south west part of the site respectively. Both buildings were heated by gas boilers and there is no evidence of any underground or above ground oil tanks.

4.2.4 The Made Ground is anticipated to be relatively thin (<1.0m) and unlikely to contain significant amounts of organic material. There are no landfills or any evidence of infilled ground within 500m of the site and the local authority has no records of any areas of significant infilling in the vicinity of the site. The risk from ground gases (carbon dioxide and methane) to the proposed development is considered very low.

Potential Off-site Sources of Contamination

4.2.5 On the opposite side of Elmsley Road, there is an electrical sub-station in the grounds of 'Greyfriars' – a large detached property. There is the potential for PCB contamination at the sub-station. However, even if there had been a spillage of PCBs at the sub-station it is considered very unlikely to impact onto the development site. This is because the

quantities of PCBs at the sub-station would be relatively low and PCBs are not very mobile, particularly given the Glacial Till strata.

4.3 Potential Receptors of Contamination

4.3.1 Based on the data previously discussed, the following potential receptors to contamination have been identified:

Table 6: Identified Potential Sensitive Receptors	
A	Humans – Pre development completion, i.e. working on site during demolition and construction.
B	Humans living on the site post construction.
C	Controlled waters – Surface Waters (rivers and streams).
D	Perched groundwater in Made Ground and Controlled waters – (groundwater - Principal Aquifer / Secondary Aquifer in drift).
E	Local flora and fauna during and post demolition and construction.
F	Building structure and services.

4.3.2 The possible contaminant linkages are discussed below. It should be noted not all may be formed between all sources and receptors.

4.3.3 The preliminary assessment of risks undertaken for the development considers potential risks to receptors A to F in Table 5 above. The receptors A to F incorporate each of the receptors normally required by the Local Authority to be considered in their planning conditions relating to land contamination;

- Human Health (A & B)
- Property (including buildings, crops, livestock, pets, woodland, service lines) (E & F)
- Adjoining land (D & F)
- Groundwater and surface water (C & D)
- Ecological systems (E)
- Buildings and structures (F)

4.3.4 It should be noted that there are no archaeological sites or ancient monuments considered to be within the zone of influence of the site. They are therefore not considered in the risk assessment.

4.3.5 The closest of each of the above receptor categories to the site are considered to be;

On-site

- Site users
- Buildings
- Flora and fauna
- Principal bedrock aquifer / Secondary Aquifer in drift

Off-site

- Residential
 - Elmsley Road (<10m north)
 - Drewell Road (<10m west)
 - Lyndhurst Road (<10m east)
 - Palmerston Road adjacent south)

4.3.6 The possible contaminant linkages are discussed below. It should be noted not all may be formed between all sources and receptors.

4.4 Identification of Pathways

Pathways to Human Health

4.4.1 There are various routes by which a potential contaminant may reach a receptor. For example, in areas where contaminated material is exposed, dermal contact with the material, inhalation or ingestion of dust may occur.

4.4.2 Approximately half of the site is currently soft landscaped and half is either covered by existing buildings or hard standing.

4.4.3 The existing buildings on site will be demolished and removed from site once the existing planning conditions have been discharged.

4.4.4 In the northern area of site there is a small stockpile consisting of tree and other vegetation from other parts of the site. It is anticipated that this will be removed as part of the groundworks.

4.4.5 Inhalation or ingestion of dust and water could occur during the construction and development phase at the site. Pathways from dermal contact with soil and groundwater may also arise. It is considered that the risk of short term exposure for ground workers and other construction workers is low unless there are asbestos fibres in the Made Ground.

4.4.6 Post construction, the surface of the development area will be occupied with buildings and hard standing, however extensive landscaped garden areas will still be present. This is significant in that a number of potential pathways are possible such as long term direct contact and dust inhalation/ingestion is also applicable.

Pathways from Ground Gas

4.4.7 There are no viable sources of ground gas so this does not need to be considered,

Pathways to Controlled Waters

4.4.8 Groundwater levels at the site are anticipated to be low and at a depth of more than 5 m within the bedrock. Lateral migration of potentially contaminated groundwater offsite (either via permeable Made Ground or the underlying aquifer) must be considered.

4.4.9 The vertical leaching of contaminants from the Made Ground into the groundwater is a potential pathway for contaminants to impact upon groundwater. The presence of Glacial Till drift deposits means there is an attenuation barrier from potential contaminated Made

Ground to the Principal Aquifer (Chester Pebble Beds), although sand and gravel bands within the Glacial Till should be disproved within the phase 2 investigation.

- 4.4.10 Surface run off from contaminated areas into surface watercourses must also be considered. Due to a lack of a hard standing site surface, this will be uncontrolled prior to and during the groundworks phase when this must be carefully managed. Post construction the majority of the site and surface run-off will be limited and controlled through drains. There are not any viable overland migration pathways for surface run off to reach any controlled waters receptors.

Other Pathways

- 4.4.11 Other potential pathways that are possibly less significant to the site but still require consideration are; potential phytotoxic effects on sensitive landscaping plants; chemical attack on foundations and services and permeation of contaminants through domestic water pipes. The risk to buildings from ground gases has been discussed under human health above.

4.5 Contaminant Linkages

- 4.5.1 For each contamination source there are potential contaminant linkages with all receptors. However, in the context of this site, not all of the contaminant linkages are plausible. The likelihood of the various pathways linking the contaminants to the receptors is presented in Table 7 below:

Table 7: Matrix of Contaminant Linkages							
Source/ Contaminated Medium	Pathway	Receptor					
		A - Humans using site pre- development	B - Humans living site post construction	C - Surface Water	D - Groundwater	E - Flora & fauna	F - Building & Services
Soil/Made Ground	Ingestion	P	P	-	-	P	-
	Dermal Contact/Direct Contact	S	P	-	-	P	P
	Inhalation	S	S	-	-	S	-
	Infrastructure/Drainage	P	P	P	P	P	P
	Groundwater	P	P	U	U	U	P
	Surface water	P	P	P	P	P	P
Groundwater	Ingestion	P	P	-	-	P	-
	Inhalation	S	S	-	-	S	-
	Dermal Contact	P	P	-	-	P	-
	Groundwater	P	P	P	P	U	P
	Surface Water	P	P	P	P	P	P
Gas (CH₄ CO₂)	Migration	-	-	-	-	-	-
Key to significance of contaminant linkages S = Significant Pathway P = Possible Pathway U = Unlikely Pathway - =Not Applicable Only Significant and Possible contaminant linkages are taken forwards to the next part of the risk assessment.							

4.6 Conceptual Site Model

4.6.1 In accordance with BS 10175, a schematic section has been developed for the site based on the previously presented data and contaminant linkage assessment:

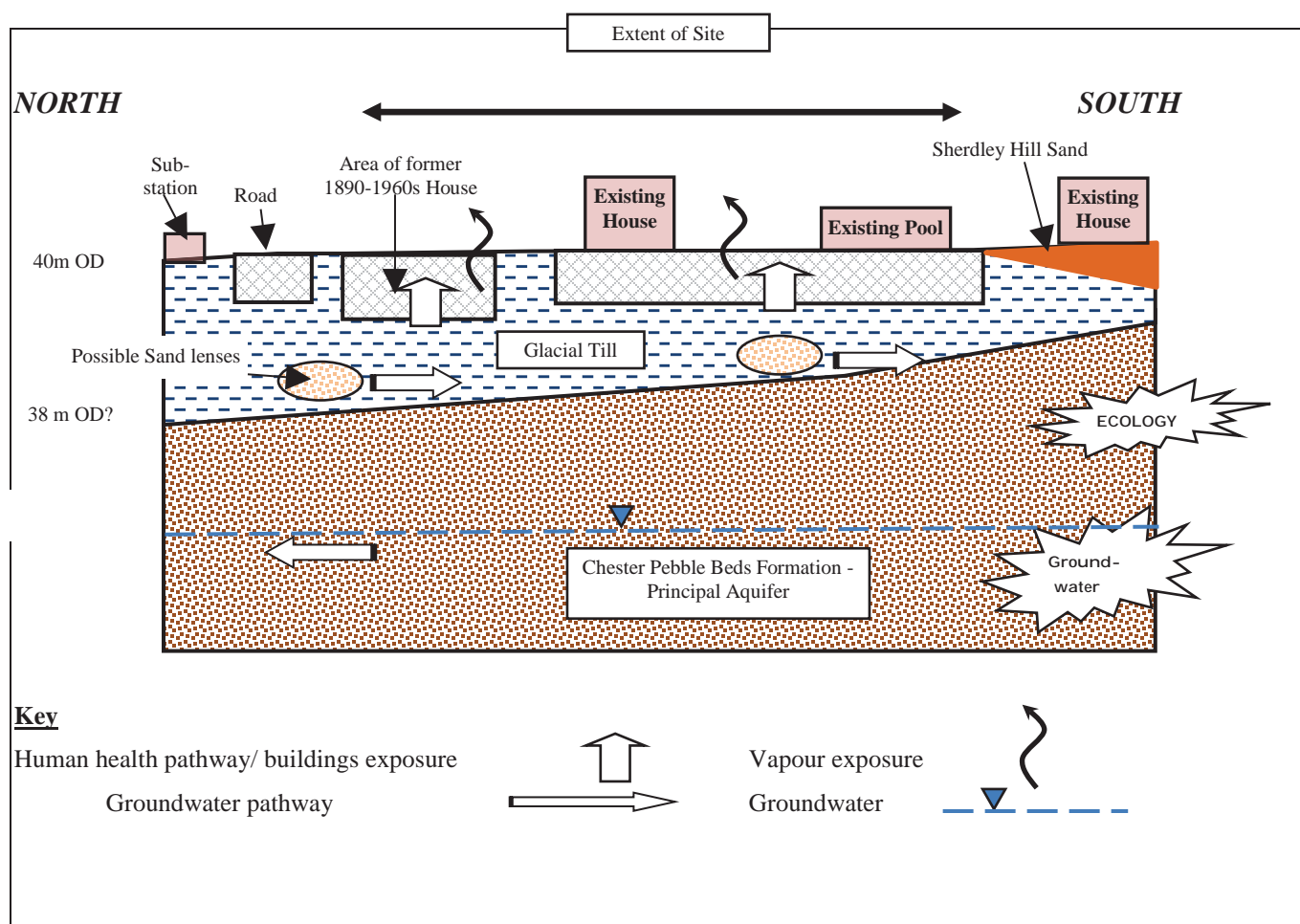


Figure 5: Preliminary Conceptual Ground Model - Schematic Section (not to scale)

4.6.2 The model shows the predicted geology and topography, the major on site potential contamination sources and vulnerable receptors. Levels shown are relative to Ordnance Datum and are based on published data previously presented in the report, although the drawing may not be considered to scale.

4.6.3 The information presented above represents the preliminary conceptual ground model that may need to be revised based on information obtained as part of any future intrusive investigation. A number of sensitive receptors and potential pathways and sources (in association with a list of likely contaminants) have been identified.

4.6.4 The ground model and proposed end use described above should be considered broadly representative of the standard housing (with vegetable uptake) as defined in SR3 "Updated Technical Model to the CLEA Model" (SC050021/SR3, 2011) for the purpose of this report.

4.7 Preliminary Contamination Hazard Assessment

4.7.1 The preliminary hazard assessment is based on current available guidance published by a number of sources and is summarised in Appendix B. A preliminary conceptual site model for this site has been established using the desk study information and has been used as a basis for the preliminary hazard assessment. The significant and possible potential pathways are only considered for the hazard assessment.

4.7.2 The preliminary hazard assessment is a qualitative assessment of the risks posed by each viable pollution link identified. The hazard assessment leads to a recommended subsequent activity that could be:

- Action Required (AR) in the short term to break existing contaminant-pathway-receptor (CPR) link;
- Site Investigation Required (SIR) with objectives for risk estimation, or
- No Action Required (NAR) at this stage.

4.7.3 The hazard assessment is summarised in Table 7 below.

Table 8: Preliminary Hazard Assessment							
Hazard Identification				Hazard Assessment			
Link	Contaminant	Pathway	Receptor	Probability	Consequence	Risk	Hazard Assessment
1	Contaminated soil/groundwater	Ingestion (via soil dust) and inhalation (via soil dust and vapours), ingestion through dirty hands, dermal contact with soil/water.	A- Humans using the site during construction.	Medium	Mild	Medium/Low	SIR - Total soil concentration of relevant contaminants for contractors and designer's risk assessments.
2		Ingestion (via soil dust) and inhalation (via soil dust and vapours), ingestion through dirty hands, dermal contact with soil/water.	B- Humans using the site after development completion.	Medium/Reasonably Foreseeable	Mild	Low	SIR- Total soil concentration of relevant contaminants for contractor's risk assessments.
3		Via service pipes	B- Humans using the site after construction. F- Building structures	Low/Unlikely	Medium	Medium/Low	SIR - Total soil concentration of relevant contaminants and designer's risk assessments.
4		Downward migration	D- Perched groundwater	Low	Medium	Medium	SIR- Total soil concentration of relevant contaminants for contractor's risk assessments.
5		Downward migration	D - Secondary aquifer/water supply	Low/Unlikely	Medium	Medium/Low	SIR
6	Contaminated soil/waste/groundwater	Ingestion, inhalation, dermal/direct contact	E- Ecology (Flora/Fauna)	Medium/Reasonably Foreseeable	Negligible	Near Zero	SIR

Table 8: Preliminary Hazard Assessment							
Hazard Identification				Hazard Assessment			
Link	Contaminant	Pathway	Receptor	Probability	Consequence	Risk	Hazard Assessment
7	Contaminated groundwater	Principal Aquifer/ Surface water	E- Ecology (Flora/Fauna)	Low/Unlikely	Medium	Low	SIR
8	Contaminated soil/groundwater	Direct contact.	F- Building structures.	Medium/ Reasonably Foreseeable	Mild	Low	SIR

4.7.4 From Table 7 a range of risk ranking from low to medium was established. Potentially moderate and high risks require quantification and consideration prior to development. The site investigation objectives described above should represent part of a detailed main stage investigation that should include overall characterisation of the ground in association with obtaining and analysing the information described above.

