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PROSPERITY CAPITAL PARTNERS LTD

THE OLD BREWERY GARDENS, MANCHESTER

PHASE 1 DESK STUDY – CONTAMINATED LAND ASSESSMENT

DECEMBER 2017

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DECEMBER 2017

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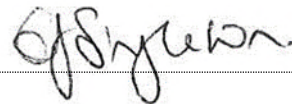
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1 EXECUTIVE SUMMARY

- 1.1 This report is part of a suite of documents that supports the full planning application by Prosperity Capital Partners Ltd, for a commercial and residential development of land identified as The Old Brewery Gardens, Manchester. The 1.38 hectare (ha) site is located to the north of Manchester Victoria Station and Manchester Arena and is within the administrative area of Manchester City Council (MCC).
- 1.2 The full planning application is for the comprehensive redevelopment of land identified as The Old Brewery Gardens, Manchester as a commercial and residential scheme, engineering works and the construction of new buildings and structures to provide:
- Approximately 556 units, 3,500 sq. m. of commercial floorspace; and
 - Accommodation is within building heights ranging between 10 and 15 storeys (blocks B to E) and another element to the north (block A), which is part 23 and part 26.
- 1.3 A summary of pertinent information relating to the site along with a qualitative assessment of the potential risk is provided in Table 1.

TABLE 1: Summary of Overall Risk			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Present and past site use	Current: car parking and scrubland with small office building. Past: timber yard, school, factories, brewery, motor works, iron works, clothing manufacturer.	Low/ Moderate	Low/ Moderate
Adjacent land uses	Current: warehouses, hotel, car parking, derelict buildings, arena, railway station. Past: factories, works, fuel stations.	Moderate	Moderate
Environmental setting	Various discharge consents, controls, enforcements and prosecutions within 1km of the site.	Low	Low
Asbestos	Asbestos containing material tentatively identified on site.	Moderate/ High	Moderate
Unexploded Ordnance	The site is within an area of medium risk.	Moderate	Moderate

TABLE 1: Summary of Overall Risk			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Geology, Mining and Geotechnical	Historic surface workings on and adjacent to site. No underground workings or coal mining. Presence of made ground on site may give risk to ground gas. Risk of potentially infilled land on site. A fault runs beneath the site.	Low	Low/ Moderate
Groundwater and surface water	The site is not in a source protection zone. Nearest graded watercourse is 171m east of site. Groundwater abstraction wells associated with the brewery on and immediately adjacent to site, which may or may not have been decommissioned.	Low	Low/ Moderate
Flooding	Western area of site is within flood zone 2. North part of site has a potential for groundwater flooding of property situated below ground level. 1% chance of surface water flooding on site in any one year.	Low/ Moderate	Moderate
Recommended further work	Prior to any intrusive site investigation and development, it would be advisable to seek advice from an unexploded ordnance specialist. Prior to any development works we recommend that a full asbestos survey be carried out at the site. Prior to any development works a geo-environmental and geotechnical site investigation should be undertaken.		
Overall Risk:	Low to Moderate/High		

- 1.4 The executive summary forms part of the overall report and should not be considered in isolation.

2 INTRODUCTION

Instructions

- 2.1 Wardell Armstrong has been instructed by Prosperity Capital Partners Ltd to undertake a contaminated land assessment to support a full planning application for commercial and residential development for the area of land identified as The Old Brewery Gardens, Manchester.

Site Location

- 2.2 The site is identified as The Old Brewery Gardens, Manchester and is located north of Manchester Victoria Station and Manchester Arena and wholly located in the administrative area of Manchester City Council (MCC). The site is approximately rectangular in shape and comprises two car parks, some scrubland areas, a ticket booth in the east of the site and an office building in the north of the site. The site levels vary greatly across the site with the higher levels in the east. The site is located as shown on Figure 1.

Figure 1: Aerial Image Showing the Approximate Site Boundary



Reproduced from Landmark Information Group

Scope and Objectives

- 2.3 The purpose of this report is to identify and examine in broad terms readily available information relating to the:
- past and current uses of the site and surrounding area;
 - environmental setting including geology, mining, hydrogeology and hydrology;
 - potential contamination sources, pathways and receptors as part of a preliminary conceptual model;
 - potential stability and contamination constraints and liabilities that may arise in connection with the present use or proposed use of the site; and
 - requirement or otherwise for future studies including potential intrusive site investigation prior to redevelopment.
- 2.4 The report has been produced in general accordance with the first incremental stage of a Land Quality Statement as set out by the Royal Institution of Chartered Surveyors (RICS) in their publication "Contamination, the Environment and Sustainability" dated April 2010. The report also draws on Environment Agency Report 11 entitled "Model Procedures for the Management of Land Contamination" dated September 2004. Further background to government guidance on contamination and the purpose and use of Land Quality Statements in assessing the risk of contamination at a site is described at Appendix 2.
- 2.5 This report has been prepared to support a full planning application for the redevelopment of the site. The report does not constitute or contain a valuation nor is it a full rigorous environmental audit which is not required for planning purposes.

Proposed Development

- 2.6 It is proposed that the site is redeveloped for residential and commercial end use. The full planning permission is for the following:
- Approximately 556 units, 3,500 sq. m. of commercial floorspace; and
 - Accommodation is within building heights ranging between 10 and 15 storeys (blocks B to E) and another element to the north (block A), which is part 23 and part 26.

3 SITE HISTORY AND CURRENT LAND USE

Data Sources

- 3.1 The history of the site and the surrounding land has been investigated by consultation with a range of archive sources as summarised at Appendix 3. Wardell Armstrong consulted with MCC Environmental Health Department and the Environment Agency regarding any available information in relation to environmental issues at the site and responses have been received from both. The topographical and environmental data is based primarily on an Envirocheck report prepared by the Landmark Information Group and dated 26 September 2017.

Site History

- 3.2 Historic maps provided in the Envirocheck report have been used to identify previous land uses, including any significant potentially contaminative uses. Where other features that may have an effect on development of the site have been identified, they are described.
- 3.3 Table 2 summarises the history of the site and its immediate vicinity from about 1848 to the present day.

TABLE 2: Summary of Land Use		
Date	Site Land Use	Adjacent Land Use
1840s -1850s	Brewery and print works buildings in west of the site. Terraced housing at the southwest corner of the site. There is a timber yard in the eastern part of the site. Northeast part of the site is building free. School in the southeast corner of the site.	Brewery, print works buildings and terraced housing adjacent to west of site. Timber yard adjacent to northwest of site. Open land and brick field adjacent to northern and eastern boundaries. A church and terraced housing adjacent to eastern site boundary. New Bridge Street adjacent to southern site boundary with a workhouse on the opposite side of the road. Victoria Station approximately 105m south of site. River Irwell runs southwards approximately 200m to southwest and west of site at nearest point. River Irk runs southwards approximately 170m to east of site.
1860s-1880s	No coverage	No coverage

TABLE 2: Summary of Land Use		
Date	Site Land Use	Adjacent Land Use
1890s -1900s	Terraced housing replaces the timber yard in the east of site. An iron works is present in the north of site. A hat works is present in the northeast of site. Print works in west of site is now a cotton works. A box works is present in the northwest of site. Eight chimneys present across site associated with various works buildings. Carriage works present in south of site.	Print works now a cotton works. Dutton Street adjacent to eastern site boundary. Open land and brick fields to north and east of site now contains works buildings on eastern side of Dutton Street. Works building adjacent to north boundary of site. Timber yard adjacent to northwest of site now a boy's refuge. Prison approximately 145m north of site. Church to east of site now a YMCA. Victoria Station expanded with more railway tracks and larger station building.
1910s	No coverage.	No coverage.
1920s-1930s	Waterproof clothing factories in north and west of site. School in southeast of site is no longer present. Unidentified buildings in southeast corner of site. Hat works factory in the northeast corner of site is no longer present. Iron works in north of site replaced by engine waste, sponge cloths, wipers and duster stores. Carriage works replaced by window cleaners and foundry and motor engineers. Saw mill in southwest of site. Jubilee Street runs from southern boundary northwards to centre of site.	Workhouse to south of site no longer present. Now forms part of Victoria Station.
1940s-1950s	Cotton works now part of brewery. Former hat works building now identified as clothing works. Garage in place of foundry and motor engineers in east of site. Cabinet makers replaces saw mill in southwest of site. Terraced properties in southwest of site no longer present. Only one chimney shown within site.	Electricity substations approximately 30m west of site and 75m east of site. Ruins marked to north, east and south of site. YMCA to east of site no longer present. Boy's refuge to southwest of site now call a men's hostel. Terraced housing to southwest of site no longer present.
1960s-1970s	Motor repairs works replaces cabinet makers in southwest of site. Building in southeast corner of site marked as joiners. Garage in location of former terraced houses in east of site. Stores building and waterproofing works in north of site now appear to be part of brewery buildings.	Clothing works replaces old YMCA site and terraced housing adjacent to east of site. Electricity substation to west of site no longer shown.
1980s-1990s	Buildings in the southeast corner of site removed. Garage in east of site no longer indicated. Embankment shown to west of works building in northeast of site. Tanks indicated in centre of site.	Arena constructed approximately 25m south. A car park is constructed adjacent to east of arena. Clothing works adjacent to east of site now a warehouse. Men's hostel adjacent to northwest of site removed. Tanks present approximately 35m northwest and 30m west of site.

TABLE 2: Summary of Land Use		
Date	Site Land Use	Adjacent Land Use
2000s	All buildings are demolished apart from one in the northeast corner of site. Site identified as a car park.	No significant change.
Present day	Site is occupied by car parks with one office building in northeast corner. There are small areas of scrubland on site.	Car park, hotel and electricity substation to west of site. Arena to south of site. Car park, offices and warehouses to east of site. Car parking, warehousing and retail units to north of site.

Current Site Use

3.4 The site was visited on 10 October 2017 by a Wardell Armstrong representative. At the time of the visit the majority of the site comprised car parking with a small office building in the northeast corner. Areas of scrubland and occasional trees were present within the site. The following points are of note:

- Japanese Knotweed observed in the south of the site.
- Possible asbestos containing materials among fly tipped waste on southern site boundary and in southwest of site.
- Overhead wire extending from the western part of the site towards the centre.
- Three levels across site. Highest level is along eastern side of site. Middle level is in centre of site. Lower level is in west of site.
- Slope between middle level and lower level may be unstable.
- Some retaining walls show damage and structural repair.
- Access off New Bridge Street to south, Dutton Street to east, and from adjacent car park to west.
- Hardstanding was cracked and in poor condition in numerous places.

3.5 A site visit record is attached at Appendix 4. Some parts of the site were inaccessible such as the scrubland and the office building in the north of the site.

Asbestos

3.6 The Health and Safety at Work Act, the Control of Asbestos Regulations and the Construction (Design and Management) Regulations impose duties upon employers, site owners, their agents and contractors in respect of hazardous materials including asbestos. Other health and safety and welfare regulations

place duties on Employers to undertake appropriate risk assessments. This could include the commissioning of surveys, identification and management of hazardous materials including any proposals for remedial work.

- 3.7 A site walkover survey has been completed. However, the walkover survey does not constitute an asbestos survey and not all areas of the site may have been visited or made available for inspection.
- 3.8 Asbestos has tentatively been identified during our site walkover and we recommend that a full asbestos survey be carried out at the site. Guidance on the need for asbestos surveys and the method of carrying them out are given in HSE Publication HSG264.

Ecology

- 3.9 There are a number of legal and planning policy considerations relating to certain important habitats and species where they are present on or in the vicinity of a site. Protected habitats and species can also be linked to development related activities via surface or groundwater and effects such as human/vehicular presence, noise, dust or pollution.
- 3.10 Reference to the Envirocheck report indicates no Special Protection Areas, Special Areas of Conservation, National Nature Reserves, Marine Nature Reserves, Local Nature Reserves or Sites of Special Scientific Interest within 1km of the site.
- 3.11 All protected and important species as well as other non-statutory sites (e.g. SINC's and areas of ancient woodland) which are protected by planning policy rather than statute, are omitted. Furthermore, consideration of those habitats defined as 'being of principle importance for the purpose of conserving biodiversity' (NERC Act 2006) which are material planning consideration under the National Planning Policy Framework (NPPF) are beyond the scope of this report.
- 3.12 Although a site visit has been carried out, this was not specifically for ecological purposes, and was not undertaken by a qualified ecologist. A Preliminary Ecological Appraisal will be submitted separately as part of the full planning application.