4.8 Geotechnical Hazards Associated with the Development

4.8.1 In addition to the environmental hazards, there are also geotechnical hazards associated with the stability of the ground (including load bearing capacity, slope stability and effects of ground (mining) cavities). Local Authorities follow NPPF (2012) which requires that “site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining.” A summary of the geotechnical considerations is provided below:

Table 9: Summary of Geotechnical Hazards	
Geohazards:	
Highly Compressible Ground	No – peat or soft Alluvium or Made Ground of thickness less than 1 m are not anticipated.
Collapsible Soils	No
Swelling Clay	Yes – Anticipate low or medium volume change potential clay present
Running Sand	No
Ground Dissolution	No
Landslip	No
Mining & Quarrying (see Section 3.3)	There is no evidence of mining or mineral extraction or quarrying at the site.
Geotechnical Design Considerations	
Site Clearance	The existing buildings will be demolished and removed from the site. It is understood that an Asbestos survey has been carried out and ACMs were found. It is understood that the ACMs will be removed from the building by a specialist prior to demolition. All green waste and deleterious material to be removed from site
Trees	Trees present on site predominantly around the perimeter. Check whether there are any Tree Preservation Orders. Foundation design to take into account trees and hedgerow.
Existing Buildings / Obstructions	There are three proposed buildings. The northern and southern buildings overlie historic buildings which were demolished in the 1960s. There is the possibility that previous foundations remain. The existing building partially overlies the proposed central building. There is also an existing swimming pool with the pool building close to the footprint of one of the new buildings

Foundations	Further investigation is required to confirm ground conditions i.e. thickness and nature of Glacial Till and depth to sandstone bedrock. Anticipate that shallow spread foundations in the glacial clay or deep trench foundations in the sandstone will be suitable at this site designed following NHBC Standards (2016) to take into account of the presence of the trees and hedges. Need to confirm the volume change potential of the formation material.
Floor Slabs	It may be possible to use ground bearing floor slabs.
Groundwater	Groundwater anticipated to be deep (more than 5m below ground level)
Earthworks	No bulk earthworks are anticipated to enable the proposed redevelopment.
Slopes	Not considered to be relevant to the proposed development
Retaining Walls	Not considered to be relevant
Chemically aggressive ground conditions	Possibility for low pH and high sulphate concentrations which could be detrimental to below ground concrete.

5. CONCLUSION

5.1 Environmental Risk Assessment

- 5.1.1 A preliminary risk assessment has been carried based on the contaminant-pathway-receptor model as defined in Statutory Guidance to Part IIA of the Environmental Protection Act, 1990 and in accordance with BS 10175: 2011+A1:2013 "Investigation of Potentially Contaminated Sites – Code of Practice. A preliminary conceptual site model has been produced to set out the characteristic ground conditions and elements of the surrounding environment and assisted with identifying potential sources of contamination, potential receptors of the contamination and potential pathways between them.
- 5.1.2 The history of the site shows there has been no industrial or commercial landuse. Historically, there was a large detached residential property in the northwest corner of the site from the late 1800s to 1960s and the current house in the centre of the site and pool house in the south west part of the site. There is potential that coal ashes could have been mixed into the shallow soils but contaminant concentrations are not anticipated to be particularly high or widespread even if present at all. There is no evidence of below or above ground oil tanks.
- 5.1.3 The Made Ground on site is considered to be relatively thin and is unlikely to contain significant amounts of organic material. There are no landfill sites or infilled ground identified close to the site. The risk from ground gases (predominantly methane and carbon dioxide) is considered to be very low and no gas monitoring is required. However, it is proposed that wells will be installed primarily to confirm groundwater conditions as part of the Phase 2 investigation and these will also be monitored for ground gases. It is proposed that four monitoring wells are installed and three rounds of gas monitoring are carried out (weekly). On completion of the third visit, the results will be reviewed and assessed whether further monitoring is required.
- 5.1.4 As with any development site, there is the possibility for hotspot contaminants, which has not been previously anticipated. Any excavations will be inspected and Made Ground

delineated as appropriate with representative samples of the Made Ground taken and appropriate testing carried out to assess the risk.

5.2 Geotechnical Design

- 5.2.1 The geotechnical hazards associated mining and quarrying at the site are negligible and no special precautions are required to be made in relation to mining for the proposed development. The site should be suitable for conventional spread footings either founded in the Glacial Till, or more likely in the top of the sandstone bedrock.
- 5.2.2 The pH and sulphate content of the soils requires checking with respect to its potential attack of concrete and take appropriate action in terms of specifying a suitable mix in line with Building Research Establishment Special Digest 1 Concrete in Aggressive Ground (2005).

5.3 Recommendations for Further Works

- 5.3.1 In order to make a quantitative assessment of the potential risks and so any required remedial measures can be designed; we recommend that a Main Investigation is carried out in accordance with BS 10175: 2011+A1:2013. This should be combined with a geotechnical investigation carried out in accordance with BS 5930:2015. We recommend that this investigation comprises:

- Trial pitting – seven machine excavated trial pits
- Nine dynamic (window) sampling boreholes to a depth of 4 to 5 m;
- Installation of four gas/groundwater monitoring wells;
- Geochemical laboratory analysis (see Appendix 2 for suites):
 - General soil suites consisting of metal, Polycyclic aromatic hydrocarbon (PAH), Total Petroleum Hydrocarbons (TPH)
 - Asbestos screen; with quantification of positive;
- geotechnical laboratory analysis
 - moisture content, liquid and plastic limit;
 - Quick unconsolidated undrained triaxial tests, single stake on UT70 mm dia sample
 - BRE SD1 brownfield suites.
- three return visits period post installation to monitor groundwater levels and gas concentrations over 3 weeks;
- provision of interpretative report including:
 - geo-environmental assessment: qualitative risk assessment and recommendations for remediation and further investigation if necessary;
 - geotechnical assessment to comprise foundation and floor slab assessment;

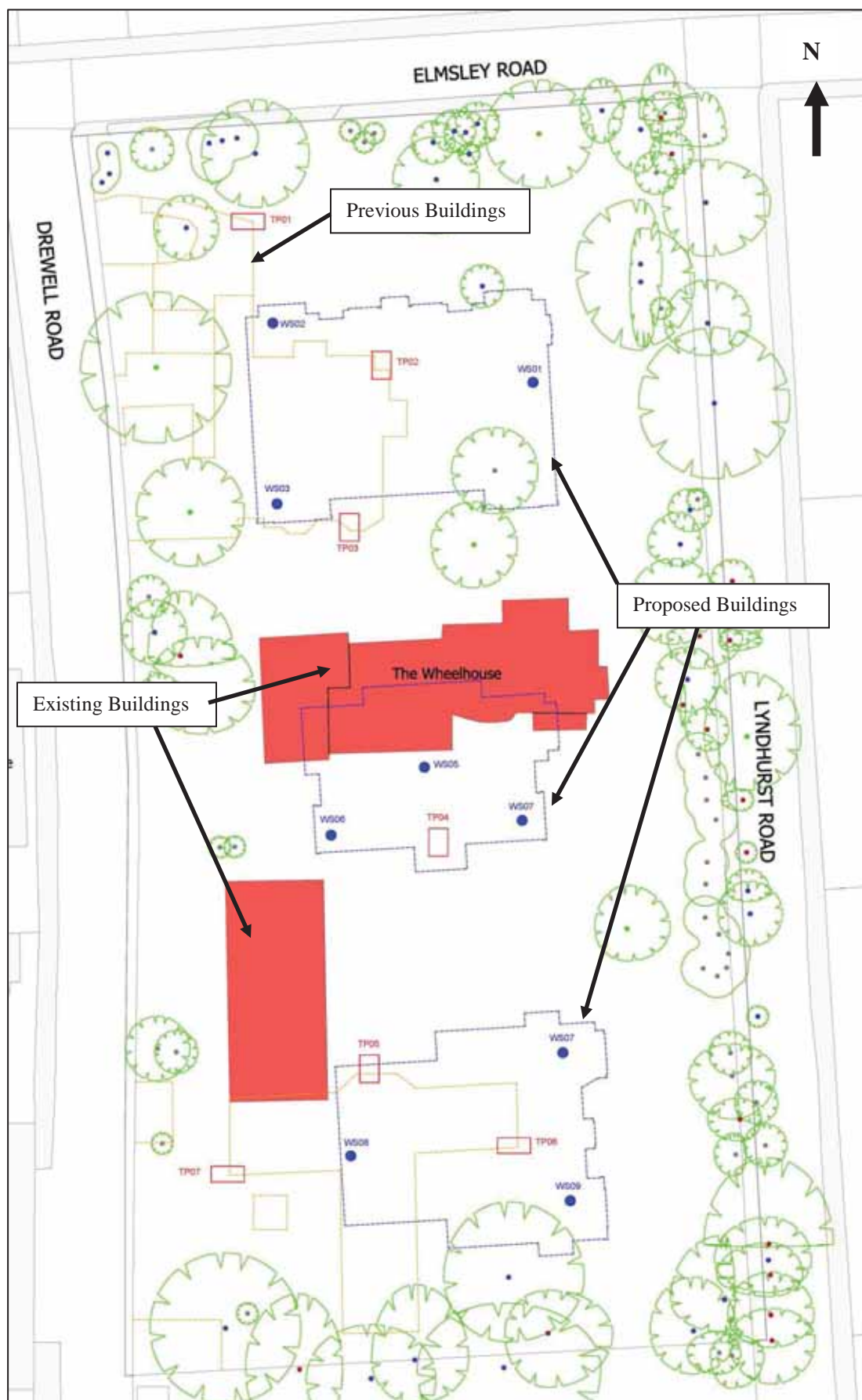


Figure 6: Proposed Locations of Exploratory Holes

Regulatory Liaison

- 5.3.2 Any proposals to remediate or develop the site should be agreed with the relevant authorities (e.g. local authority environmental health officer, Environment Agency etc) to obtain Planning Permission prior to commencement of the works and should also be agreed with the NHBC or similar, or with the local authority building control officer.

5.4 Health and Safety

- 5.4.1 As outlined within the HSE publication “Successful Health and Safety Management – HSG65” this report should inform your development of safe systems of work and information as an input into the safety management system. The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2015.

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- Environment Agency : 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3
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- HMSO: 1995 : Part 2A of the Environmental Protection Act 1990, as inserted by Section 57 of the Environment Act 1995, was brought into force on 1 April 2000

APPENDICES

List of Appendices

Appendix A	Service Constraints, Report Limitations & Planning Requirements
Appendix B	Environmental Risk Assessment Methodology and Terminology
Appendix C	Photographs
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APPENDIX A

Service Constraints, Report Limitations & Planning

Service Constraints, Report Limitations & Planning Requirements

This consultancy contract, report and the site investigation (together comprise the "Services") were compiled and carried out by TerraConsult Limited (TCL) for Elmsley Homes (the "client") on the basis of a defined programme and scope of works and the terms of a contract between TCL and the "client." The Services were performed by TCL with all reasonable skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by TCL taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between TCL and the client. TerraConsult Ltd cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Other than that expressly contained in the above paragraph, TCL provides no other representation or warranty whether express or implied, is made in relation to the Services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of TCL. If a third party relies on this report, it does so wholly at its own and sole risk and TCL disclaims any liability to such parties.

It is TCL's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without TCL's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of TerraConsult Limited.

The report was written in June 2016 and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of TCL. In the absence of such written advice of TCL, reliance on the report in the future shall be at the client's own and sole risk. Should TCL be requested to review the report in the future, TCL shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between TCL and the client.

The observations and conclusions described in this report are based solely upon the Services that were provided pursuant to the agreement between the client and TCL. TCL has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. TCL is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, TCL did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, radon gas or other radioactive or hazardous materials.

The Services are based upon TCL's observations of existing physical conditions at the site gained from a walkover survey of the site together with TCL's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst TerraConsult Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report. Further TCL was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. TCL is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to TCL and including the doing of any independent investigation of the information provided to TCL save as otherwise provided in the terms of the contract between the client and TCL.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and TCL] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geoenvironmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geoenvironmental sections are written in broad agreement with BS 10175:2011+A1 2013. For the geotechnical aspects of the report, the general requirements of Eurocode 7 (BS EN 1997-2:2007) are to produce a Ground Investigation Report (GIR) which shall form part of the Geotechnical Design Report (GDR). The geotechnical section of this report is intended to fulfil the general requirements of the GIR as outlined in BS EN 1997-2, Section 6. The GIR contains the factual information including geological features and relevant data, and a geotechnical evaluation of the information stating the assumptions made in the interpretation of the test results. This report shall not be considered as being a GDR.

Planning Requirements

The National Planning Policy Framework (NPPF, 2012) has twelve core land-use planning principles, two of which directly relate to the potential for pollution and contaminated land:

- Requirement to “*contribute to conserving and enhancing the natural environment and reducing pollution*” and setting out of a preference for developments to be on land of “*lesser environmental value*”; and
- “*encourage the effective use of land by re-using land that has been previously developed (brownfield land), providing that it is not of high environmental value.*”.

In accordance with the core principles of NPPF, Paragraph 109 clarifies that enhancing the natural environment includes:

- “*preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*”.

Paragraph 121 of NPPF states that planning policies and decisions for developments should also ensure that:

- “*the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
- *adequate site investigation information, prepared by a competent person, is presented.*”.

This report has been prepared and authorised by staff that are competent as defined in the NPPF.

Unexploded Ordnance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA Report C681 (Stone et al 2009). A non-UXO specialist screening exercise has been carried out for the site by considering any evidence of UK defence activities on or near the site evident from the gathered desk study information and the unexploded aerial delivered bomb (UXB) regional risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experience in the desk study, field investigation and clearance of UXO/UXB.

APPENDIX B

Environmental Risk Assessment Methodology & Terminology

ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY & TERMINOLOGY

LEGISLATION OVERVIEW

This report includes hazard identification and environmental risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a “suitable for use approach,” which is relevant to both the current use of land and also to any proposed future use. The contaminated land regime is the statutory regime for remediation of contaminated land that causes an unacceptable level of risk and is set out in Part 2A of the Environmental Protection Act 1990 (“EPA 1990”). The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

“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 a significant possibility of such harm being caused;*
- or*
- (b) Pollution of controlled waters is being, or is likely to be, caused.”*

In order to assist in establishing if there is a “significant possibility of significant harm” there must be a “contaminant linkage” for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of contaminant-pathway-receptor is termed a “contaminant linkage or CPR linkage.”

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations. Key implementing legislation of the Part 2A regime includes the Contaminated Land (England) Regulations 2006 (SI 2006/1380) as amended by the overarching legislation for the contaminated land regime, which implements the provisions of Part IIA of the Environmental Protection Act 1990 (as inserted by section 57 of the Environment Act 1995), came into force on 14th July 2000 together with recent amended regulations: Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263). Revised Contaminated Land Statutory Guidance was published by DEFRA in April 2012. Part IIA defines the duties of Local Authorities in dealing with it. Part IIA places contaminated land responsibility as a part of planning and redevelopment process rather than Local Authority direct action except in situations of very high pollution risk.

In the planning process guidance is provided by National Planning Policy Framework (NPPF) of March 2012 which requires that a site which has been developed shall not be capable of being determined “contaminated land” under Part IIA. In practice, Planning Authorities require sites being developed to have a lower level of risk post development than the higher level of risk that is required in order to determine a site as being contaminated in accordance with Part IIA. This is to ensure that there is a suitable zone of safety below the level for Part IIA determination and prevent recently developed sites becoming reclassified as contaminated land if there are future legislative or technical changes (e.g. a substance is subsequently found to be more toxic than previously assessed this increases its hazard).

The criteria for assessing concentrations of contaminants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

- (a) to identify and remove unacceptable risks to human health and the environment;
- (b) to seek to bring damaged land back into beneficial use;
- (c) to seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the “suitable for use” approach to risk management and remediation of contaminated land. The “suitable for use” approach focuses on the risks caused by land contamination. The approach recognises that

the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

- (a) *ensuring that land is suitable for its current use* - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise ("remediating" the land); the contaminated land regime provides the regulatory mechanisms to achieve this;
- (b) *ensuring that land is made suitable for any new use, as planning permission is given for that new use* - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and
- (c) *limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought* - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of contaminants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the use that the site has, and will have in the future.

OVERALL METHODOLOGY

The work presented in this report has been carried out in general accordance with recognised best practice as detailed in guidance documents such as in the CLR 11 Model Procedures for the Management of Land Contamination (Environment Agency, 2004), and BS10175:2011+A1 2013. Important aspects of the risk assessment process are transparency and justification. The particular rationale behind the risk assessments presented is given in this appendix.

The first stage of a two-staged investigation and assessment of a site is the Preliminary Investigation (BS 10175:2011), often referred to as the Phase 1 Study, comprising desk study and walk-over survey, which culminates in the Preliminary Risk Assessment. A preliminary conceptual site model (CSM) is developed which identifies potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. From the geo-environmental perspective, the Hazard Identification process uses professional judgement to evaluate all the hazards in terms of potential contaminant linkages (of contaminant source-pathway-receptor). Potential contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The scope of the Ground Investigation is based on the findings of the Preliminary Risk Assessment and is designed to reduce uncertainty in the geotechnical and geo-environmental hazard identification. The Ground Investigation comprises fieldwork, laboratory testing and usually also on-site monitoring. The Ground Investigation may include the Exploratory, Main and Supplementary Investigations described in BS 10175:2011+A1 2013. The results of the Ground Investigation reduces uncertainty in the geotechnical and geo-environmental risks. Depending on the findings more detailed investigations or assessments may be required.

PRELIMINARY RISK ASSESSMENT

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby “risk” is defined as:

- “(a) The probability, or frequency, or occurrence of a defined hazard; and
(b) The magnitude (including the seriousness) of the consequences.”

The UK’s approach to the assessment of environmental risk is set out in by the Department of the Environment Transport and the Regions (2000) publication “A Guide to Risk Assessment and Risk Management for Environmental Protection” (also called Greenleaves II). This established an iterative, systematic staged process which comprises:

- (a) Hazard identification;
- (b) Hazard assessment;
- (c) Risk estimation;
- (d) Risk evaluation;
- (e) Risk assessment;

At each stage during the development process, the above steps are repeated as more detailed information becomes available for the site.

For an environmental risk to be present, all three of the following elements must be present:

- Source/Contaminant: hazardous substance that has the potential to cause adverse impacts;
- Receptor: target that may be affected by contamination: examples include human occupants/users of site, water resources (rivers or groundwater), or structures;
- Pathway: a viable route whereby a hazardous substance may come into contact with the receptor.

The absence of one or more of each component (contaminant, pathway, receptor) would prevent a contaminant linkage being established and there would be no significant environmental risk.

The identification of potential contaminant linkages is based on a Conceptual Model of the site, which is subject to continual refinement as additional data becomes available. As part of a Preliminary Risk Assessment (Desk Study and site walk over) a Preliminary Conceptual Site Model (PCSM) is formed. Based on the PCSM, potential contaminant linkages can be assessed. If the PCSM and hazard assessment indicate that a contaminant linkage is not of significance then no further assessment or action is required for this linkage. For each significant and potential linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the Conceptual Site Model and assess the level of risk from each contaminant linkage.

Definition of Risk Assessment Terminology

The criteria used for risk assessment are broadly based on those presented in DETR’s “A Guide to Risk Assessment and Risk Management for Environmental Protection” (2000). The Severity of the risk is classified according to the criteria in Table B.1 below:

Table B.1 Severity/Consequence of Risk	
Severe	Acute risks to human health. Catastrophic damage to buildings/property (e.g. by explosion). Direct pollution of sensitive water receptors or serious pollution of other controlled water (watercourses or groundwater) bodies.
Medium	Harm to human health from long-term exposure. Slight pollution of sensitive controlled waters (surface waters or aquifers) or pollution of other water bodies. Significant effects on sensitive ecosystems or species.
Mild	No significant harm to human health in either short or long term. No pollution of sensitive controlled waters, no more than slight pollution of non-sensitive waters. Significant damage to buildings or structures. Requirement for protective equipment during site works to mitigate health effects.
Negligible	Damage to non-sensitive ecosystems or species. Minor damage to buildings or structures. No harm or pollution of water.

The probability of the risk occurring is classified according to criteria given in Table B.2 below:

Table B.2: Probability of Risk Occurring	
High likelihood	Contaminant linkage may be present, and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Medium/Reasonably Foreseeable	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low/Unlikely	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Negligible/Not credible	Contaminant linkage may be present but the circumstances under which harm would occur are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table B.3 below:

Table B.3: Comparison of Severity and Probability					
		Severity			
		Severe	Medium	Mild	Negligible
Probability	High likelihood	Very High Risk	High Risk	Medium/Low Risk	Low Risk
	Medium/Reasonably Foreseeable	High Risk	Medium Risk	Low Risk	Near Zero
	Low/Unlikely	High/Medium Risk	Medium/Low Risk	Low Risk	Near Zero
	Negligible/Not credible	Medium/Low Risk	Low Risk	Low Risk	Near Zero

The various risk rankings provide guidance for recommended actions, whether this is:

- AR - Action Required, Remediation or mitigation or site investigation works required
- SIR - Site Investigation Required, further assessment is required.
- NAR - No Action Required.

A description of the evaluated risk is as follows:

Table B.4 – Description of the Classified Risks and Likely Action Required	
Evaluated Risk	Recommended Actions
Very High Risk	AR: There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	AR: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	SI: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	NAR: It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild.
Near Zero	NAR: There is a negligible possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

MANAGEMENT OF CONTAMINATED LAND

When risk assessment of the site has been completed and this indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication CLR11 (2004) “Model Procedures for the Management of Land Contamination.” The stages of managing remediation are as follows:

- (a) Options Appraisal and develop Remediation Strategy;
- (b) Develop Implementation Plan and Verification Plan;
- (c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

GLOSSARY

TERMS		UNITS	
AST	Above Ground Storage Tank	m	Metres
BGS	British Geological Survey	km	Kilometres
BSI	British Standards Institute	%	Percent
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	% v/v	Percent volume in air
CIEH	Chartered Institute of Environmental Health	mb	Milli Bars (atmospheric pressure)
CIRIA	Construction Industry Research Association	l/hr	Litres per hour
CLEA	Contaminated Land Exposure Assessment	ha	Hectare (10,000 m ²)
CSM	Conceptual Site Model	µg/l	Micrograms per Litre (parts per billion)
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)	ppb	Parts Per Billion
DWS	Drinking Water Standard	mg/kg	Milligrams per kilogram (parts per million)
EA	Environment Agency	ppm	Parts Per Million
EQS	Environmental Quality Standard	mg/m ³	Milligram per metre cubed
GAC	General Assessment Criteria	Mg/m ³	Megagram per metre cubed
GL	Ground Level	µg/m ³	Microgram per metre cubed
GSV	Gas Screening Value	m bgl	Metres Below Ground Level
HCV	Health Criteria Value	m bcl	Metre Below Cover Level
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel)	mOD	Metres Above Ordnance Datum (sea level)
ND	Not Detected	kN/m ²	Kilo Newtons per metre squared
LMRL	Lower Method Reporting Limit	kPa	Kilo Pascal – same as kN/m ²
NR	Not Recorded	µm	Micro metre
OD	Ordnance Datum		
PAH	Poly Aromatic Hydrocarbon		
PCB	Poly-Chlorinated Biphenyl		
PID	Photo Ionisation Detector		
PCSM	Preliminary Conceptual Site Model		
SGV	Soil Guideline Value		
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)		
SPT	Standard Penetration Test		
SVOC	Semi Volatile Organic Compound		
UST	Underground Storage Tank		
VCCs	Vibro Concrete Columns		
VSCs	Vibro Stone Columns		
VOC	Volatile Organic Compound		

APPENDIX C

Site Photographs

LOCATION OF PHOTOGRAPHS



Photograph 1: Entrance onto site from Elmsley Road (northern boundary)



Photograph 2: Looking from entrance along western boundary



Photograph 3: Looking south from site entrance



Photograph 4: Looking east along northern boundary



Photograph 5: Looking south at current property



Photograph 6: Looking southeast



Photograph 7: Eastern part of existing building



Photograph 8: Looking east along rear of current property



Photograph 9: Looking north along eastern boundary from rear of property



Photograph 10: Looking south along eastern boundary





Photograph 11: Looking north along eastern boundary



Photograph 12: Looking northwest along eastern boundary

Photograph 13: Looking north from southern boundary



Photograph 14: Looking northwest from southern boundary



Photograph 15: Looking west towards Pool House



Photograph 16: Looking at Pool House



Photograph 17: Looking north within Pool House



Photograph 18: North end of Pool House showing area of Boiler and toilets



Photograph 19: Boiler area of Pool House



Photograph 20: Pipework relating to the swimming pool boiler



Photograph 21: Looking west towards shed with slate roof



Photograph 22: Inside brick shed



APPENDIX D

GroundSure EnviroInsite Report

(Historical Maps & Environmental Data on the Site and Surrounding Land Use)



Terra Consult

Bold Business Centre, Bold Lane,
Bold Lane,
Sutton, WA9 4TX

Groundsure
Reference:

HMD-147-3012763

Your Reference: 2872-PO15426

Report Date 1 Jun 2016

Report Delivery Method: Email - pdf

Groundsure Enviro Insight

Address: 10, ELMSLEY ROAD, LIVERPOOL, L18 8AZ

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

A handwritten signature in black ink, appearing to be "Andy O.", written in a cursive style.

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Groundsure Enviro Insight

Address: 10, ELMSLEY ROAD, LIVERPOOL, L18 8AZ

Date: 1 Jun 2016

Reference: HMD-147-3012763

Client: Terra Consult

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 24-Jun-2009

Grid Reference: 338927,387495

Site Size: 0.63ha

Report Reference: HMD-147-3012763

Client Reference: 2872-PO15426

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	8	49
1.2 Additional Information – Historical Tank Database	1	0	10	6
1.3 Additional Information – Historical Energy Features Database	0	2	14	27
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	7
1.6 Potentially Infilled Land	0	0	6	29

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	2
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHS sites	0	0	0	0
2.3 Environment Agency Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	1	5	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	2
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	3
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched
	On-site	0-50m	51-250	251-500	501-1000	1000-1500

Section 6: Hydrogeology and Hydrology		0-500m				
6.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	0	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding	
7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
7.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site	No
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Limited potential
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	2
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	2
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards	
9.1 What is the maximum risk of natural ground subsidence?	Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