Environmental Management

3.13 The overall standard of housekeeping and environmental management was observed to be satisfactory. The following issues were noted during the site visit:

- Fly tipping of waste which may include asbestos containing materials were noted in various places across the site.
- Poor quality hardstanding across the site.

4 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

Geology

- 4.1 The assessment of the geology of the site is based on the published geological mapping sheets (British Geological Survey Sheet No. 85, Manchester, 1:50,000 scale, Bedrock and Superficial Deposits Edition 2011, and Bedrock Edition, 2010) supplemented by online mapping records, geological memoir, topographical plans and site visit. Online data from the British Geological Survey (BGS) has been researched and relevant borehole records are attached (Appendix 5). A summary of relevant geological information is provided below in Table 3.

TABLE 3: Summary of Relevant Geological Data	
Strata	Description
Made ground	Made ground generally described as soily clayey fill with brick and stone has been identified in the south of the site. The northeastern part of the site is recorded to be underlain by infilled ground likely to be associated with historic brickfields in this area.
Natural superficials	Devensian Till or Diamicton generally described as a clay to sandy clay unsorted with common pebbles, cobbles and some boulders
Solid strata	The Chester Pebble Beds Formation generally described as sandstone, medium grained; quartzite pebbles common towards base, moderately cemented. Underlain by the Manchester Marls Formation described as a gypsiferous mudstone.
Geological structure	The Ardwick Fault passes underneath the site orientated northwest to southeast. The fault is downthrown to the east. The strata underlying the site dip slightly down towards the west.
Natural cavities	None recorded within 1km of the site.
Landslides	Potential for landslides is very low.
Ground stability	British Geological Information Services indicate a moderate potential for compressible ground stability hazards on site.

- 4.2 Boreholes records from on site and adjacent to the site published on the BGS website have been reviewed. Made ground is recorded in boreholes ST89NW503-506 (included in Appendix 5) in the south of the site to up to 1.35m depth. A borehole located in the central eastern part of the site (borehole ref. SJ89NW197 included in Appendix 5) recorded diamicton to 6.4m below ground level (bgl) underlain by "Upper new red sandstone" considered to be the Chester Pebble Beds Formation to 89.61m bgl. This was in turn underlain by "Dark Raddle" considered to be the Manchester Marls Formation.

Hydrogeology

- 4.3 Hydrogeological information has been obtained from a review of:
- An Envirocheck report;
 - Groundwater Protection Policy and Groundwater Vulnerability maps published by the Environment Agency;
 - Hydrogeological maps published by the British Geological Survey; and
 - Interactive aquifer designation map published by the Environment Agency.
- 4.4 This information indicates the site to be underlain by superficial deposits which are classified as a Secondary Undifferentiated Aquifer. The underlying solid strata are classified as a Principal Aquifer.
- 4.5 Principal aquifers are highly permeable formations usually with a known or probable presence of significant fracturing. They are usually highly productive, strategic reserves able to support large abstractions, public water supply and river base flow.
- 4.6 Secondary Undifferentiated aquifers typically have variable characteristics and may be identified as Secondary A or B aquifers (minor or non-aquifers).
- 4.7 Groundwater was recorded in the BGS borehole in the centre of the site (borehole ref. SJ89NW197 included in Appendix 5) at approximately 3m bgl within the till. This is likely to be a perched water table in a permeable layer of the till. Groundwater is expected within the sandstone underlying the site.
- 4.8 There are 15 active groundwater abstraction licences within influencing distance of the site (2km). One licence is recorded on site and corresponds to BGS borehole ref. SJ89NW3264 (included in Appendix 5). This is operated by Interbrew UK Ltd which is licensed to abstract an unspecified amount of groundwater per year for drinking, cooking, sanitary and washing purposes and for brewery processes. However, the closure of the brewery suggests that groundwater is no longer being abstracted from this location even though the abstraction license still appears active. Another borehole recorded on site (BGS borehole ref. ST89NW197 included in Appendix 5) is not identified as a groundwater abstraction well although the records suggest it was operated by the brewery and therefore may have been used for this reason. Two groundwater abstraction wells associated with the brewery are located

approximately 11m and 34m west of the site; they correspond to BGS borehole refs. SJ89NW3263 and ST89NW198 respectively (included in Appendix 5). Again, although these licenses appear active they are likely to be no longer in use due the closure of the brewery. It is not known, at this stage, whether the boreholes associated with the brewery were decommissioned on closure of the brewery. The closest active groundwater abstraction license that is likely to be currently abstracting is approximately 416m northeast of the site, operated by Joseph Holt Ltd and is licensed to abstract 45,460 m³/per year for general cooling purposes and brewery process water.

- 4.9 The site does not lie within a source protection zone.
- 4.10 The BGS has developed a dataset to indicate areas that may be susceptible to groundwater flooding. This can occur when the water table rises causing drainage networks to be ineffective. The dataset has indicated that the southern half of the site has limited potential for groundwater flooding to occur. The northern half of the site has the potential for groundwater flooding of property situated below ground level.

Soil Vulnerability Classification – Leaching Potential

- 4.11 The soil vulnerability classification groups the many different soil types of England and Wales into three soil vulnerability classes and six sub-classes. Each is based on the physical and chemical properties of the soil, which affect the downward passage of water and contaminants. This classification is not applied to soil above unproductive strata. Soil information for urban areas is based on fewer observations than elsewhere. A worst case vulnerability is therefore assumed until proved otherwise.
- 4.12 The soil is considered to have a high leaching potential (HU) due to the site's urban location.

Hydrology

- 4.13 The nearest graded surface watercourse is the River Irk which is approximately 171m east of the site. The Environment Agency has given the Moston Brook to River Irwell reach of the River Irk a General Quality Assessment (Chemistry) rating of E (Poor). In addition, the Salford University to Salford Docks reach of the River Irwell which is approximately 250m southwest of the site has also been given a General Quality Assessment rating of E (Poor).

- 4.14 The Environment Agency maintains national flood maps based on ground levels, predicted flood levels, information on flood defences and local knowledge. The flood maps show the predicted likelihood of flooding in an area in the context of current and also the proposed land use considered in development planning.
- 4.15 For planning purposes, the likelihood of flooding is based on flood zones identified in National Planning Policy Guidance (2014) attached to the National Planning Policy Framework (2012) and the EA map entitled Flood Map for Planning (Rivers and Sea). The Flood Map for Planning only applies if the site is intended for redevelopment. The majority of the site is within Zone 1 and has a low probability of flooding. The chance of flooding each year in Zone 1 is less than 0.1% (1 in 1,000). Part of the western portion of the site is within Zone 2 and has a moderate probability of flooding. The chance of flooding each year in Zone 2 is between 1.0% (1 in 100) and 0.1% (1 in 1,000).
- 4.16 The likelihood of surface water flooding (from rainwater not draining away through the normal drainage system) across the majority of the site is classed as very low, meaning that the change of surface water flooding from rainwater is less than 0.1% (1 in 1,000). There is however a small area in the southwest of the site that is classed as having a low likelihood of surface water flooding, meaning the chance of surface water flooding from rainwater is between 0.1% (1 in 1,000) and 1% (1 in 100).
- 4.17 There are four surface water abstraction licences within 2km of the site. The closest abstraction licence is recorded as revoked and is therefore regarded as historic. That abstraction was 1,468m south of the site (NGR: 384100 397700) and was operated by North Western Electricity Board, which was licensed to abstract 25,230m³ of surface water per year from Rochdale Canal for cooling purposes. The closest active surface water abstraction licence is 1,991m east (NGR: 385900 398800) and is operated by the British Waterways Board, which is licensed to abstract an undisclosed volume of water from a canal.

Preliminary Hydrogeological Model

- 4.18 The site is underlain by the Devensian Till or Diamicton which is classed as a Secondary Undifferentiated aquifer and extends to around 65m bgl. This is underlain by the Chester Pebble Beds Formation which is classed as a Principal aquifer and is recorded locally to up to approximately 90m bgl. The till, which

comprises pebbly, sandy, clay may afford some protection to the underlying Chester Pebble Beds Formation.

- 4.19 The site does not lie within a source protection zone. There are a number of groundwater abstraction wells on site and immediately adjacent to the site which were associated with the brewery. Although these are no longer actively abstracting groundwater, it is not known whether they were decommissioned to protect the aquifer on closure of the brewery. If they have not been decommissioned they may create a pathway to the Principal aquifer.
- 4.20 The Rivers Irk and Irwell both lie within 200m of the site, however they have both been graded as having a “poor” river quality. The chance of flooding each year at the site is up to 1%. The likelihood of surface water flooding due to rainwater is up to 1% in any one year; this likely to be in localised areas of the site. Groundwater flooding may occur in the north of the site in property below ground level.

5 MINING AND QUARRYING

General

- 5.1 Research of the mining setting is based on examination of the published topographical and geological information as described in Section 4 of this report along with other mining archive information. A Coal Authority report for the site dated 26 September 2017 has been obtained, and is attached at Appendix 6.

Surface Workings

- 5.2 Research of topographical, geological and other archive mining records has indicated that a brickfield existed to the north and east of the site until around 1891. There are five BGS recorded Mineral Sites within 1km of the site. They are all classed as opencast brickfields and are all recorded as ceased. The closest entry is approximately 126m north of the site.

Underground Workings

- 5.3 Published geological information indicates that this site is not in an area of underground mining. Therefore, the site is considered unlikely to be subject to any ground instability from this source and no mine entries should be present.
- 5.4 The Coal Authority report indicates that there are no recorded workings on or in the vicinity of the site.

Deep Coal Mining

- 5.5 Deep mining is generally defined as that mining undertaken at depths greater than about 30m to 50m below rockhead. The Coal Authority report does not indicate evidence of underground mining activity.
- 5.6 There are no current mining activities affecting the site and the site does not lie within influencing distance of any presently known planned future workings.

Mine Entries

- 5.7 Surface instability can be associated with recorded or unrecorded mine entries including shafts and adits. The Coal Authority report has indicated that there are no recorded mine entries on or within influencing distance of the site.
- 5.8 The remote possibility of there being unrecorded mine entries at the site cannot be discounted entirely. If during any future works at the site a feature is

discovered which may represent an unrecorded mine entry, such as circular brickwork or anomalous area of till/timber, it should be reported, investigated and acted upon as necessary.

6 ENVIRONMENTAL SETTING AND CONSULTATIONS

Statutory Sources

- 6.1 Information from various statutory sources has been summarised from the Envirocheck report prepared specifically for this site and is abridged at Appendix 7. The results from a site visit and responses from the Environment Agency and local authority have also been considered as part of this assessment.

Environment Agency Response

- 6.2 The response received following an enquiry with the Environment Agency is included in Appendix 3. The Environment Agency report no environmental incidents in the site area.

Local Authority Response

- 6.3 The response from an enquiry made with MCC is included in Appendix 3. MCC report the following:
- No records of contamination issues at the site or within 25m of the site from pre 2006 to the present.
 - No landfill sites are recorded within 250m of the site.
 - No records of Environmental Protection Act 1990 Part 2A sites determined to be statutory contaminated land within 250m of the site.
 - No records of EPA Act 1990, Statutory Nuisance Activities were in force within 100m of the site.
 - No records of waste management licences or Part A (1) Permitted Processes were identified within 250m of the site.
 - No records of Part B Permitted Processes on site, however three were identified off site within 250m of the site, all of which were garages/service stations. Two of these were however revoked.
 - One private water supply within 2km of the site. This is operated by Joseph Holt Ltd and is considered to be the same groundwater abstraction referred to in section 4.8 of this report. The abstraction wells associated with the brewery on site and immediately adjacent to the site have not been identified by MCC.

- No radioactive substances registered within 25m of the site.

6.4 In addition to the MCC reports there are two implemented planning permissions in relation to the site which relate to the public car park on the site. The first was for the creation of the car park on and to the west of the site and was approved in 2007. The second related to the retention of the car park for a further period of two years which was approved in 2011.

Contaminated Land Register Entries and Notices

6.5 There are no contaminated land entries or notices identified on site or within 1km of the site.

Waste Management

6.6 Information supplied has indicated the presence of four Environment Agency historic recorded landfill sites, and 59 records of other types of waste management or landfill sites located within 1km of the site. The closest recorded facility of each type is shown in Table 4.

6.7 In addition to the recorded/licensed landfilling activities in the vicinity of the site, the possibility, although remote of there being unrecorded landfilling activities within influencing distance of the site cannot be entirely discounted. If at some time in the future, the presence of such an unrecorded landfill is revealed then its potential influence on the site may need to be investigated and dealt with as necessary.