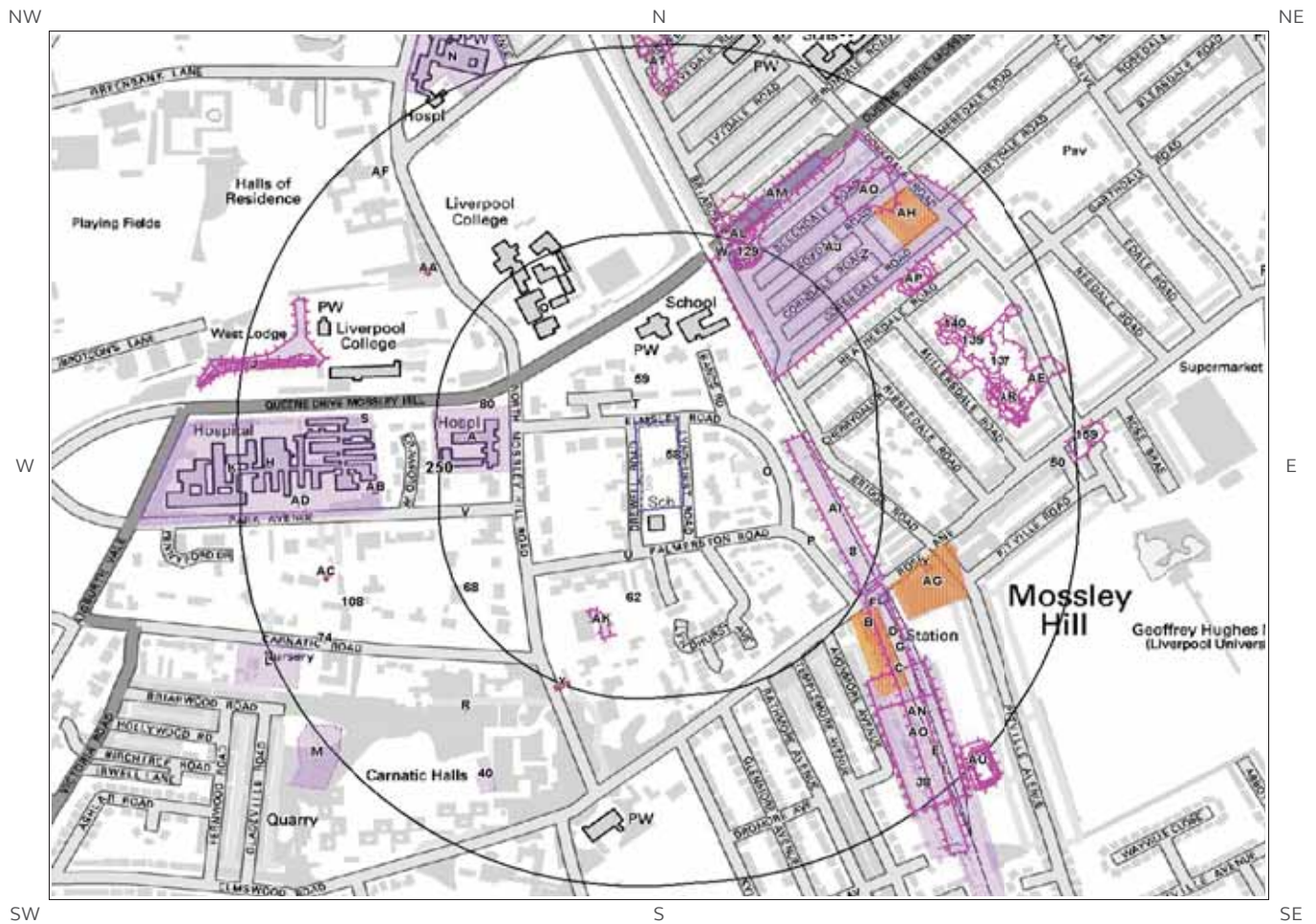
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

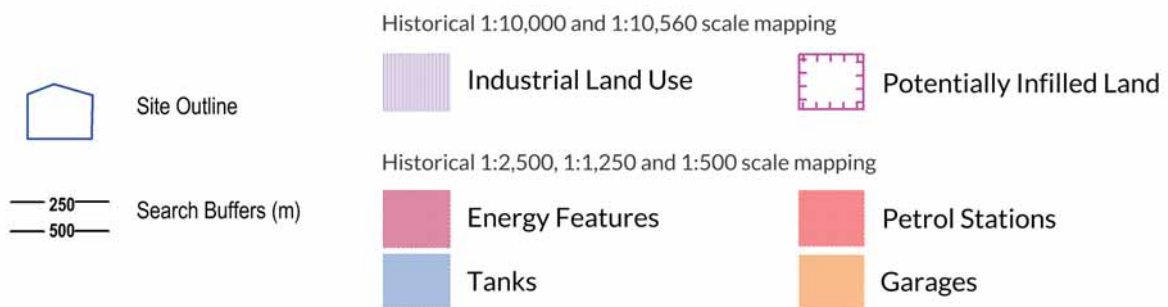
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 57

ID	Distance [m]	Direction	Use	Date
1AI	133	E	Cuttings	1851
2AJ	134	NE	Brick Works	1905
3AK	144	S	Unspecified Ground Workings	1956
4C	147	E	Railway Sidings	1938
5A	156	W	Hospitals	1989
6A	156	W	Hospitals	1987
7A	171	W	Hospital	1967
8	206	E	Railway Station	1851
9AM	251	N	Cuttings	1938
10AN	257	SE	Cuttings	1851
11B	260	SE	Railway Building	1956
12F	262	SE	Railway Building	1891
13B	264	SE	Railway Building	1967
14B	264	SE	Railway Building	1987
15C	265	SE	Railway Station	1925
16D	266	SE	Railway Station	1925
17D	267	SE	Railway Station	1938
18G	268	SE	Railway Station	1905
19D	269	SE	Railway Station	1956
20E	269	SE	Railway Sidings	1956
21E	270	SE	Railway Sidings	1925
22F	272	SE	Railway Station	1987
23F	272	SE	Railway Station	1967
24F	272	SE	Railway Station	1989
25B	279	SE	Railway Building	1905
26B	279	SE	Railway Building	1925
27AG	282	E	Carriage Works	1905
28G	307	SE	Railway Station	1891
29H	321	W	Hospital	1967
30H	321	W	Hospitals	1987
31H	321	W	Hospital	1956
32H	321	W	Hospitals	1989
33H	325	W	Hospital	1925

34AO	327	SE	Cuttings	1925
35I	336	SE	Railway Sidings	1967
36AQ	345	NE	Unspecified Pit	1905
37I	348	SE	Railway Sidings	1925
38	348	SE	Railway Sidings	1905
39E	363	SE	Cuttings	1905
40	378	SW	Laundry	1925
41AS	400	W	Unspecified Ground Workings	1956
42J	410	W	Unspecified Ground Workings	1938
43J	410	W	Unspecified Ground Workings	1938
44J	411	W	Unspecified Ground Workings	1925
45K	418	W	Hospital	1925
46K	418	W	Hospital	1938
47L	459	SW	Nursery	1989
48L	459	SW	Nursery	1987
49L	459	SW	Nursery	1967
50	465	E	Smithy	1905
51M	472	SW	Laundry	1925
52M	472	SW	Laundry	1905
53M	473	SW	Laundry	1938
54N	483	NW	Hospital	1956
55N	483	NW	Hospital	1967
56N	484	NW	Hospital	1987
57N	484	NW	Hospital	1989

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

17

ID	Distance (m)	Direction	Use	Date
58	0	On Site	Unspecified Tank	1908
59	51	N	Unspecified Tank	1908
60O	106	E	Unspecified Tank	1927
61O	106	E	Unspecified Tank	1908
62	118	S	Unspecified Tank	1893
63P	166	E	Unspecified Tank	1927
64P	166	E	Unspecified Tank	1893
65P	166	E	Unspecified Tank	1908

66Q	185	NW	Unspecified Tank	1908
67Q	185	NW	Unspecified Tank	1927
68	234	SW	Unspecified Tank	1893
69R	338	SW	Unspecified Tank	1968
70S	338	W	Unspecified Tank	1985
71R	338	SW	Unspecified Tank	1993
72S	338	W	Unspecified Tank	1971
73R	338	SW	Unspecified Tank	1979
74	429	SW	Unspecified Tank	1893

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

43

ID	Distance (m)	Direction	Use	Date
75T	18	N	Electricity Substation	1993
76T	19	N	Electricity Substation	1985
77U	63	S	Electricity Substation	1968
78U	65	S	Electricity Substation	1993
79U	65	S	Electricity Substation	1979
80	185	W	Electricity Substation	1993
81V	215	W	Electricity Substation	1993
82V	216	W	Electricity Substation	1968
83V	217	W	Electricity Substation	1979
84W	217	N	Electricity Substation	1990
85W	220	N	Electricity Substation	1978
86X	243	S	Electricity Substation	1953
87X	243	S	Electricity Substation	1953
88X	243	S	Electricity Substation	1968
89X	244	S	Electricity Substation	1993
90X	244	S	Electricity Substation	1979
91Y	306	E	Electricity Substation	1952
92Y	307	E	Electricity Substation	1967
93Y	307	E	Electricity Substation	1952
94Y	307	E	Electricity Substation	1981
95Y	307	E	Electricity Substation	1990
96Z	317	NE	Electricity Substation	1990
97Z	317	NE	Electricity Substation	1978
98AA	324	NW	Electricity Substation	1993
99AA	324	NW	Electricity Substation	1985
100AA	325	NW	Electricity Substation	1953

101AA	325	NW	Electricity Substation	1953
102AA	325	NW	Electricity Substation	1971
103AB	328	W	Electricity Substation	1953
104AB	328	W	Electricity Substation	1993
105AB	328	W	Electricity Substation	1953
106AB	328	W	Electricity Substation	1968
107AB	329	W	Electricity Substation	1979
108	379	W	Electricity Substation	1993
109AC	397	W	Electricity Substation	1979
110AC	397	W	Electricity Substation	1993
111AD	424	W	Gas Governor	1989
112AD	426	W	Gas Governor	1997
113AE	453	E	Electricity Substation	1990
114AE	455	E	Electricity Substation	1978
115AF	456	NW	Electricity Substation	1985
116AF	457	NW	Electricity Substation	1971
117AF	457	NW	Electricity Substation	1993

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 7

ID	Distance (m)	Direction	Use	Date
118G	254	SE	Garage	1981
119B	260	SE	Garage	1952
120B	260	SE	Garage	1967
121B	261	SE	Garage	1952
122AG	280	E	Carriage Works	1908
123AH	367	NE	Garage	1952
124AH	367	NE	Garage	1952

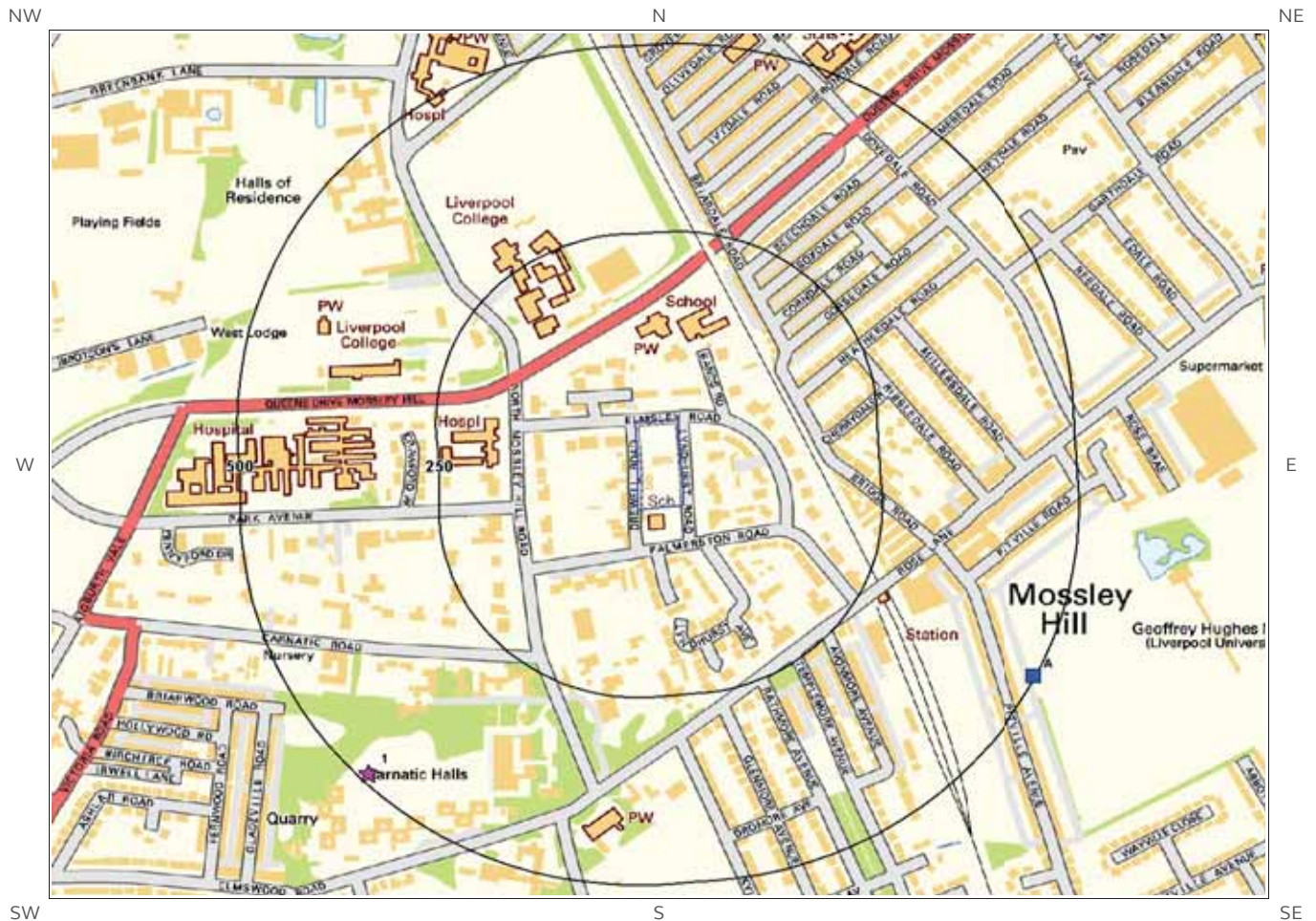
1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 35

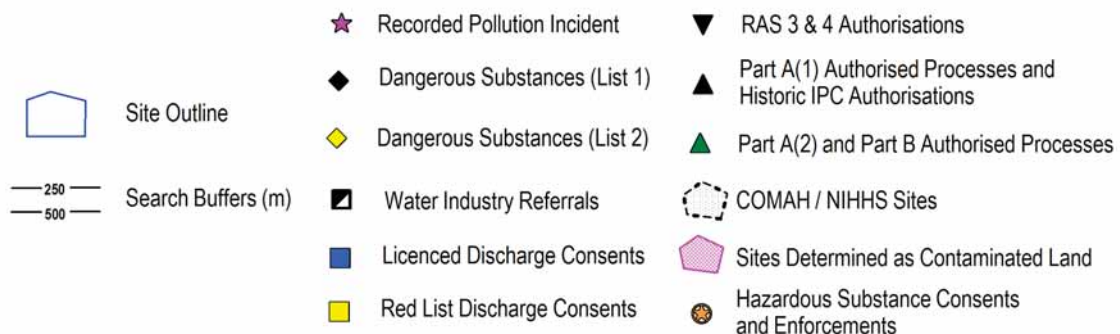
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
125AI	133	E	Cuttings	1851
126AJ	134	NE	Brick Works	1905
127AK	144	S	Unspecified Ground Workings	1956
128AL	215	N	Ponds	1891
129	219	N	Pond	1905
130AL	227	N	Ponds	1851
131AM	251	N	Cuttings	1938
132AN	257	SE	Cuttings	1851
133AP	327	NE	Pond	1891
134AO	327	SE	Cuttings	1925
135AP	333	NE	Pond	1905
136AP	340	NE	Pond	1851
137	345	E	Ponds	1891
138AQ	345	NE	Unspecified Pit	1905
139	351	E	Ponds	1905
140	351	E	Pond	1851
141E	363	SE	Cuttings	1905
142AR	391	E	Ponds	1851
143AR	396	E	Pond	1925
144AR	396	E	Pond	1905
145AR	396	E	Pond	1925
146AS	400	W	Unspecified Ground Workings	1956
147J	410	W	Unspecified Ground Workings	1938
148J	410	W	Unspecified Ground Workings	1938
149J	411	W	Unspecified Ground Workings	1925
150AT	433	N	Pond	1891
151AE	433	E	Pond	1905
152AT	445	N	Pond	1851
153AU	474	SE	Pond	1851
154AU	486	SE	Pond	1925
155AU	488	SE	Pond	1925
156AU	488	SE	Pond	1905
157AU	488	SE	Pond	1891
158AU	489	SE	Pond	1938
159	492	E	Pond	1851

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

2

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
2A	496	SE	339400 387200	<p>Address: SPS HERCULANEUM DOCK, SOUTH DOCKS, LIVERPOOL, MERSEYSIDE</p> <p>Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES</p> <p>Permit Number: 016991104</p> <p>Permit Version: 1</p> <p>Receiving Water: Status: REVOKED - UNSPECIFIED</p> <p>Issue date: -</p> <p>Effective Date: Revocation Date: 10/03/1987</p>
3A	496	SE	339400 387200	<p>Address: SPS HERCULANEUM DOCK, SOUTH DOCKS, LIVERPOOL, MERSEYSIDE</p> <p>Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Permit Number: 016991104</p> <p>Permit Version: 2</p> <p>Receiving Water: Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY)</p> <p>Issue date: -</p> <p>Effective Date: 11-Mar-1987</p> <p>Revocation Date: -</p>

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	489	SW	338560 387070	Incident Date: 14-Aug-2001 Incident Identification: 24004 Pollutant: Inorganic Chemicals/Products Pollutant Description: Acids Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

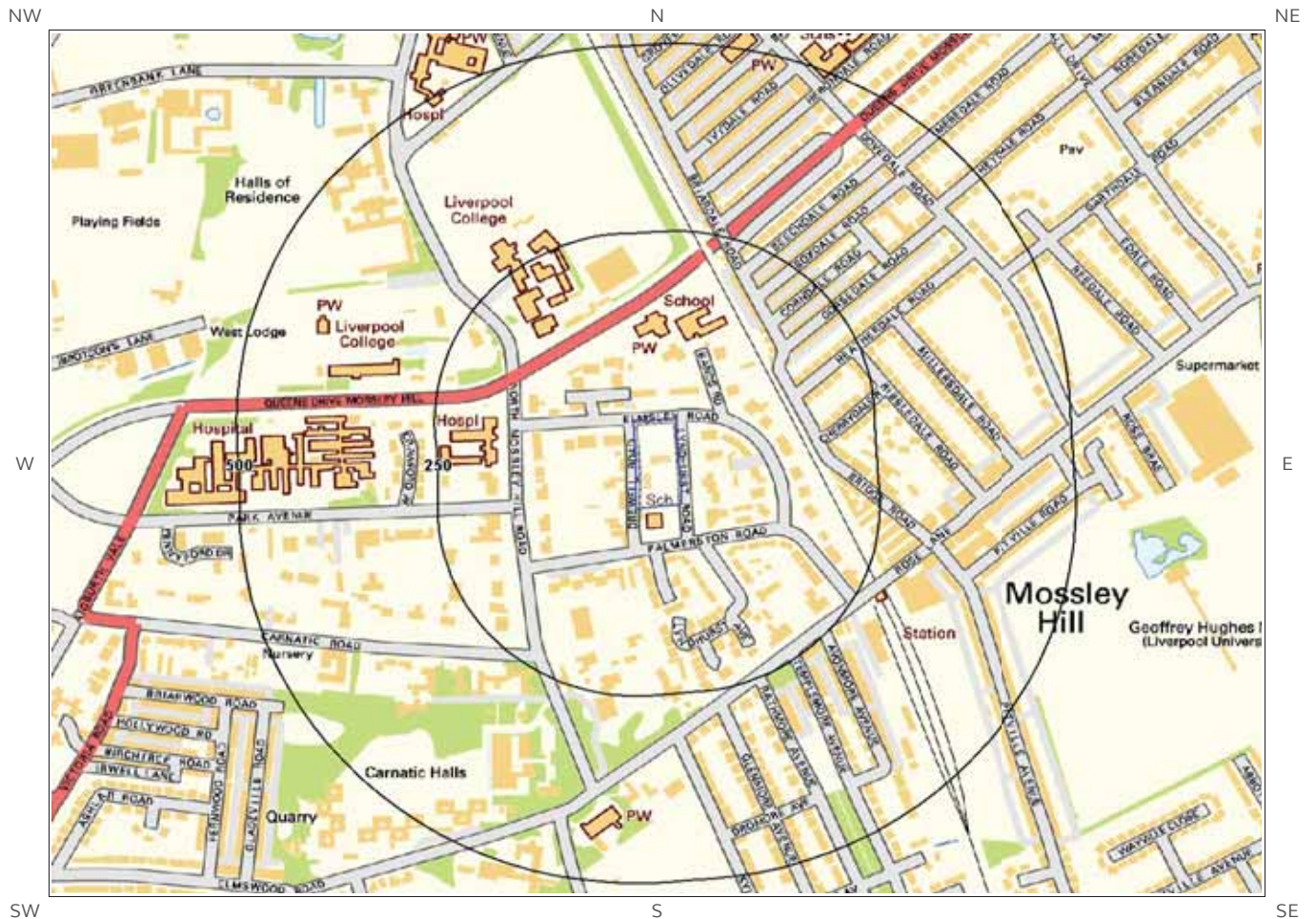
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

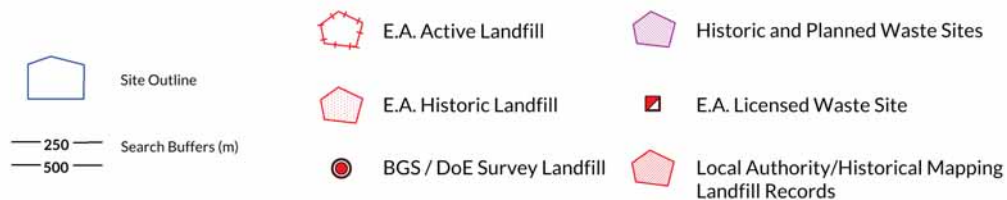
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

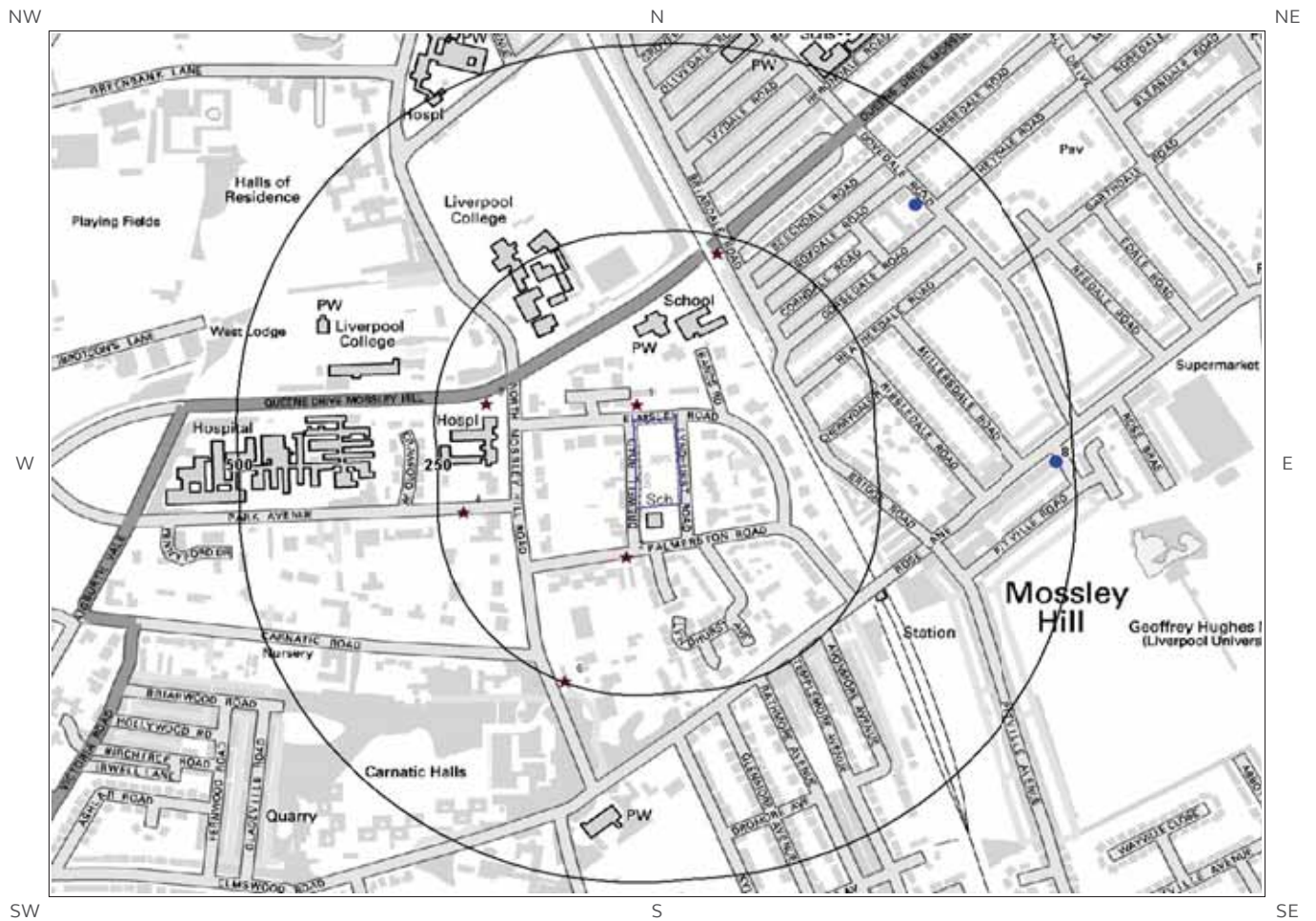
Database searched and no data found.

3.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

6

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	21	N	Electricity Sub Station	338901 387559	L18	Electrical Features	Infrastructure and Facilities
2	66	S	Electricity Sub Station	338888 387356	L18	Electrical Features	Infrastructure and Facilities
3	187	W	Electricity Sub Station	338710 387560	L18	Electrical Features	Infrastructure and Facilities
4	218	W	Electricity Sub Station	338682 387416	L18	Electrical Features	Infrastructure and Facilities
5	226	N	Electricity Sub Station	339002 387761	L18	Electrical Features	Infrastructure and Facilities
6	248	S	Electricity Sub Station	338810 387190	L18	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
7	415	NE	339252 387826	Texaco	Petrol Express Mossley Hill, 56-74, Dovedale Road, Dovedale Road, Mossley Hill, Liverpool, Merseyside, L18 5ER	Not Applicable	Obsolete
8	478	E	339433 387483	Texaco	Rose Lane Filling Station, 6A, Rose Lane, Rose Lane, Pitville Road, Mossley Hill, Liverpool, Merseyside, L18 5ED	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site:

0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD	TILL, DEVENSIAN	DIAMICTON
TILLD	TILL, DEVENSIAN	CLAY, SANDY, GRAVELLY, COBBLY [UNLITHIFIED DEPOSITS CODING SCHEME]
SSA	SHIRDLEY HILL SAND FORMATION	SAND [UNLITHIFIED DEPOSITS CODING SCHEME]