TABLE 4: Waste Management Facilities	
Location	Details
Historical Landfill Site	
License Holder: Not supplied Site Location: Salford, Greater Manchester Name: Overbridge Road Grid Ref: 383481 399308 Distance from Site: 326m	Provider Reference: EAHL17901 First input date: Not supplied Last input date: Not supplied Waste Type: Not supplied WRC Ref: Not supplied
Licensed Waste Management Facility	
Operator Name: Mel Ltd License Number: 65243 Grid Ref: 384300 399400 Distance from Site: 415m Site Location: Red Bank, Cheetham Hill, Manchester, M8	Authority: Environment Agency, North West Region, South Area Site Category: Mobile Plant License Status: Surrendered 06/02/2007 First Input Date: 17/04/2002 Last Input Date: 06/02/2007
Potentially Infilled Land (Non-Water)	
Grid Ref: 383881 399317 Distance from Site: 1m	Use: Unknown filled ground (Pit, quarry etc.) Date of mapping: 1994
Potentially Infilled Land (Water)	
Grid Ref: 383872 399257 Distance from Site: On site	Use: Unknown filled ground (pond, marsh, river, stream, dock, etc.) Date of mapping: 1848
Registered Waste Transfer Site	
Licence Holder: Placemix Ltd Grid Ref: 384485 399445 Distance from Site: 601m Site Location: Hargreaves Street, M4 4EJ	License ref: EAWML50017 Authority: Environment Agency Site Category: Transfer Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Authorised Waste: Inert materials, contaminated soils, metal waste/ scrap metal and degradable house, industrial and commercial wastes. Prohibited Waste: Liquid waste, powders in bulk, sludge wastes, special waste, other waste/ waste not otherwise specified. Dated: 31/03/2000 Licence Status: Operational
Registered Waste Treatment or Disposal Sites	
License Holder: E Gregson Grid Ref: 383250 399670 Distance from Site: 653m Site Location: Unit 26 Caroline Street Industrial Est, Neil Street, Salford, Greater Manchester, M7 1SS Operator Location: 47 Stapleton Street, Greater Manchester, M6 7NR	License ref: 00644 Authority: Environment Agency Site Category: Recycling Drums Max Input Rate: Very small (less than 10,000 tonnes per year) Authorised Waste: Empty drums/containers, max waste permitted by license. Prohibited Waste: Special waste N.O.S. and waste N.O.S Dated: 01/03/1996 License Status: Operational

Radon

- 6.8 Radon can be a hazard within built developments and especially within enclosed or confined spaces. The Health Protection Agency and British Geological Survey document "Indicative Atlas of Radon in England and Wales" (2007) provides a summary of the number of homes in a given area above the "Action Level" for radon. Although the radon atlas relates directly to measurements taken from homes or dwellings, it is also relevant to employers assessing risks for enclosed underground and ground floor work places.
- 6.9 The BRE document "Radon: guidance on protective measures for new buildings" (2015) provides guidance for reducing the concentration of radon in new buildings and a two stage procedure using accompanying maps needed to determine the level of protection for a given site.
- 6.10 These documents have been consulted and the site is shown to lie in an area where no protection against radon is needed should the development of residential dwellings or new structures of similar form of construction and compartmentation occur.

Environmental Issues

- 6.11 The Environment Agency data via the Envirocheck report records the following environmental issues at or in the vicinity of the site:
- 31 discharge consents (Table 5);
 - 1 integrated pollution control (Table 6);
 - 19 Local Authority Pollution Prevention and Controls (Table 7);
 - 1 Local Authority Pollution Prevention and Control Enforcement (Table 8);
 - 1 prosecution related to authorised processes (Table 9);
 - 6 substantiated pollution incidents (table 10); and
 - 2 registered radioactive substances (Table 11).

The closest recorded example of each type is shown in the following tables.

TABLE 5: Discharge Consents	
Consent	Details
Operator: United Utilities Water Ltd Location: Verdon St, Near Scotland Street, Manchester Grid Ref: 384120 399165 Distance from Site: 175m	Authority: Environment Agency Discharge Reference: 016982715 Effective Date: 30/09/1994 Type: Public Sewage: storm sewage overflow Receiving Water: River Irk Status: Not Supplied

TABLE 6: Integrated Pollution Controls	
Operator and Location	Details
Operator: Oldham Crompton Batteries Ltd Location: Edward Street, Manchester M34 3AT Grid Ref: 383259 399616 Distance from Site: 620m (northwest)	Permit Reference: BH7130 Dated: 11/07/2000 Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry Status: Authorisation revoked

TABLE 7: Local Authority Pollution Prevention Controls	
Operator and Location	Details
Operator: Park Garage M/Cr Ltd Location: Cheviot Street, Manchester, M3 1LW Grid Ref: 383820 399443 Distance from Site: 78m	Authority: Manchester City Council, Environmental Health Department Reference: PPC/57/02 Date: 30/11/1993 Description: PG6/34 Respraying of road vehicles Status: Authorisation revoked

TABLE 8: Local Authority Pollution Prevention and Control Enforcement	
Operator and Location	Details
Location: Sherborne Street West, Salford, M3 7LF Grid Ref: 383353 399449 Distance from Site: 477m	Type: Air Pollution Control Enforcement Notice Reference: V1259 Date issued: 15/07/2009 Enforcement Date: Not Supplied Details: Not supplied

TABLE 9: Prosecutions Related to Authorised Processes	
Operator and Location	Details
Location: 21-23 Honey Street, Cheetham Hill, Manchester, M8 8RG Grid Ref: 384510 399656 Distance from Site: 720m	Prosecution Text: 150m ³ of demolition waste found deposited on land without waste management license Prosecution Act: Epa90 S33(1)(B) & S33(6) Hearing Date: 14/10/2002 Verdict: Guilty

TABLE 10: Substantiated Pollution Incidents	
Location	Details
Grid Ref: 383953 399795 Distance from site: 438m	Authority: Environment Agency Incident Date: 02/12/2010 Reference: 841985 Water Impact: Cat 4 – no impact Air Impact: Cat 2 – significant incident Land impact: Cat 2 – significant incident Pollutant: Inert construction/demolition material, commercial waste, contaminated soils and subsoils, household waste

TABLE 11: Registered Radioactive Substances	
Operator and Location	Details
Name: Brook Edgley Specialist Technical Services Ltd Location: Unit 4, Angel Industrial Estate, Angel Street, Manchester, M4 4BQ Grid Ref: 384457 399030 Distance from Site: 533m	Authority: Environment Agency Reference: BI9880 Dated: 07/08/2000 Process Type: Authorisation under S13 RSA for the disposal of radioactive waste Status: Revoked

Archaeology

- 6.12 Preliminary examination of historical maps indicate no apparent features of significant archaeological interest in the general vicinity of the site.

Unexploded Ordnance

- 6.13 A Zetica regional unexploded ordnance (UXO) risk map has been reviewed. The map shows the site to be in medium risk area.
- 6.14 A Preliminary Unexploded Ordnance (UXO) Threat Assessment for the site has been undertaken by 6 Alpha Associates (included in Appendix 8). In summary the report notes the following:
- The site is an area which sustained less than 6 High Explosive (HE) bomb strikes per 100 hectares (i.e. a very low level of bombing) during the Second World War.
 - There are no records of HE bomb strikes on site.
 - Five HE bomb strikes were identified within 170m of the site boundary. The closest strike was 35m south of the site.

- There is a record of one incendiary bomb (IB) on site on the northwestern site boundary.
- Records indicate a further six IBs within 50m of the site.
- Official bomb damage mapping identified demolished buildings on site and in the immediate vicinity of the site. Post war mapping also identified clearance areas on site.
- Luftwaffe aerial photography identified three primary bombing targets within 885m of the site, the closest being a machine tool factory 375m east of the site.
- Several works and mills on site may have been considered secondary bombing targets.
- The probability of encountering UXO has been rated as medium.
- In accordance with CIRIA C681 Chapter 5 on managing UXO risks, 6 Alpha Associates recommends that a Detailed UXO Threat and Risk Assessment is undertaken.

Contemporary Trade Directory

- 6.15 There are 795 contemporary trade directory entries within 1km of the site. The closest active use is approximately 18m northeast of the site and provides garage services.

Fuel Station

- 6.16 There are ten fuel stations recorded within 1km of the site. The closest is approximately 227m northeast of the site, however it is recorded as being obsolete. The closest open fuel station is approximately 251m northeast of the site and is operated by Texaco.

7 CONCEPTUAL SITE MODEL

Environmental Issues

- 7.1 Conclusions are drawn from the preceding information in terms of potential sources of contamination, possible receptors that may be affected by any sources of contamination and the pathways that exist between source and receptor. This basic risk assessment allows identification of the suitability of the site for its current and future use and evaluation of any potential environmental liability that may attach to the site. A description of past or existing uses and any chemicals of potential concern is attached at Appendix 9. The issues can be broadly addressed as follows: land contamination, groundwater contamination, surface water contamination, ground gases and air pollution.
- 7.2 The land use history has identified the following potentially significant sources of contamination both on the site and adjacent to the site.

Potentially Significant Contamination Source On Site:

1. Made ground present across the site.
2. Historic industrial uses including timber yard, clothing manufacturers, brewery, motor works, iron works.
3. Historic tanks.
4. Historic building material and made ground.
5. Potential asbestos containing material in flytipped waste.
6. Invasive species (Japanese knotweed).
7. Potentially infilled land.

Potentially Significant Contamination Source Off Site:

8. Surrounding commercial and industrial properties including works, factories, warehouses, breweries and a railway station.
 9. Potentially infilled land.
- 7.3 As a result of the land use history presented in previous sections of this report the site may have a number of sources of contamination. For land or groundwater to be designated as polluted a linkage must exist between:
- a source of contamination capable of causing significant harm;
 - human or environmental receptors; and
 - a pathway by which the contamination can reach the receptor.

7.4 The conceptual site model presented in Table 12 details an initial assessment of all potential pollutant linkages. Drawing LO10517/003 presents a schematic conceptual site model based on the information presented in Table 12.

TABLE 12: Conceptual Site Model		
Source (Contaminant)	Pathway	Receptor
No. 1 Made ground present across the site (heavy and phytotoxic metals, PAH).	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna
No. 2 Historic industrial uses including timber yard, clothing manufacturers, brewery, motor works (hydrocarbons, phenols, solvents, PCBs, metals).	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna
No. 3 Historic tanks (hydrocarbons, phenols, solvents)	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna
No. 4 Historic building material and made ground (asbestos).	1. Disturbance and inhalation	1. Current occupiers 2. Future occupiers 3. Construction workers
No. 5 Flytipped asbestos containing materials (asbestos)	1. Disturbance and inhalation	1. Current occupiers 2. Future occupiers 3. Construction workers
No. 6 Invasive species (Japanese knotweed)	8. Habitat degradation	6. Subsurface building materials 7. Flora and fauna
No. 7 Potentially infilled land (on site) (eg. nitrate, nitrogen, phosphorous, heavy metals, ammonia, dioxins, PCBs, hydrocarbons, asbestos)	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna

TABLE 12: Conceptual Site Model		
Source (Contaminant)	Pathway	Receptor
No. 8 Surrounding commercial and industrial uses including works, factories, warehouses, brewery, railway station (hydrocarbons phenols, solvents, PCBs, metals)	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna
No. 9 Potentially infilled land (off site) (eg. nitrate, nitrogen, phosphorous, heavy metals, ammonia, dioxins, PCBs, hydrocarbons, asbestos)	1. Inhalation 2. Dermal contact 3. Ingestion 4. Surface runoff 5. Groundwater migration 6. Direct contact (aggressive attack) 7. Gas migration	1. Current occupiers 2. Future occupiers 3. Construction workers 4. Groundwater 5. Surface water 6. Subsurface building materials and plastic service pipes 7. Flora and fauna

8 ENVIRONMENTAL RISK ASSESSMENT

Introduction

8.1 The main issues considered in the risk assessment are:

- The environmental risks identified, if any, that may have implications for the current the proposed use of the site.
- How likely it is that the environmental risks identified may affect the site. This is considered against a background of continuation of the current use and potential for the site to be redeveloped in accordance with the proposed use.
- Other areas of primary concern from a ground engineering and environmental viewpoint that may have been revealed as a result of the research carried out. These features are limited to the scope of work/research carried out and may not cover such factors as the wider planning constraints, archaeology, ecology etc.