5.3 Bedrock and Solid Geology

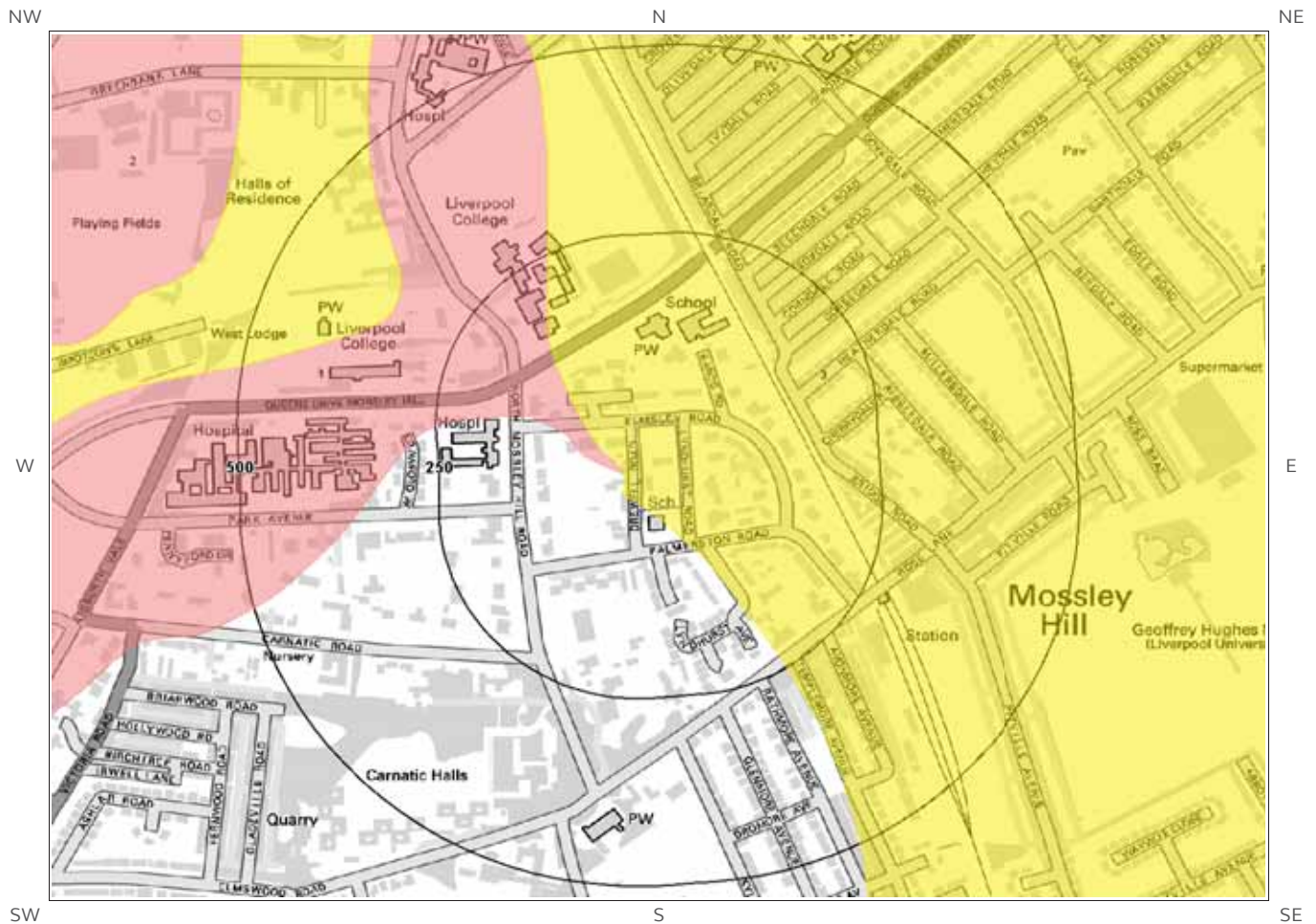
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
CPB-PESST	CHESTER PEBBLE BEDS FORMATION	SANDSTONE, PEBBLY (GRAVELLY)
CPB-PESST	CHESTER PEBBLE BEDS FORMATION	SANDSTONE, PEBBLY (GRAVELLY)

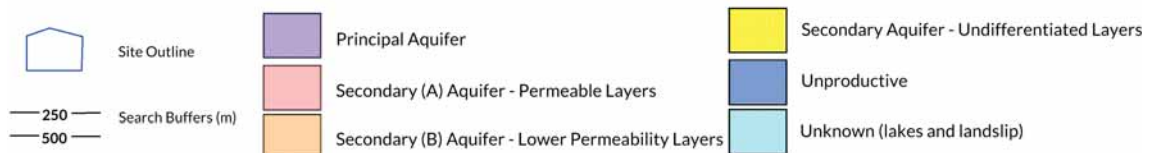
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

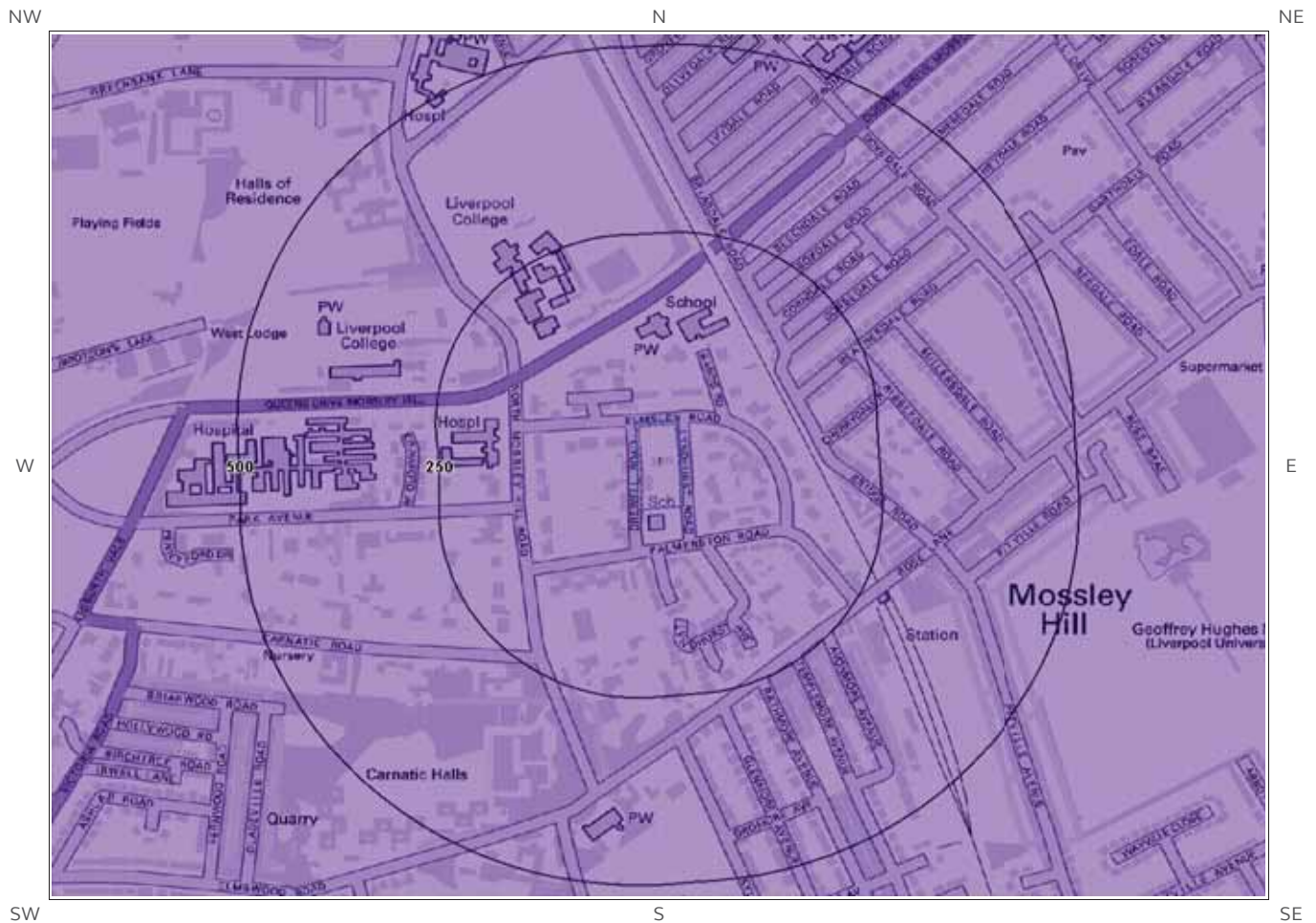
6a. Aquifer Within Superficial Geology



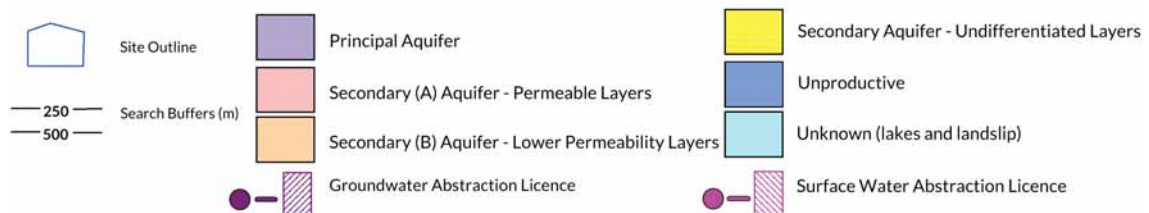
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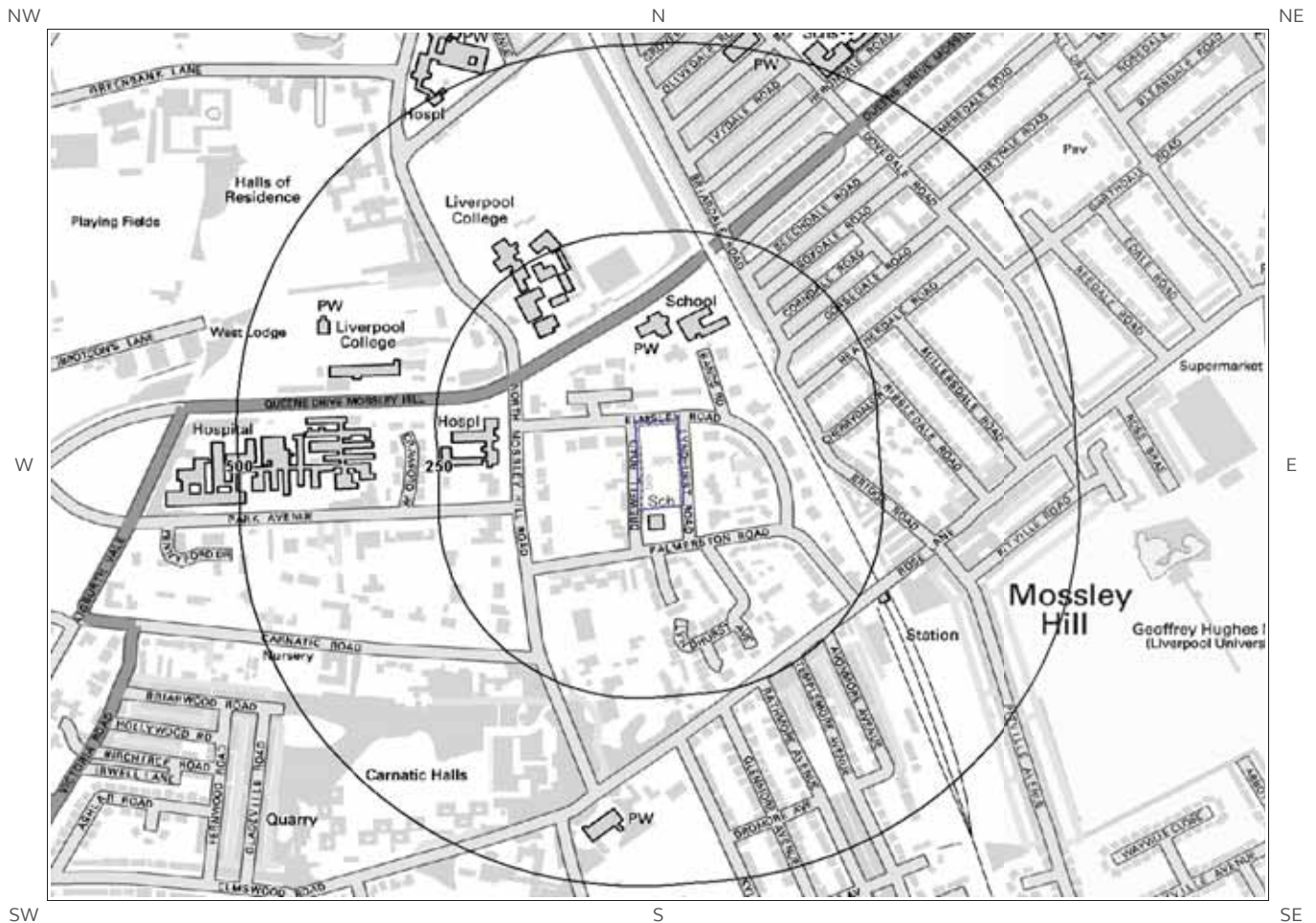
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



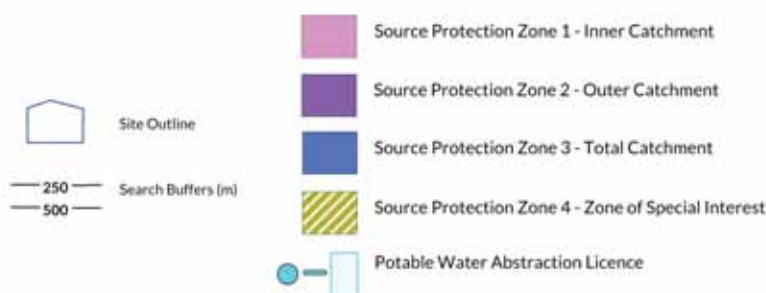
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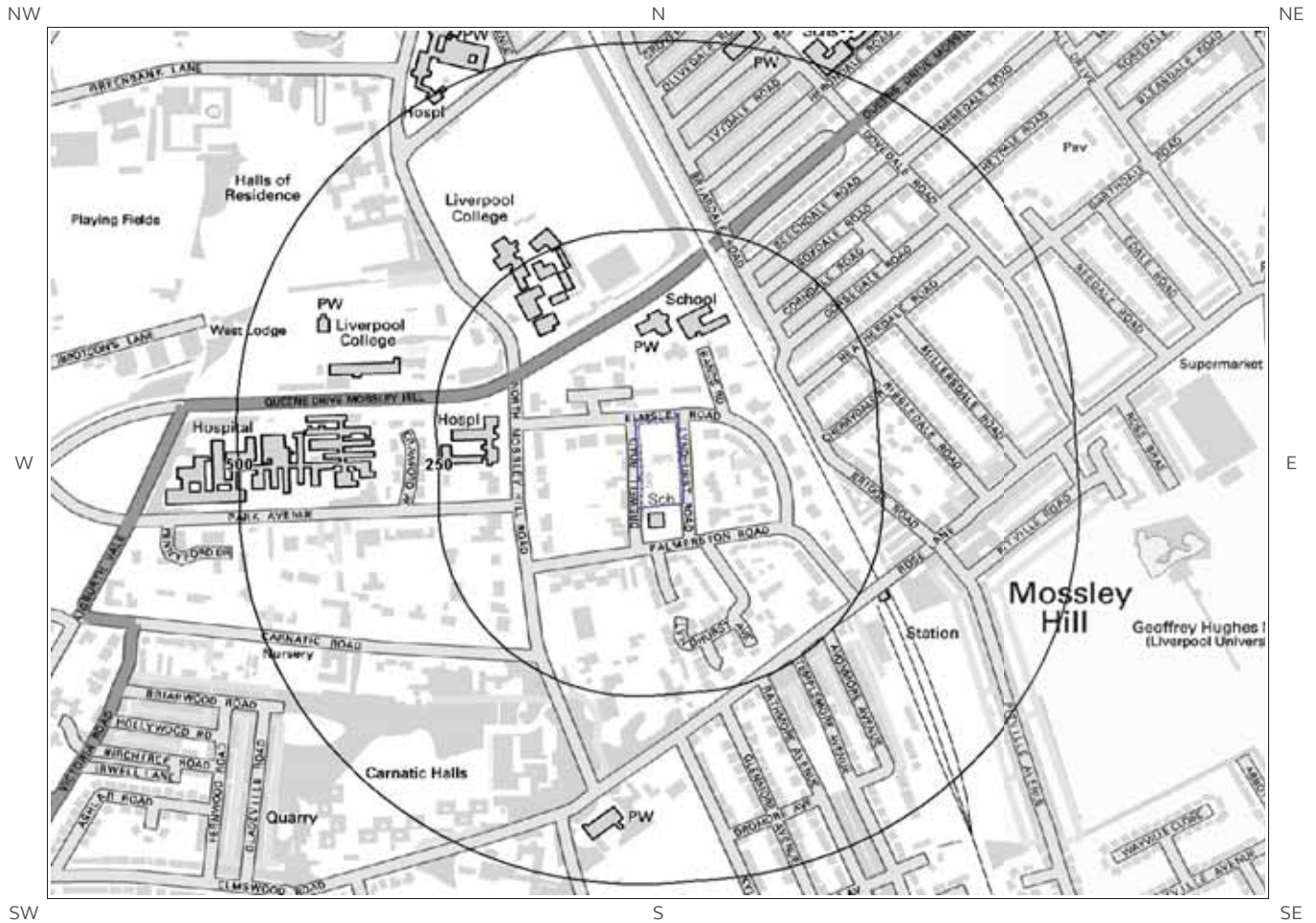
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