8.2 For ease of reference and understanding the risks are assessed against 3 possible levels/categories:

- **Low risk** - site considered suitable for use and environmental setting. Contaminants may be present but unlikely to have an unacceptable impact on key targets. Action unlikely to be needed;
- **Moderate risk** - site may not be suitable for use and environmental setting. Contaminants probably or certainly present and likely to have an unacceptable impact on key targets. Action may be needed in the medium term; and
- **High risk** - site probably or certainly not suitable for use and environmental setting. Contaminants probably or certainly present and very likely to have an unacceptable impact on key targets. Urgent action needed in short term.

8.3 Under each of the categories the environmental issues which have been identified have been assessed with regard to a wide range of topics including (where appropriate):

- the 'source-pathway-receptor' concept;
- the behaviour of potential contaminants within the environment;
- environmental processes;

- industrial operations and best practice;
- current environmental legislation;
- the views and practices of the environmental regulators;
- the likelihood of environmental notices, orders or other enforcement action;
- any requirements to remove waste, contaminated or hazardous materials;
- the health and safety of occupiers or neighbours;
- any redevelopment plans for the site;
- effects on the fabric of buildings caused by contamination; and
- financial and cost implications.

Qualitative Risk Assessment

- 8.4 From the combination of the foregoing information a qualitative assessment of the potential geo-environmental risk is provided in Table 13. Where indicated, these risks may need to be considered for any future redevelopment of the land.
- 8.5 The effect of the present site use on the surrounding area is assessed with regard to the possible contaminant migration from the site off site and with regard to the general environmental setting and land quality of the surrounding area in order to put the on site assessment in context.

TABLE 13: Qualitative Risk Assessment			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Contamination Potential:			
Present site use	Car parking and scrubland with small office building.	Low	Low
Past site use	Timber yard, school, factories, brewery, motor works, iron works and clothing manufacturer.	Moderate	Moderate
Impact to site from past and present adjacent land uses	Industrial and commercial activities	Moderate	Moderate
Mining history	Historic surface workings (brickfields) on site and adjacent to the site. No underground workings or coal mining.	Low	Low/Moderate

TABLE 13: Qualitative Risk Assessment			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Emissions, pollution incidents, discharges etc	31 discharge consents, 19 LA Pollution Prevention and Controls, 1 LA Pollution, Prevention and Control Enforcement, 1 integrated pollution control, 1 prosecution relating to authorised processes, 6 substantiated pollution incidents and 2 registered radioactive substances within 1km of the site.	Low	Low
Asbestos	Asbestos containing material has tentatively been identified on site.	Moderate/ High	Moderate
Ground Gas	The likely presence of made ground and infilled ground on and adjacent to the site may give rise to ground gas.	Low/ Moderate	Moderate
Waste Management	Potentially infilled land on and adjacent to site. Nearest historical landfill site >250m from site.	Moderate	Moderate
Environmental Sensitivity:			
Geology	Made ground of varying composition overlying Till (Diamicton) overlying Chester Pebble Beds Formation.	N/A	N/A
Groundwater vulnerability	This site is situated on a secondary undifferentiated aquifer which overlies a principal aquifer. The closest active groundwater abstraction licence is 416m northeast used for brewery processes. The site does not lie within a source protection zone. Groundwater abstraction wells associated with the brewery on site and immediately adjacent to site may or may not have been decommissioned on closure of the brewery.	Low	Low/ Moderate
Surface water vulnerability	Nearest graded surface watercourse is River Irk 171m east. Closest surface water abstraction license is 1,468m south.	Low	Low
Radon	Radon protection measures are not required for residential or similar development.	Low	Low
Geological constraints:			
Made ground / superficals / solid geology	Presence of made ground on site may give risk to ground gas. Risk of potentially infilled land on site. The Till is unsorted and may contain up to boulder sized material. There is a fault which runs beneath the site.	Low	Low/Moderate

TABLE 13: Qualitative Risk Assessment			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Mining setting	5 historic brickfields within 1km of the site. Site is not in an area of underground mining. No recorded coal workings on or in vicinity of site.	Low	Low/ Moderate
Risks relating to other constraints (miscellaneous):			
Services	Overhead power/telecommunication line running across centre of site.	Low	Low
Flooding	The western portion of the site is within flood zone 2. The north of the site has a potential for groundwater flooding of property situated below ground level. There is a 1% chance of surface water flooding on site in any one year.	Low/ Moderate	Moderate
Ecology	Japanese knotwood has been identified on site.	Low	Moderate
Unexploded ordnance	The site is within a medium risk area. The site has had no previous military use but the factories on the site may have been considered secondary targets during WWII. An incendiary bomb is recorded to have dropped on the site boundary. High explosion bombs recorded from 35m from site boundary. Bomb damage indicated by historical mapping.	Moderate	Moderate
Liability Issues:			
Risk of liability with past use of site	Factories, timber yard, clothing manufacturers, brewery, garage, iron works etc.	Moderate	Moderate
Risk of liability with current use of site	Car park and office.	Low	Low
Risk of liability for proposed use of site	Residential and commercial.	Low	Low
Overall Risk for Site:	Low to Moderate/High		

9 CONCLUSIONS AND RECOMMENDATIONS

- 9.1 Based on the available information summarised in this report the site is considered to present an overall Low to Moderate/High risk from past use, adjacent operations, ground instability and environmental setting.
- 9.2 The site is currently used for car parking purposes and it is understood that this use will continue but will be greatly expanded and will also include residential use. Due to historical site uses on and adjacent to the site, it is considered that the site may present a risk of hazard or environmental liability.
- 9.3 As redevelopment is proposed, we anticipate that an investigation of the geological conditions will be required and it may be anticipated that some made ground or other unsuitable materials could be encountered. Further to this, some remedial measures may be necessary depending on the nature and extent of the made ground and potential contamination.
- 9.4 Based on the available information, it is considered likely that the regulator will require a Phase II intrusive investigation of the site. The Phase II investigation is likely to include:
- Drilling and testing of soil, groundwater and ground gas to target potential sources of contamination within the outside of the current buildings;
 - A quantitative risk assessment to determine if significant contamination is present; and
 - If significant contamination is identified, calculation of site specific remedial targets, liaison with the regulators and remediation.
- 9.5 A geotechnical assessment should be undertaken to:
- Determine the type, strength and bearing characteristics of the Till and Chester Pebble Beds Formation;
 - Provide recommendations for a suitable and economic foundation/floor slab solution for the development; and
 - Provide recommendations with regard to any other geotechnical aspects pertaining to the proposed development.

9.6 It is also recommended that the following areas of future work are undertaken:

- Liaison with a UXO specialist to complete a detailed threat assessment of the risk of UXO at the site, prior to any intrusive site investigation works and site development;
- Testing of potential fly tipped asbestos containing material to ensure compliance with current regulations;
- A watching brief by a specialist company for potential asbestos containing materials during site clearance/site investigation works;
- Sampling and testing of fly tipped materials prior to disposal off site; and
- Research into whether groundwater abstraction boreholes on and immediately adjacent to the site associated with the brewery were effectively decommissioned on closure of the brewery.

A P P E N D I X 1

Standard Terms and Conditions and Limitations to Reports

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The conclusions and recommendations contained in this Report are based upon information provided by others including details supplied by the client and/or professional advisors on the assumption that all relevant information from whom it has been requested and/or supplied is accurate. Information so provided and/or supplied has not been verified independently by Wardell Armstrong LLP, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Wardell Armstrong LLP in providing the services are outlined in this Report. The work described in this Report is based on the conditions and information as stated at the date the Report was completed. The scope of this Report and the services are accordingly limited by these circumstances. The findings outlined in the Report together with any opinions expressed and recommendations made are considered to be valid and appropriate at the time of preparation and for the specific purpose or purposes intended. Whilst a walk over site visit may have been carried out as part of the work this has been limited to observations only and no other physical investigations, sampling and testing work has been carried out as part of this work.

Wardell Armstrong LLP disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to Wardell Armstrong LLP's attention after the date of the Report. Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where any site observations have been carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results from any site observations made may vary and further confirmatory work should be made after the issuance of this Report. Wardell Armstrong LLP does not guarantee or warrant any estimates or projections contained in this Report.

APPENDIX 2

Guidance on Contamination and Land Quality Statements

CONTAMINATION

Environmental Protection Act Part IIA

Contaminated land was defined for the first time under Part IIA of the Environmental Protection Act 1990. Part IIA was inserted into the 1990 Act by section 57 of the *Environment Act 1995*. The regime came into effect in England on 1 April 2000, Scotland on 12 July 2000 and Wales on 15 September 2001.

Contaminated land is defined 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) significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused.”

Harm is described in the EPA 1990 as being “*harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to his property*”.

There are a number of important government policies and priorities underlying the Act. The first priority is to prevent the creation of new contamination by use of this Act and other controls such as Environmental Permitting (formerly regulated by Integrated Pollution Prevention and Control and Waste Management licensing). The second is to identify and remove unacceptable risks to human health and the environment. In addition there is a desire to bring contaminated land back into beneficial use whilst seeking to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

Under Part II(a), Local Authorities are responsible for the inspection of contaminated land and for ensuring that remediation is undertaken where necessary. Local Authorities also maintain a Public Register detailing the regulatory actions that they have implemented. The Environment Agency has a complementary role and act as the enforcing Authority for designated special sites.

The policy objectives are underlain by the “suitable for use” approach to the remediation of contaminated land, which the Government considers is the most appropriate approach to achieving sustainable development. This approach recognises that the risks presented by any given level of contamination will vary greatly on a site by site basis.

In general the responsibility for paying for remediation will, where feasible, follow the “polluter pays” principle. In the first instance, any person who caused or knowingly permitted the contaminating substance to be in, or under the land will be the appropriate person(s) to undertake

the remediation and meet its costs. If it is not possible to find such a person, responsibility will pass to the current owner or occupier of the land.

Planning Regime

Land contamination, or the possibility of it, is a material consideration for the purposes of town and country planning. This means that the planning authority has to consider the potential implications of contamination both when it is developing structure or local plans and when it is considering individual applications for planning permission. Under the suitable for use approach, risks should be assessed and remediation requirements set, on the basis of both the current use and its proposed new use.

Model Procedures for the Management of Contaminated Land - CLR 11

The Model Procedures for the Management of Contaminated Land (CLR11) was published by the Environment Agency and DEFRA in September 2004. It provides a technical framework for applying a risk management process when dealing with land affected by contamination in a way that is consistent with government policies and legislation within the UK.

The approach presented is designed to be applicable to a range of regulatory and non-regulatory contexts including:

- i. Development or redevelopment of land under the planning regime;
- ii. Regulatory intervention under Part IIA of the EPA 1990;
- iii. Voluntary investigation and remediation; and
- iv. Managing potential liabilities of those responsible for individual sites or a portfolio of sites.

The definition of contaminated land is based upon the principles of risk assessment. *“Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence”.*

CLR 11 uses the concept of “pollutant linkage” and identifies that there are three essential elements for any risk:

- A **contaminant** – a substance that is in, on or under the land and has the potential to cause harm or cause pollution
- A **receptor** – something that could be adversely affected by a contaminant, such as people, an ecological system, property or a water body; and
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently, but they only create a risk when all three are present and linked together.

CLR 11 is structured as follows:

Chapter 1 Overview of Model Procedures		
Chapter 2 Risk Assessment	Chapter 3 Options Appraisal	Chapter 4 Implementation of the Remediation Strategy
Preliminary Risk Assessment	Identification of feasible remediation options	Preparation of the implementation plan
Generic quantitative risk assessment	Detailed evaluation of options	Design, implementation and verification
Detailed quantitative risk assessment	Developing the remediation strategy	Long term monitoring and maintenance
Chapter 5 References and Glossary		

A Phase I Environmental Assessment provides the first stage of the risk assessment (Preliminary Risk Assessment in the table above). Further risk assessment (described in Chapter 2) and the subsequent sections (Chapters 3 and 4) of CLR11 are dealt with through site investigation and any subsequent remediation reports.

CLR11 defines the purpose of the Preliminary Risk Assessment to “*develop an initial **conceptual model** of the site and establish whether or not there are potentially unacceptable risks*”. It identifies that during a preliminary risk assessment “*the assessor collects and reviews largely desk-based information to prepare an initial conceptual model to identify possible pollutant linkages. The assessor then evaluates the possible linkages, using criteria appropriate to the risk assessment context*”.

CLR 11 states that “*Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process*”. The Conceptual model presents the characteristics of the site in diagrammatic or written form and shows the possible relationships between potential contaminants, pathways and receptors. This then forms the basis of the further risk assessment and any site investigation or other works.

RICS Guidance Note: Contamination, the environment and sustainability (GN13/2010)

The document is intended to provide guidance to chartered surveyors (members of RICS). It supersedes an earlier document "Contamination and its implications for Chartered Surveyors" (September 1997) which promoted the concept of a Land Quality Statement (LQS) as the written output of an environmental risk assessment.

In addition to contamination, the document provides a summary and guidance on other factors which might affect land value and environmental duties and/or liabilities. These factors assist with the overall assessment of the site and often provide valuable information to consider within the conceptual model required in CLR11. These factors include, but are not limited to, flooding and flood risk management, invasive species, mineral workings, shallow mining subsidence, natural subsidence risk and radon.

Section 11.8 of the RICS guidance note which sets out what is usually incorporated within a Land Quality Statement as follows:

- *a detailed description of the site and its location, by reference to a plan;*
- *a description of the current uses of the land and of the adjacent land;*
- *a summary of the site history, produced by reference to historical maps, archive records, and statutory, local authority and water authority registers and records;*
- *identification of potential contaminants associated with existing and previous uses, or with geological and hydrogeological features, through site investigation reports and the specialists' own observations;*
- *identification of other relevant issues, including those pertaining to archaeology, ecology, sites of special scientific interest (SSSIs), human population exposure and characteristics of off-site locations that could have an environmental impact or be sensitive to effects from the subject site;*
- *conclusions as to:*
 - *whether remedial treatment is necessary or prudent to enable the continued use of the property for its current use without undue risk to the health of persons using the property;*
 - *whether remedial treatment is necessary or prudent to reduce the risk of damage to a third party's health or property, or damage to the environment, which may give rise to a claim for damages, prosecution or action by the appropriate regulatory authorities;*
 - *if remedial treatment is not warranted, whether a residual risk of future claims from third parties and regulatory authorities remains;*
 - *whether concern regarding the risks associated with the known or suspected presence of contamination restricts the prudent use of the property compared with its likely range of possible uses if the site were uncontaminated;*
 - *if the property is to be redeveloped for a specified purpose, how much additional expense would be incurred in investigating contamination of the property further, and in carrying out any necessary remedial work, as compared with an uncontaminated property. Estimates produced prior to intensive investigations are often extremely broad; and*
 - *whether there is a likely implication from the foregoing for the value and/or the viability of development.*

Further information is available from a range of public and professional bodies including central government, local Council and the Environment Agency. Pertinent documents for additional information include Safe Development of Housing on Contaminated Land, 2014; , Managing and Reducing Land Contamination: Guiding Principles, 2010 and the Water Framework Directive (2000/60/EC, 23 October 2000).

APPENDIX 3

Sources of Information

The following principal sources of information have been consulted in the preparation of this report:

- Landmark Envirocheck report 26 September 2017 (*a review of information provided by Landmark Information Group Ltd who were commissioned to provide an “Envirocheck” report consisting of published historical plans, environmental data sheets and environmental sensitivity plans;*
- Ordnance Survey County and National Grid Series Plans;
- Other library archive as relevant;
- British Geological Survey published maps and memoirs;
- Environment Agency/NRA Groundwater Vulnerability Map Series;
- British Geological Survey borehole database;
- Environment Agency;
- In house Wardell Armstrong archives;
- Client information - copies of historical articles, leases, maps;
- Zetica Regional Unexploded Bomb Risk map (www.zetica.com);
- Preliminary Unexploded Ordnance Threat Assessment, 6 Alpha Associates.;
- Coal Authority Report.

A P P E N D I X 4

Site Visit Record

SITE WALKOVER RECORD

Date of Visit:	10-10-17
Client:	
Site Name:	UX Manchester - Phase 1
Refer to Drawing No.:	
Visited by:	JR
Job No.:	LO10517
Site Contact Name:	
Access (key required):	
Site Area (Ha):	

GENERAL SITE DETAILS

Relevant Identification (<i>names of buildings, roads</i>):
Present Land Use:
Surface parking dominant. Fencing, scrub, small buildings and trees occasional.
Adjacent Land Use:
Warehouses, hotel, parking, derelict buildings, arena, busy roads, electricity substation.
Adjacent public highways, roads leading to/crossing/servicing the site:
See map
Site Access (<i>main access points, dimensions, by rig/excavator, footpaths</i>):
See map. Mostly security fencing
Site Boundary (<i>hedges, walls, fences, open</i>):
See map
Topography (<i>general site setting, land gradients, slopes</i>):
3 main terraces. See map.

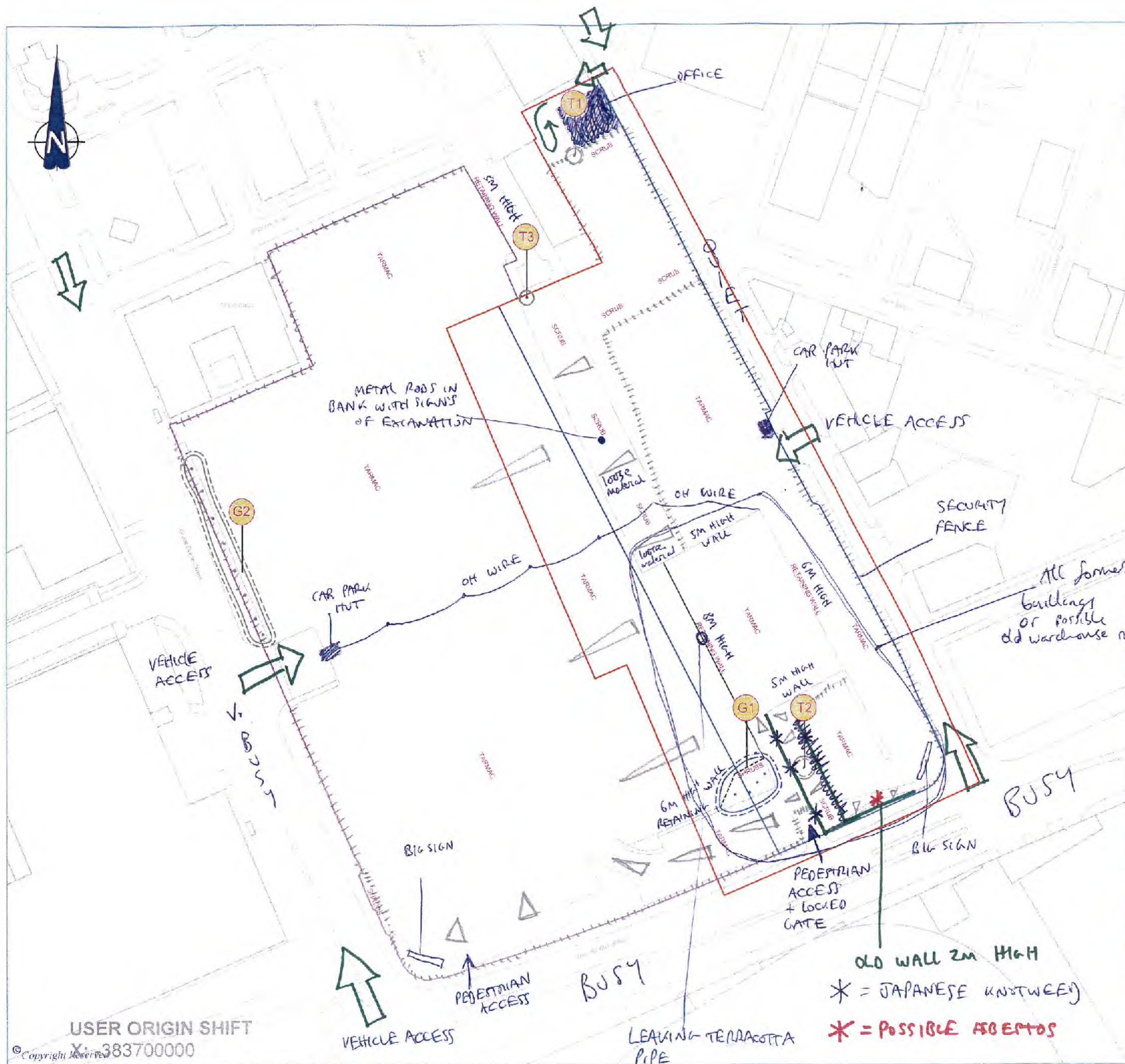
EVIDENCE OF LAND USE

Archaeology (<i>old buildings, monuments, mounds, ditches, artefacts in soil, pottery, glass</i>):
See map. Old wall towards south east of site. Large leaking terracotta pipe. See map
Site Relics (<i>evidence of past land use, building remains, roads, humps, bumps, hollows</i>):
See map
Buildings (<i>general condition, construction e.g. brick/steel framed, asbestos, pits/basements, use</i>):
See building descriptions in ecology report. Car park ticket booth on eastern boundary. Small office in north east corner.
Storage Facilities: (<i>tanks, drums, chemicals, capacity, condition, bunding, containment, leaks, audit</i>):

None observed
Activities/Processes on Site (<i>past and present, materials, equipment</i>):
Car parking
Observable Environment (<i>noise, dust, odours, emissions</i>):
Busy roads to west and south. Quiet roads elsewhere. Noisy and bad air quality near roads.
Waste Management (<i>fly tipping, waste disposal, fires</i>):
Flytipping in multiple locations including behind fencing. Possible asbestos, see map.
Underground Services (<i>evidence of manholes, grates, culverts, water supply, telephone</i>):
Drains everywhere.
Overhead Services (<i>overhead cables, pipes</i>):
One main overhead cable. See map

EVIDENCE OF GROUND CONDITIONS

Vegetation (<i>description, condition, trees, frequency and age, saplings, bare patches, new growth</i>):
See ecology report and map. Very little vegetation.
Ecology (<i>woodland, trees, hedges, ponds, running water, water loving plants, wild flowers, wildlife</i>):
As above
Soil Cover (<i>vegetated/unvegetated, soil/made ground/hardstanding, condition, cracks, staining</i>):
Hardstanding across most of site - in poor condition with pooling surface water. Vegetation in scrubland areas. Bare soil with some vegetation on slopes.
Evidence of Geological Setting (<i>made ground, natural superfcials, underlying rock</i>):
Made ground seen in sloped areas.
Groundwater and Drainage (<i>ponding, streams, springs, wells, marshes, tides, rivers</i>):
See map. Occasional puddles following rain.
Subsidence (<i>fissures, abrupt changes in slope, collapse, tilting trees/posts, property damage</i>):
See map. Damage to retaining walls in places. Retaining wall in south of site has been repaired.
Evidence of Mining (<i>surface features, shafts, trenches, tunnels, caves, wells, boreholes, gas</i>):
None observed
Hazards Identified:
See map. Japanese knotweed. Possible asbestos containing material. Loose earth. Damaged walls.
Additional Remarks:
Photographs (<i>yes/no, file location</i>):
See fifi



APPENDIX 5

British Geological Survey Boreholes

Borehole SJ89NW503

Sampling		Properties			Strata SI 8392 9916 SI 89 NW 503						
Depth	Type	Strength kN m ²	w %	SPT N	Description	Depth	Level	Legend			
0.55-1.50	B				MADE GROUND: Tarmac.	0.10	36.20				
					MADE GROUND: Stone sets.	0.25	36.10				
					MADE GROUND: Concrete.	0.40	35.95				
					MADE GROUND: Clayey silty fill*	0.55	35.80				
1.50-2.00	U(45)	70		17	Firm brown very silty, sandy slightly gravelly CLAY.						
					End of Borehole.	2.10	34.10				

Drilling **Ground Water**

Type	From	To	Size	Fluid	Struck	Behaviour	Sealed	Date	Hole	Cased	Water
Shell and Auger	GL	2.10	0.15	-	Nil			13.7.87	2.10	1.70	-

Remarks Service Location Pit excavated to 1.50m (2 hours). Obstruction encountered at 2.10m, borehole terminated. * Drillers description

Borehole Record	Project City of Manchester, Manchester and Salford, Inner Relief Route,	Contract E6531/4
exploration associates		Borehole 9