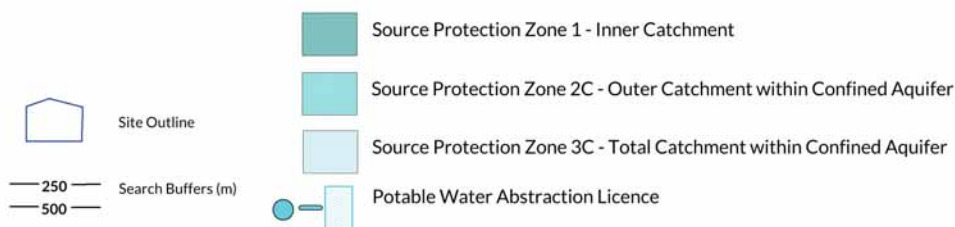
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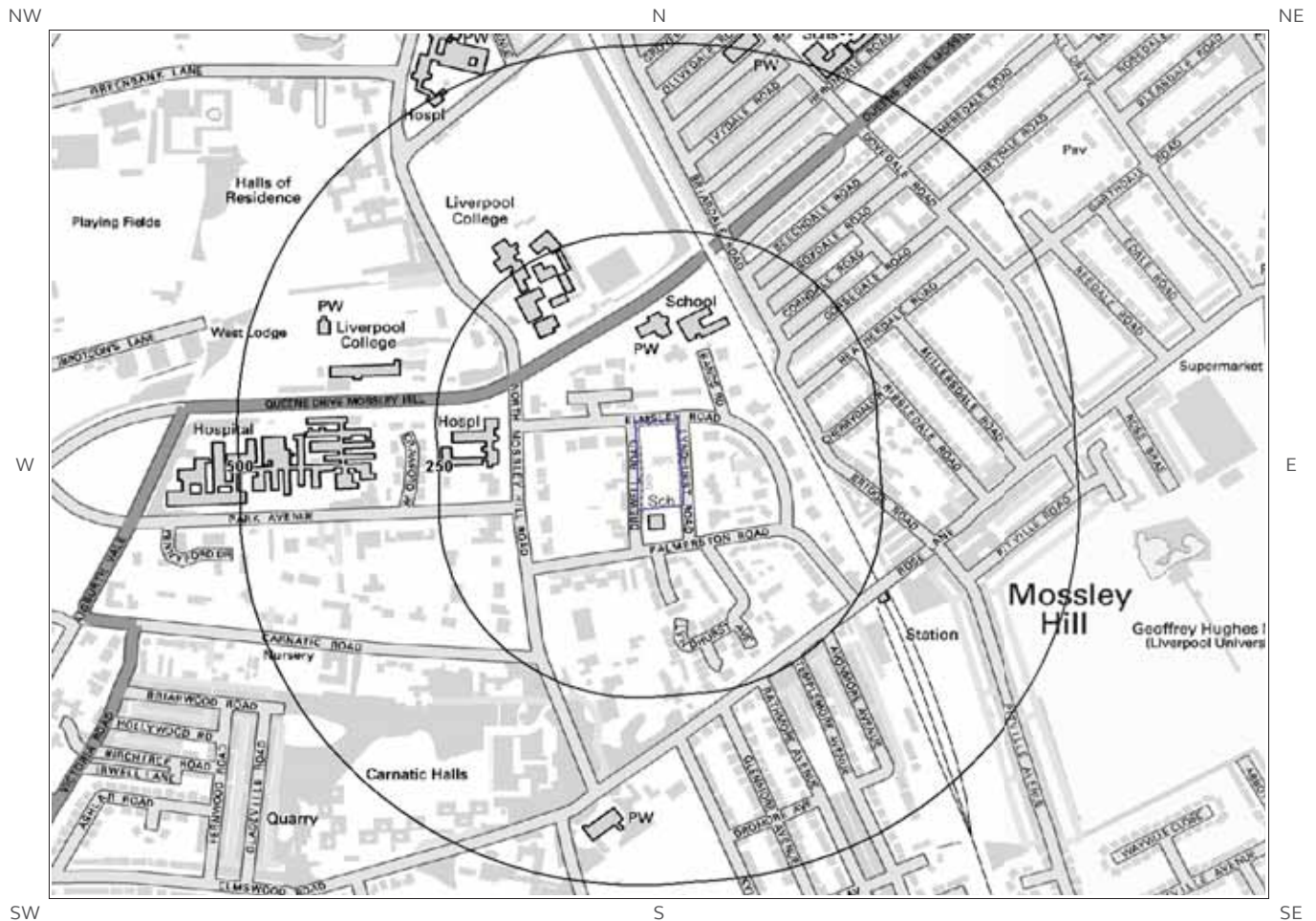
6d. Hydrogeology – Source Protection Zones within confined aquifer



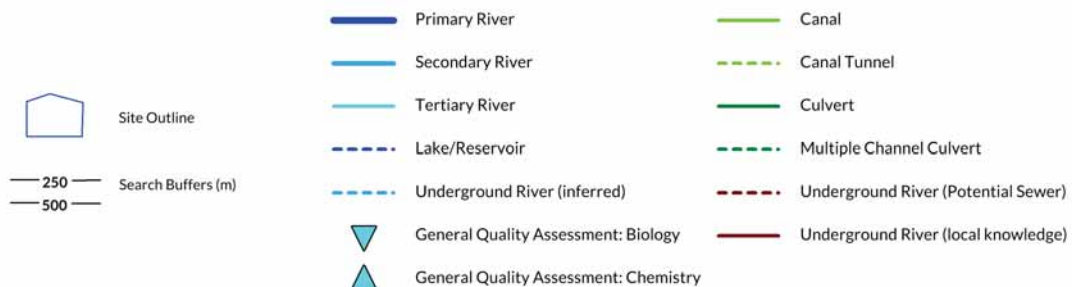
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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	18	W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1329	NW	337776 388253	Status: Active Licence No: 2569030070R01 Details: Lake & Pond Throughflow Direct Source: Ground Water - North West Region Point: Borehole At Sefton Park, Liverpool Data Type: Point Name: LIVERPOOL CITY COUNCIL Annual Volume (m³): 300000 Max Daily Volume (m³): 1296 Original Application No: NPS/WR/016550 Original Start Date: - Expiry Date: 22/12/2019 Issue No: 1 Version Start Date: 23/12/2014 Version End Date:
Not shown	1329	NW	337776 388253	Status: Historical Licence No: 2569030070 Details: Lake & Pond Throughflow Direct Source: Ground Water - North West Region Point: Borehole At Sefton Park, Liverpool Data Type: Point Name: LIVERPOOL CITY COUNCIL Annual Volume (m³): 473040 Max Daily Volume (m³): 1296 Original Application No: S7620 Original Start Date: 22/12/2008 Expiry Date: 22/12/2014 Issue No: 1 Version Start Date: 22/12/2008 Version End Date:
Not shown	1638	NE	340200 388600	Status: Historical Licence No: 2569030038 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: 1 Well & 2 B/holes Each At Green La & Dudlow La, L'pool \$212 Data Type: Point Name: NORTH WEST WATER LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 550 Original Start Date: 4/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 4/3/1966 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site?

Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details
Not shown	1638	NE	340200 388600	Status: Historical Licence No: 2569030038 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: 1 Well & 2 B/holes Each At Green La & Dudlow La, L'pool \$212 Data Type: Point Name: NORTH WEST WATER LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 550 Original Start Date: 4/3/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? No

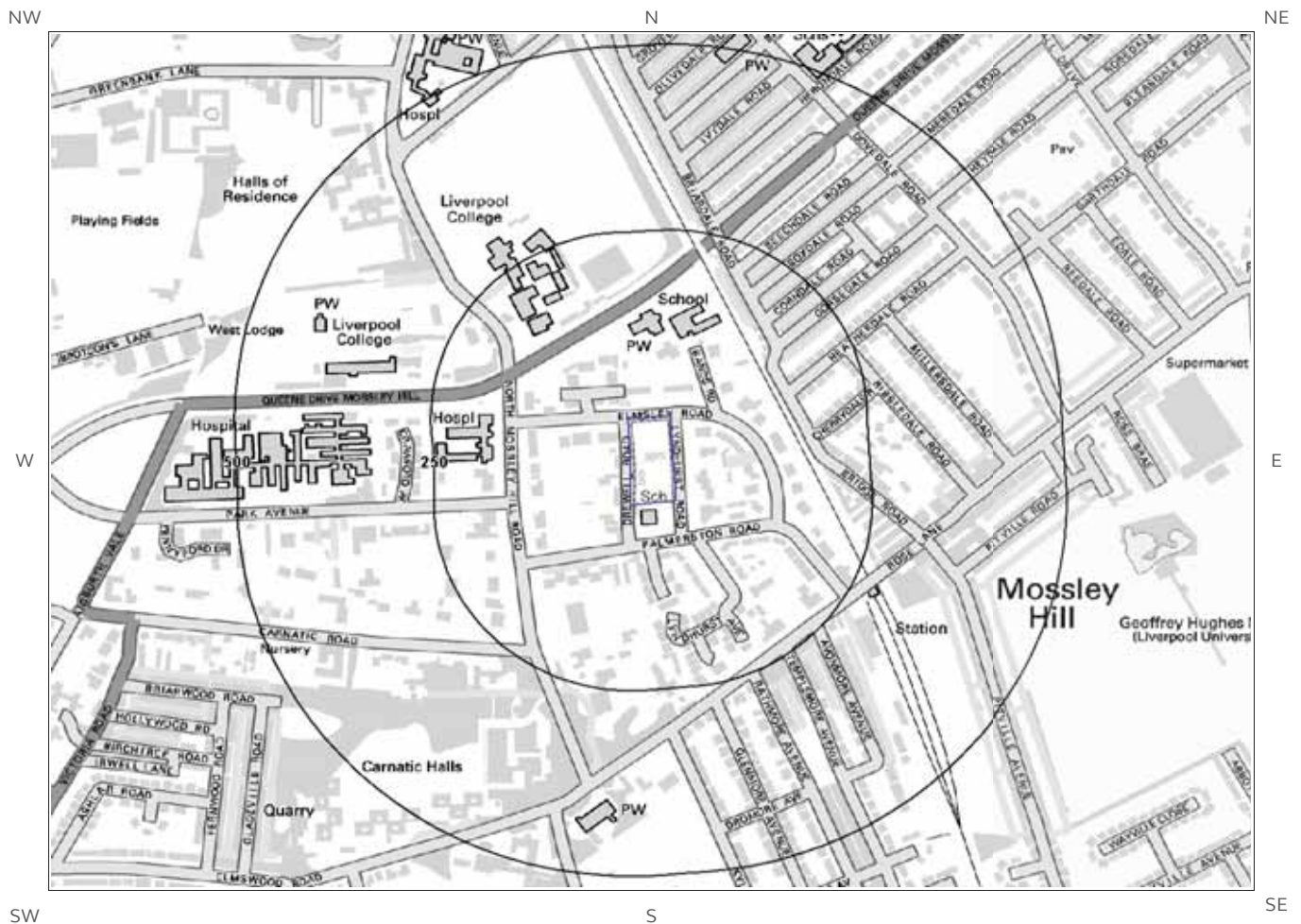
Database searched and no data found.

6.11 Surface Water Features

Are there any surface water features within 250m of the study site? No

Database searched and no data found.