Borehole SJ89NW504

Sampling		Properties			Strata SJ 9392 9916 SJ89NW 504									
Depth	Type	Strength kN m²	w %	SPT N	Description	Depth	Level	Legend						
0.70-1.50	B	U(45)	80	14	MADE GROUND: Stone sets.	GL	36.00							
					MADE GROUND: Silty clayey Fill with brick and stone*	0.15	35.83							
					Stiff dark brown sandy silty slightly gravelly CLAY (fine to medium sub-rounded gravel). Fissured with depth.	0.70	35.30							
						1.50-2.00	U(45)				90	14		
						2.10	D							
						2.50-3.00	U(45)				90	14		
						3.10	D							
						3.50-4.00	U(45)				90	14		
						4.10	D							
						4.50-5.00	U(60)				110	14		
5.10	D													
5.55-6.00	SD		97	Very stiff to hard brown very sandy slightly gravelly CLAY (fine to coarse sub-rounded gravel).	5.00	31.00								
				End of Borehole.	6.00	30.00								
Drilling					Ground Water									
Type	From	To	Size	Fluid	Struck	Behaviour	Sealed	Date	Hole	Cased	Water			
Shell and Auger	GL	6.00	0.15		Nil			16.7.87	6.00	1.50	-			
Remarks Service Location Pit excavated to 1.50m (2 hours). * Drillers description.														
Borehole Record					Project City of Manchester, Manchester and Salford, Inner Relief Route, Jubilee Street to Chesham Hill Road				Contract E6531/4					
exploration associates									Borehole 98 Sheet 1 of 1					

Borehole SJ89NW505

Sampling		Properties			Strata		SI 894 9917 SI 89 NW 505				
Depth	Type	Strength kN m ²	w %	SPT N	Description	Depth	Level	Legend			
0.10-1.00	B				MADE GROUND: Stone over sand fill*	GL	40.00				
					MADE GROUND: Dark brown gravelly sand and brick rubble. Occasional clayey pockets.	0.10	39.90				
1.00-1.45	SD			11		1.10	38.90				
1.50-2.00	U(40)				Stiff dark brown silty sandy slightly gravelly CLAY. (fine to coarse sub-angular to sub-rounded gravel).						
2.10	D				Fissured with depth.						
2.50-3.00	U(40)	95	18								
3.10	D										
3.50-4.00	U(55)	95	19								
4.10	D										
4.50-5.00	U(55)	120	17								
5.10	D										
5.50-6.00	U(65)	130	17								
6.10	D					6.10	33.90				
					End of Borehole.						
Drilling					Ground Water						
Type	From	To	Size	Fluid	Struck	Behaviour	Sealed	Date	Hole	Cased	Water
Shell and Auger	GL	6.10	0.15	-	Nil			17.7.87	6.10	1.50	-
Remarks Standpipe installed to 6.00m. * Drillers description.											
Borehole Record					Project			Contract			
exploration associates					City of Manchester, Manchester and Salford, Inner Relief Route, Jubilee Street to Cheetham Hill Road.			E6531/4			
					Borehole			10			
					Sheet 1 of			1			

Borehole SJ89NW506

Sampling		Properties			Strata SJ8394 9915 SJ89NW 506						
Depth	Type	Strength kN m ²	w %	SPT N	Description	Depth	Level	Legend			
					MADE GROUND: Brick rubble fill**	GL	36.50				
1.00	D					0.95	35.55				
1.35-1.85	U(45)	100	14		MADE GROUND: Firm dark grey silty sandy gravelly clay, dark grey sand, trace brick fragments.	1.35	35.15				
1.90	D										
2.00-2.50	U(45)	85	20		Stiff dark brown sandy silty slightly gravelly fissured CLAY (fine to medium sub-rounded gravel).						
2.60	D										
3.00-3.50	U(60)	120	13								
3.60	D										
4.00-4.50	U(55)	100	14								
4.60	D										
5.00	D				Occasional sand partings below 5.00m.						
5.40-5.42	S			50*		5.40	31.10				
5.50	D			25	Very dense reddish brown fine to coarse very silty SAND.						
5.95-6.00	S			50*		6.00	30.50				
				75	End of Borehole.						
Drilling					Ground Water						
Type	From	To	Size	Fluid	Struck	Behaviour	Sealed	Date	Hole	Cased	Water
Shell and Auger	GL	6.00	0.15	-	Nil			15.7.87	6.00	1.50	-
Remarks					Service Location Pit excavated to 1.00m (1 hour). Chiselled 5.40-6.00m (1 hour). * Seating blows. ** Drillers description.						
Borehole Record					Project				Contract		
exploration associates					City of Manchester, Manchester and Salford, Inner Relief Route, L51 1P Street to Cheetham Hill Road				E6531/4		
					Borehole				11		
					Sheet 1 of 1						

Borehole SJ89NW197

117 85/18 G.S.M. No. 22.

SJ89NW197

SECTION OF Borehole at West of Lower Bradley, Stange, Lancashire.

Maps: One-inch 85 Six-inch 104 County Lancs.

Height above O.D. 24105 ft Latitude _____ Longitude _____

Communicated by Birney: Home Branch Ltd & P. J. Birney Date of Sinking _____

Made by Hidling's No. 22. Sec. 2, 48, XI, p. 226. Dip of Strata _____

85/104 NW 197 M/c 58.

		Thickness.		Depth from Surface.	
Swift deposits		60.40	21 -	60.40	21 -
Upper red sandstone		83.21	275 -	89.61	294 -
Dark raddle		9.14	30 -	98.76	324 -
Limestone		0.31	1 -	99.06	325 -
Raddle		3.66	12 -	102.72	337 -
Limestone		0.41	1 4	103.12	338 4
Raddle containing magnesian		9.14	30 -	112.27	368 4
Light gritstone		0.76	2 6	113.03	370 10
Light raddle		7.32	24 -	120.35	394 10
Light stone		0.46	1 6	120.80	396 4
Light raddle		5.49	18 -	126.29	414 4
Dark gritstone		1.07	3 6	127.36	417 10

558385 9925

5589/16

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RECORD OF WELL (SHAFT OR BORE)

1" N.S. 85

1" O.S.

Grid M/c 56

Ref.

At esqrs. Jones & redoubt, StrangewaysTown or Village Manchester County Lancs. Six-inch quarter sheet 104 N.W.Exact site (A rough sketch-map or a tracing from a map is very desirable)Level of ground surface above sea-level (O.D.) 15 ft. If well starts below ground surface, state how far ft.Shaft ft. diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.

Details of permanent lining tubes (internal diameters preferred)

Water struck at depths of (feet)

Rest-level of water below top of well feet. Suction at feet. Yield on hours' test days' testgallons per (with pump of capacity g.p.h.); depressing water level to feetbelow top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.

Quality (attach copy of analysis if available)

Sunk by for Mr. Date of well Information from Linney: Mem. Lanc. Lit. & Phil. Soc. Sec. 2. Vol. xii. p. 226.

(For Survey use only)

GEOLOGICAL CLASSIFICATION:

NATURE OF STRATA (and any additional remarks)

THICKNESS DEPTH
Feet. Inches Feet. Inches

Drift deposits	21	-	21	-
Upper red sandstone	273	-	294	-
Dark red riddle	30	-	324	-
Limestone	1	-	325	-
Riddle	12	-	337	-
Limestone	1	4	338	4
Riddle containing magnesite	2	-	368	4
Light gritstone	2	6	370	10
Light riddle	24	-	394	10
Light stone	1	-	396	4
Light riddle	18	-	414	4
Dark gritstone	3	6	417	10

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GEOLOGICAL SURVEY AND MUSEUM
SOUTH KENSINGTON.
LONDON. S.W. 7.

For Survey use only

Date received

O.S.M. Office File No.

Site marked on map (use symbol)

(*1 in 15) W. 1295/10,000 9/89
A.D. R.W. Ltd. Op. 286

RECORD OF WELL

At Boddingtons Breweries Ltd

New-Briggs-Street

Town or Village Balford

County Manchester

Six-inch sheet 104 N.W. / E / 100 Six-inch National Grid sheet

For State whether owner, tenant, builder, contractor, consultant, etc.:-

Address (if different from above) Same

Level of ground surface 25 ft. If well top is not at ground } above *
above sea level (O.D.) 25 ft. eve. 25 ft.

SHAFT 245 ft.; diameter 18 ft.; HEADINGS (please attach details dimensions and directions)

BORE 245 ft.; diameter of bore: at top 18 in.; at bottom 18 in.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)
18" dia. Tubes to 70 ft 3" cemented in position.

Water struck at depths of 9' 10" ft. below well top.

Rest level of water 9' 10" ft. above * well top. Suction at 130 ft. Yield on 12 hours' * test
pumping at 12 galls. per. with depression to 130 ft. below well top.

Recovery to rest level in 12 mins. * Capacity of pump 12 g.p.h. Date of measurements 1945

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT

Make and/or type Thomas Matthews Ltd Motive power Electric Motor

Capacity 15,000 BEAM PUMP galls. per hour. Suction at 130 ft. below well top.

Amount pumped 12 galls. per day. Estimated consumption 12 galls. per week.

Well made by Thomas Matthews Ltd Date of sinking 1945

Information from As above.

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

For Survey use only

Date Received 12.9.62

Section 8

Pumping test 12.9.62

Observ well 12.9.62

Recorder 12.9.62

K.R. log 12.9.62

Site marked on 12.9.62

1" map 12.9.62

6" map 12.9.62
(use symbol)

Record forwarded 12.9.62

To 12.9.62

date 12.9.62

GEOLOGICAL SURVEY,
WATER DIVISION,
SOUTH KENSINGTON,

Copy sent to M/c on 12.10.64 116

85/22 C

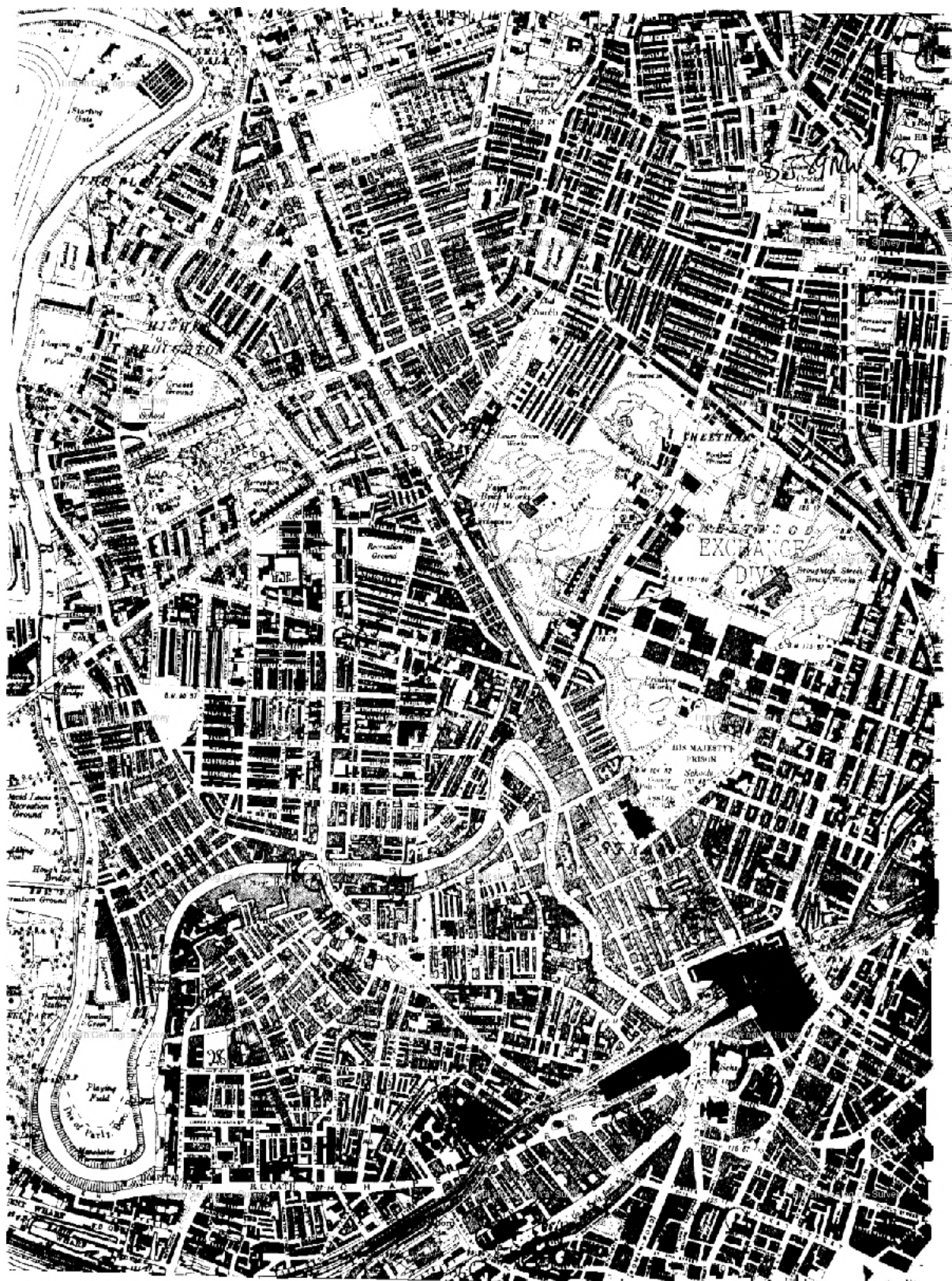
ANALYSIS OF BODDINGTON'S NEW WELL
by
HERON & COSBIE:

SJ 89NW 197

		<u>Grains per</u> <u>gallon:</u>
Carbonic Acid	CO_2	12.60
Sulphuric Acid	SO_4	12.98
Chlorine	Cl.	5.60
Nitric acid	NO_3	3.2
Nitrous acid	NO_2	Nil
Calcium	Ca	8.96
Magnesium	Mg	2.85
Sodium	Na	4.92
Silica		.52
Oxide of Iron and Aluminium		.56

Hypothetical continuation of Acids,
and metals:

Sodium Nitrate	NaNO_3	4.42
Sodium Chloride	NaCl	9.24
" Sulphate	Na_2SO_4	.28
Magnesium "	MgSO_4	15.96
Magnesium Carbonate	MgCO_3	1.18
Calcium Carbonate	CaCO_3	21.0
Total solids dried @ 180°C.		46.76.



APPENDIX 6

Coal Authority Report



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

FORMER BODDINGTONS BREWERY
MANCHESTER
GREATER MANCHESTER

Date of enquiry: 26 September 2017
Date enquiry received: 26 September 2017
Issue date: 26 September 2017

Our reference: 51001629659001
Your reference: 140772215_3|



CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

FORMER BODDINGTONS BREWERY, MANCHESTER,
GREATER MANCHESTER

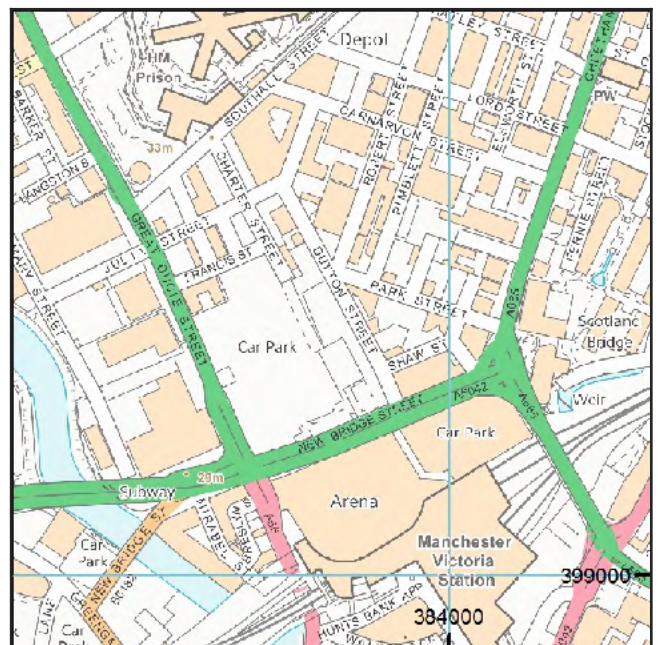
How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
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NG18 4RG

www.groundstability.com

 /company/the-coal-authority
 /thecoalauthority
 /coalauthority



Approximate position of property



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Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	No
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is not within a surface area that could be affected by past underground mining.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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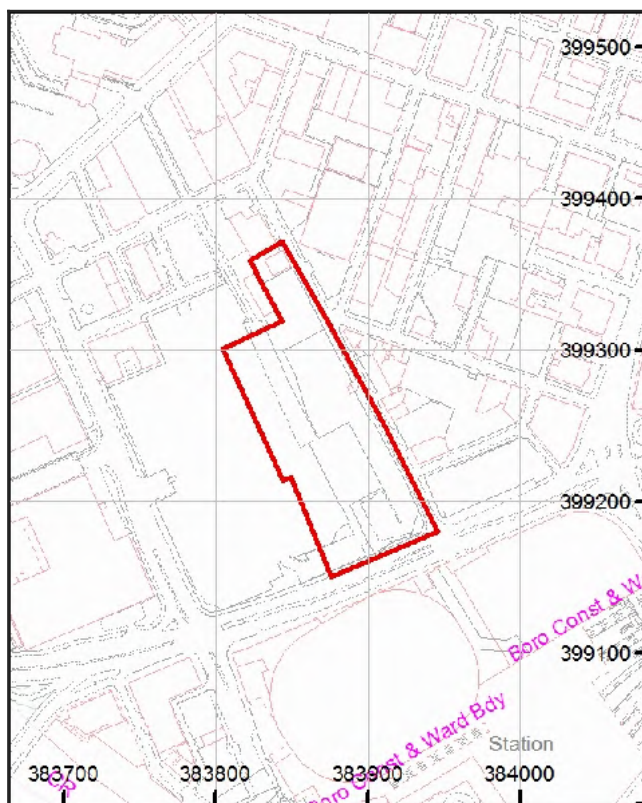
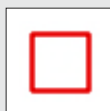
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

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+44 (0)1623 637 000 (International)

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Mansfield
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 /coalauthority



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A P P E N D I X 7

Summary of Landmark Information Group Report

STATUTORY SOURCES OF INFORMATION

Information from the Landmark Information Group Ltd has been summarised in the Table below. The site sensitivity map and full copy of the Envirocheck data is available on request.

Distance from an Approximate Central Point on Site*				
Agency & Hydrological	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
BGS Groundwater Flooding Susceptibility	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices				
Discharge Consents		17	28	39
Enforcement and Prohibition Notices				
Integrated Pollution Controls				9
Integrated Pollution Prevention and Control				
Local Authority Integrated Pollution Prevention and Control				
Local Authority Pollution Prevention and Controls		3	3	16
Local Authority Pollution Prevention and Control Enforcements			1	
Nearest Surface Water Feature		Yes		
Pollution Incidents to Controlled Waters		2	4	16
Prosecutions Relating to Authorised Processes				1
Prosecutions Relating to Controlled Waters		n/a	n/a	n/a
Registered Radioactive Substances				2
River Quality		2		
River Quality Biology Sampling Points				
River Quality Chemistry Sampling Points				1
Substantiated Pollution Incident Register			1	5
Water Abstractions	6	12	6	3 (*17)
Water Industry Act Referrals				
Groundwater Vulnerability	Yes	n/a	n/a	n/a
Source Protection Zones				
Extreme Flooding from Rivers or Sea without Defences	Yes	Yes	n/a	n/a
Flooding from Rivers or Sea without Defences		Yes	n/a	n/a
Areas Benefiting from Flood Defences			n/a	n/a
Flood Water Storage Areas			n/a	n/a
Flood Defences		Yes	n/a	n/a
Waste	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
BGS Recorded Landfill Sites				
Historic Landfill Sites			1	3
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfill Boundaries)				
Licensed Waste Management Facilities (Locations)			2	9
Local Authority Recorded Landfill Sites				
Potentially Infilled Land (Non-Water)		2	2	12
Potentially Infilled Land (Water)	1	4	10	11
Registered Landfill Sites				
Registered Waste Transfer Sites				5
Registered Waste Treatment or Disposal Sites				2

Hazardous Substances	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				
Geological	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Brine Compensation Areas		n/a	n/a	n/a
Coal Mining Affected Areas	Yes	n/a	n/a	n/a
Mining Stability	Yes	n/a	n/a	n/a
Natural and Mining Cavities				
Potential for Collapsible Ground Stability Hazards	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards			n/a	n/a
Potential for Landslide Ground Stability Hazards	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	Yes		n/a	n/a
Radon Affected Areas		n/a	n/a	n/a
Radon Protection Measures		n/a	n/a	n/a
Industrial Land Use	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Contemporary Trade Directory Entries	1	50	138	606
Fuel Station Entries		1	1	8
Sensitive Land Use	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Ancient Woodland				
Areas of Adopted Green Belt				
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Environmentally Sensitive Areas				
Forest Parks				
Local Nature Reserves				
Marine Nature Reserves				
National Nature Reserves				
National Parks				
National Sensitive Areas				
Nitrate Vulnerable Zones	2			
RAMSAR Sites				
Sites of Special Scientific Interest				
Special Areas of Conservation				
Special Protection Areas				
World Heritage Sites				

*The distances recorded are approximate and measured from the site boundary.

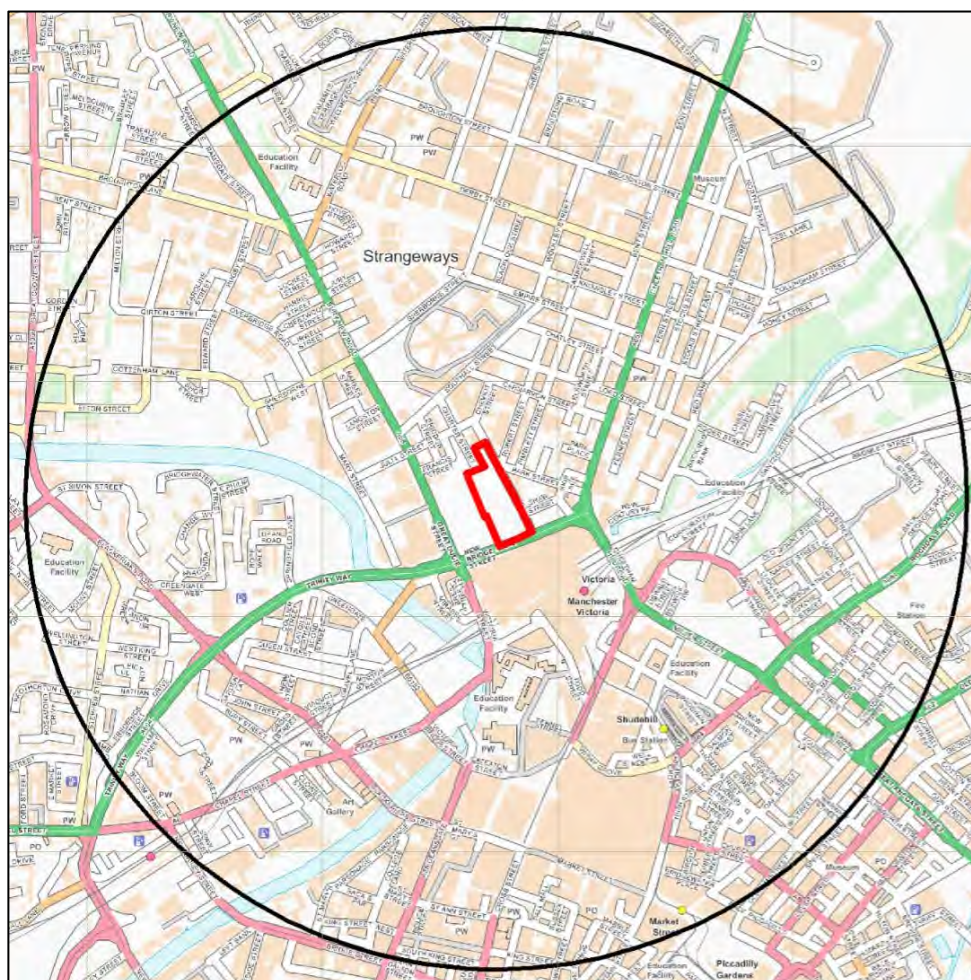
** Where 'Yes' and 'No' are referred to this indicates the presence or absence of data and does not imply a potential risk or hazard.

APPENDIX 8

Preliminary Unexploded Ordnance Threat Assessment, 6 Alpha Associates

PRELIMINARY UNEXPLODED ORDNANCE (UXO) THREAT ASSESSMENT

Meeting the requirements of *CIRIA C681* 'Unexploded Ordnance (UXO) – A guide for the Construction Industry' Risk Management Framework



6 ALPHA PROJECT NUMBER	P6190	ORIGINATOR	C. Cole
LANDMARK ORDER NUMBER	140772215_2	REVIEWED BY	R. Griffiths (27 th September 2017)
CLIENT REFERENCE	LO10517	RELEASED BY	L. Askham (28 th September 2017)
SITE	Former Boddingtons Brewery, Manchester, M3 1PQ		
RATING	MEDIUM – This Site requires further action to establish and mitigate any UXO risk posed		

STUDY SITE

The Study Site is described as “Former Boddingtons Brewery, Manchester, M3 1PQ”, and it is centred on National Grid Reference 383870, 399250.

THREAT POTENTIAL AND RECOMMENDATIONS

UXO PROBABILITY ASSESSMENT = 3 RATING, INDICATING A MEDIUM PROBABILITY OF UXO ENCOUNTER

The rating scale can be seen on *Figure 2* (Probability of UXO Encounter). In accordance with current guidelines (*CIRIA C681 Chapter 5*), the highest threat rating has been determined at this specific site for UXO threat consideration and has been used for the final assessment and recommendations.