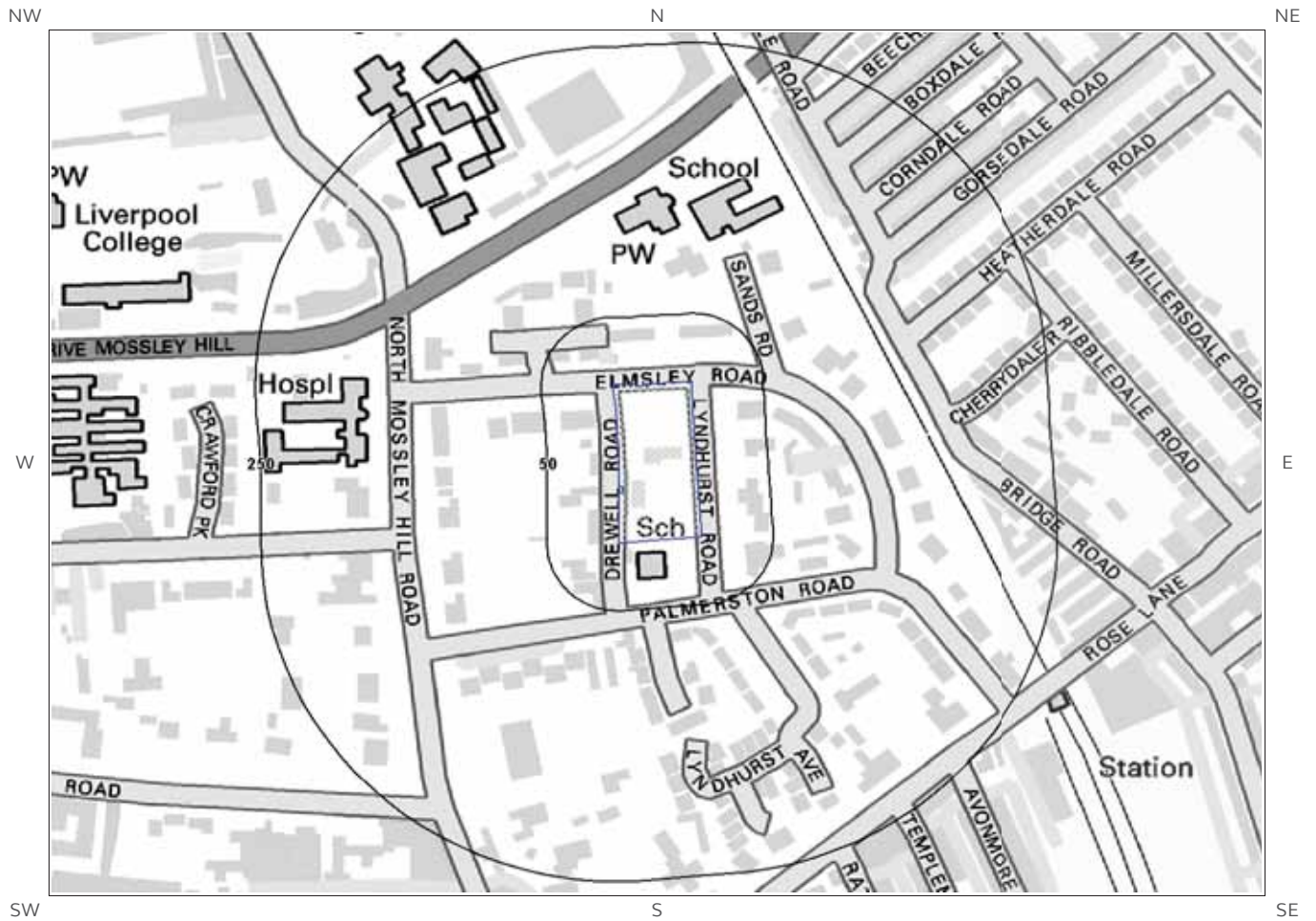
7a. Environment Agency Flood Map for Planning (from rivers and the sea)



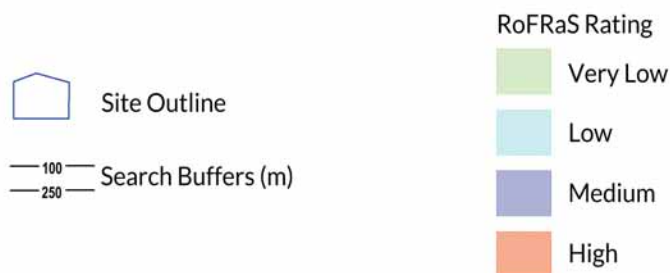
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7b. Environment Agency Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency Zone 2 floodplain? No

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site?

No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding?

Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

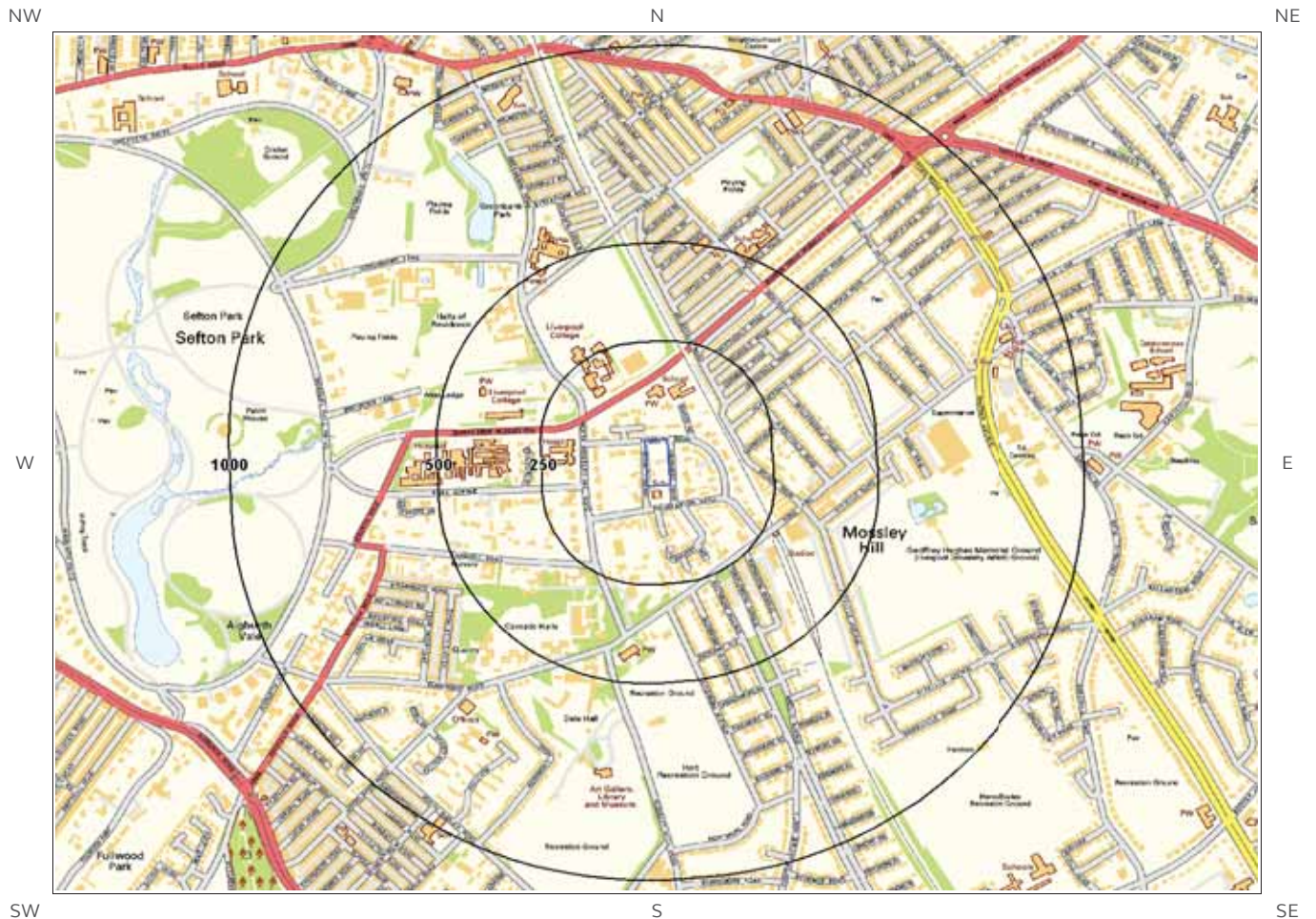
What is the British Geological Survey confidence rating in this result?

Low

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?
 Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

2

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
3	1258	SW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1646	SW	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

2

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
Not shown	1373	NE	Existing	DEFRA
Not shown	1491	NE	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our [website](#). The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build Ö consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property Ö no significant increase in insurance risk due to running sand problems is likely.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing

ones as described in publication BR211 by the Building Research Establishment?

No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com



British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 08708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk



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www.gov.uk/phe
Email: enquiries@phe.gov.uk
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DX 716176 Mansfield 5
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Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505



Local Authority
Authority: Liverpool City Council
Phone: 0151 233 3000
Web: <http://www.liverpool.gov.uk/>
Address: Municipal Buildings, Dale Street, Liverpool, L2 2DH

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

“Beneficiary” means the person or entity for whose benefit the Client has obtained the Services.

“Client” means the party or parties entering into a Contract with Groundsure.

“Commercial” means any building or property which is not Residential.

“Confidential Information” means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by Groundsure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

“Support Services” means Support Services provided by Groundsure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

“Contract” means the contract between Groundsure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

“Third Party Data Provider” means any third party providing Third Party Content to Groundsure.

“Data Reports” means reports comprising factual data with no accompanying interpretation.

“Fees” has the meaning set out in clause 5.1.

“Groundsure” means Groundsure Limited, a company registered in England and Wales under number 03421028.

“Groundsure Materials” means all materials prepared by Groundsure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

“Intellectual Property” means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

“Mapping” means a map, map data or a combination of historical maps of various ages, time periods and scales.

“Order” means an electronic, written or other order form submitted by the Client requesting Services from Groundsure in respect of a specified Site.

“Ordnance Survey” means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

“Order Website” means the online platform through which Orders may be placed by the Client and accepted by Groundsure.

“Report” means a Risk Screening Report or Data Report for Commercial or Residential property.

“Residential” means any building or property used as or intended to be used as a single dwelling.

“Risk Screening Report” means a risk screening report comprising factual data with an accompanying interpretation by Groundsure.

“Services” means any Report, Mapping and/or Support Services which Groundsure has agreed to provide by accepting an Order pursuant to clause 2.6.

“Site” means the area of land in respect of which the Client has requested Groundsure to provide the Services.

“Third Party Content” means data, database information or other information which is provided to Groundsure by a Third Party Data Provider.

“User Guide” means the user guide, as amended from time to time, available upon request from Groundsure and on the website (www.Groundsure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 Groundsure agrees to provide the Services in accordance with the Contract.

2.2 Groundsure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of Groundsure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on a Client’s order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, Groundsure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and Groundsure will have no liability therefor. In addition you acknowledge and agree that Groundsure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 Groundsure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by Groundsure. Groundsure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by Groundsure. Groundsure's acceptance of an Order shall be binding only when made in writing and signed by Groundsure's authorised representative or when accepted through the Order Website.

3 The Client’s obligations

3.1 The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to Groundsure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.

3.3 The Client shall supply to Groundsure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as Groundsure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client's approval or decision is required to enable Groundsure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the Groundsure Materials, or use the Groundsure Materials in a manner for which they were not intended. The Client may make the Groundsure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that Groundsure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

4 Reliance

4.1 The Client acknowledges that the Services provided by Groundsure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by Groundsure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;

- (i) the Beneficiary,
- (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),
- (iv) the first purchaser or first tenant of the Site, and
- (v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by Groundsure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1 Groundsure shall charge and the Client shall pay fees at the rate and

frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by Groundsure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together "Fees").

5.2 The Client shall pay all outstanding Fees to Groundsure in full without deduction, counterclaim or set off within 30 days of the date of Groundsure's invoice or such other period as may be agreed in writing between Groundsure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of Groundsure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to

(i) full payment of all relevant Fees and

(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the Groundsure Materials.

6.2 All Intellectual Property in the Groundsure Materials are and shall remain owned by Groundsure or Groundsure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the Groundsure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to Groundsure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the Groundsure Materials in order to advise the Beneficiary in a professional capacity. However, Groundsure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify Groundsure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7.Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of Groundsure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by Groundsure or its employees, agents or

subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 Groundsure shall not be liable for

(i) loss of profits;

(ii) loss of business;

(iii) depletion of goodwill and/or similar losses;

(iv) loss of anticipated savings;

(v) loss of goods;

(vi) loss of contract;

(vii) loss of use;

(viii) loss or corruption of data or information;

(ix) business interruption;

(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;

(xi) loss or damage that arise as a result of the use of all or part of the Groundsure Materials in breach of the Contract;

(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the Groundsure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;

(xiii) loss or damage to a computer, software, modem, telephone or other property; and

(xiv) loss or damage caused by a delay or loss of use of Groundsure's internet ordering service.

7.5 Groundsure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 Groundsure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of Groundsure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against Groundsure in relation to the Services or other matters arising pursuant to the Contract.

8 Groundsure's right to suspend or terminate

8.1 If Groundsure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, Groundsure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 Groundsure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to Groundsure within 30 days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon Groundsure's acceptance of the Order; and

(ii) the Reports and/or Mapping provided under this Contract are

- (a) supplied to the Client's specification(s) and in any event
- (b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) Groundsure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in Groundsure's possession or control; and

(ii) the Client shall pay to Groundsure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay Groundsure any additional costs incurred in relation to the termination or suspension of the Contract.

11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of Groundsure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to Groundsure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through Groundsure.

12.3 Groundsure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of Groundsure.

12.4 No failure on the part of Groundsure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 Groundsure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

(i) the Client or Beneficiary's failure to provide facilities, access or information;

(ii) fire, storm, flood, tempest or epidemic;

(iii) Acts of God or the public enemy;

(iv) riot, civil commotion or war;

(v) strikes, labour disputes or industrial action;

(vi) acts or regulations of any governmental or other agency;

(vii) suspension or delay of services at public registries by Third Party Data Providers;

(viii) changes in law; or

(ix) any other reason beyond Groundsure's reasonable control.

In the event that Groundsure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then Groundsure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 Groundsure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at Groundsure who will respond in a timely manner. In the event you are not satisfied with Groundsure's complaints handling process or you are unable to resolve the complaint, at your discretion you may refer the complaint to The Property Ombudsman Scheme at the following URL/email: website www.tpos.co.uk or email: admin@tpos.co.uk

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law. © Groundsure Limited June 2013