In accordance with *CIRIA C681 Chapter 5* on managing UXO risks, *6 Alpha* recommends that the next stage in the risk management framework is:

DETAILED UXO THREAT & RISK ASSESSMENT

We would be pleased to provide this service, please contact *Envirocheck* for further details:



REPORT SUMMARY

During WWII, the Study Site was situated within *Manchester County Borough*, which recorded six High Explosive (HE) bomb strikes per 100 hectares; a very low level of bombing.

Luftwaffe aerial reconnaissance photography associated with the Site identified a machine tool factory (located 375m east), gas works (located 615m east) and non-ferrous metals, works and mills (located 885m west) as primary bombing targets. In addition, several works and mills located on-site may have been considered secondary bombing targets.

Air Raid Precaution (ARP) records did not identify any HE bomb strikes within the Site. However, five HE bomb strikes were identified within 170m of the Site boundary, the closest being 35m south. In addition, IBs were recorded on the Site boundary, 15m north, 15m west, 20m south, 30m east, 40m north and 50m north.

Official bomb damage mapping showed demolished buildings on-site and in the immediate vicinity. In addition, an analysis of post-war mapping identified clearance areas on-site.

Given that bomb damage was recorded on-site and bombing was recorded in close proximity; it would suggest that further action is warranted to address the potential for UXO encounter.

USING THIS REPORT

This Preliminary Assessment is designed to inform environmental and construction professionals of the potential threat of military related explosives and/or ordnance on, or in, the vicinity of the Study Site.

This assessment is designed to be employed as a site-screening tool to meet with the requirement of Phase One of the *CIRIA UXO Risk Management Framework*; there are two broad prospective outcomes; either the threat level requires a detailed threat & risk assessment; or no further action is required. In the former instance we can provide a report within 14 working days (or more quickly upon application).

Two figures accompany the report, the *Second World War* (WWII) High Explosive (HE) Bomb Density and the final Probability of UXO Encounter. The purpose of this approach is to demonstrate that whilst bomb density statistics give an indication for WWII bombing, they should not be relied upon exclusively to generate a holistic assessment.

For further information, please contact *Envirocheck*:

Telephone: +44 (0)844 844 9952

Website: <http://www.envirocheck.co.uk>

Email: customerservice@envirocheck.co.uk

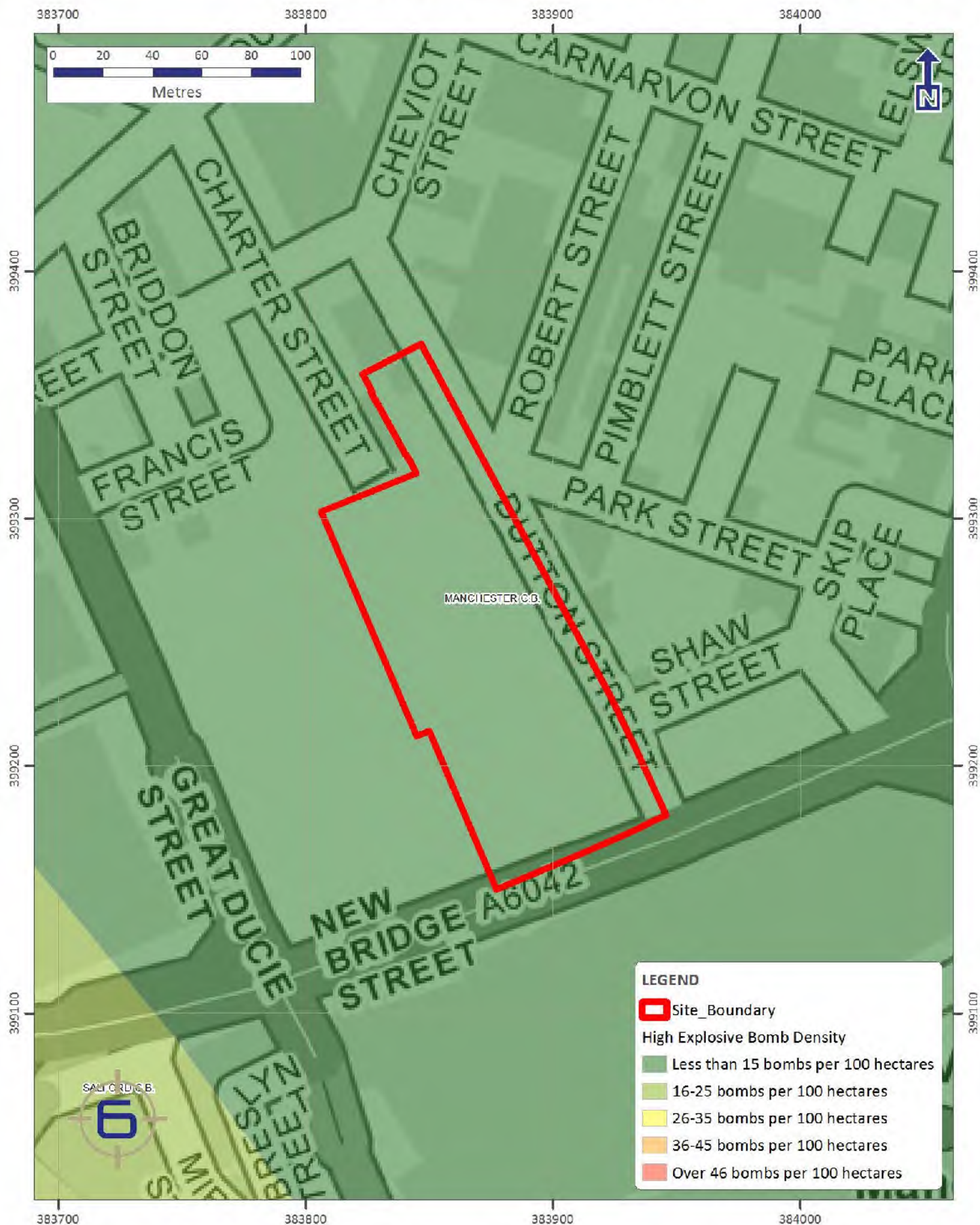
DATA FINDINGS

Threat Source (within 1,000m)	Detail	
	Identified	Comments
 Airfields/Military Facilities	✗	None recorded within 1,000m.
 Ordnance Manufacture/Storage	✗	None recorded within 1,000m.
 WWII Decoy Bombing Sites	✓	Site decoyed (730m south-south-west).
 WWII Defensive Features	✗	None recorded within 1,000m.
 WWII <i>Luftwaffe</i> Designated Bombing Targets	✓	A machine tool factory (375m east), gas works (615m east) and non-ferrous metals, works and mills (885m west).
 Secondary Bombing Targets	✓	Numerous works and mills (on-site).
 WWII Bomb Strikes Within Site Boundary	✓	ARP records identified an IB on the north-western boundary of the Site.
 WWII Bomb Strikes Near Site Boundary	✓	ARP records identified HE bomb strikes 35m south, 50m north, 70m east, 115m west and 170m south-west.
 WWII Bomb Damage	✓	Official bomb damage mapping identified demolished buildings on-site.
 Abandoned Bomb Register	✗	The official abandoned bomb list did not identify any abandoned bombs within 1,000m.
 WWII Bombing Density Per 100 Hectares	✓	The Site was located within <i>Manchester County Borough</i> , which recorded six HE bomb strikes per 100 hectares.

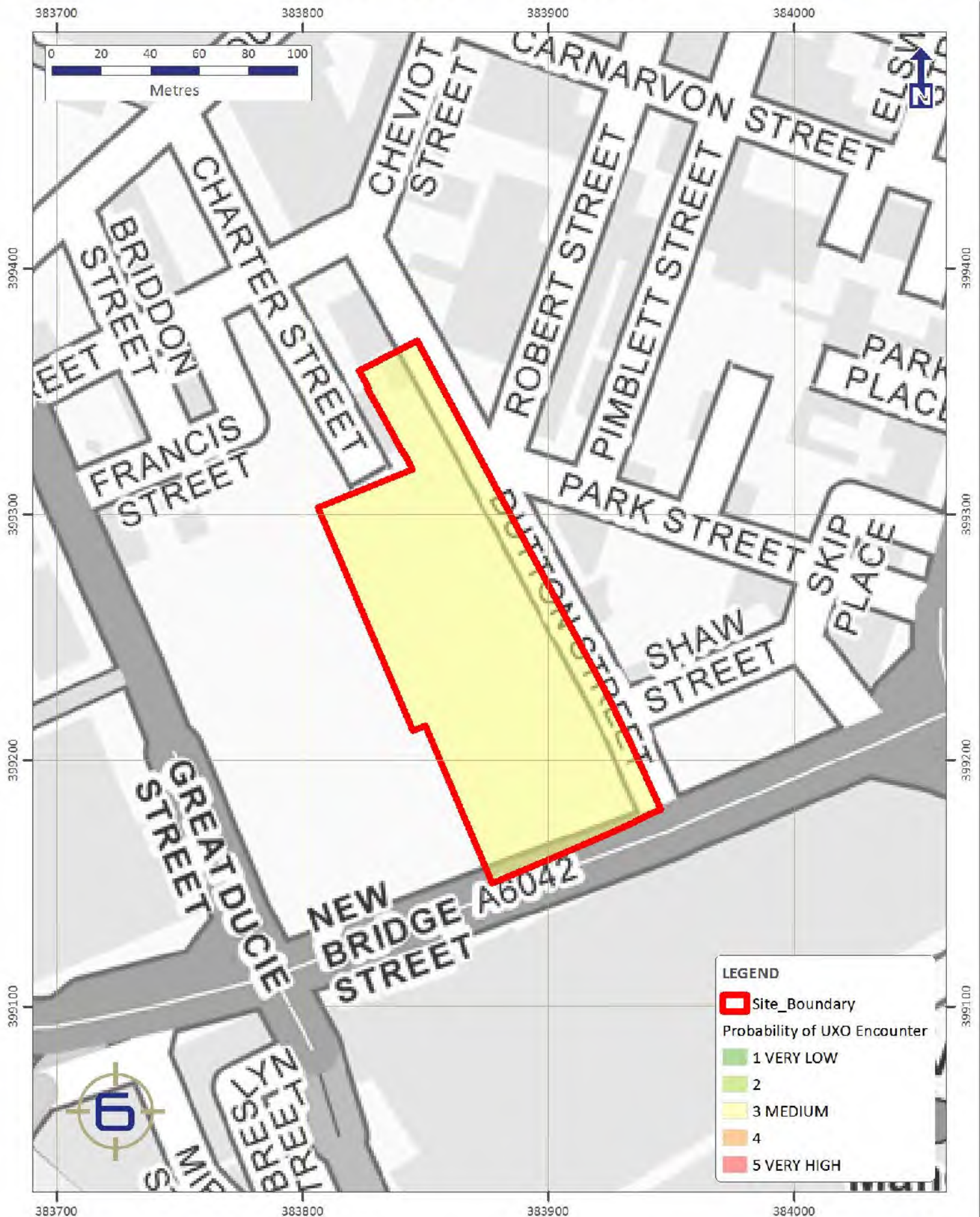
IMPORTANT NOTES

1. The term 'Preliminary UXO Threat Assessment' has been used to describe this report, to fall in line with the *CIRIA* C681 guidelines. Whilst the term 'Risk' can be justifiably used at this stage, the reader should note that the 'Consequence' function of 'Risk' is not considered. Should it be required, this would be addressed in the 'Detailed UXO Threat & Risk Assessment' (Stages 2 and 3).
2. This report is accurate and up to date at the time of writing.
3. The assessment levels have been generated from historical data and third party sources. Where possible *6 Alpha* have sought to verify the accuracy of such data, but cannot be held accountable for inherent errors that may be in third party data sets (e.g. *National Archives* or library sources).
4. *6 Alpha* have exercised all reasonable care, skill and due diligence in producing this service.
5. Whilst every effort has been used to identify all potential UXO/explosive threats, there were a number of private facilities, which may not have released privately recorded information concerning UXO/explosive threats into the public domain. It is therefore possible that some of the aforementioned sites may not be included within the database.

WWII High Explosive Bomb Density



Probability of UXO Encounter



- LEGEND**
- Site_Boundary
 - Probability of UXO Encounter
 - 1 VERY LOW
 - 2
 - 3 MEDIUM
 - 4
 - 5 VERY HIGH

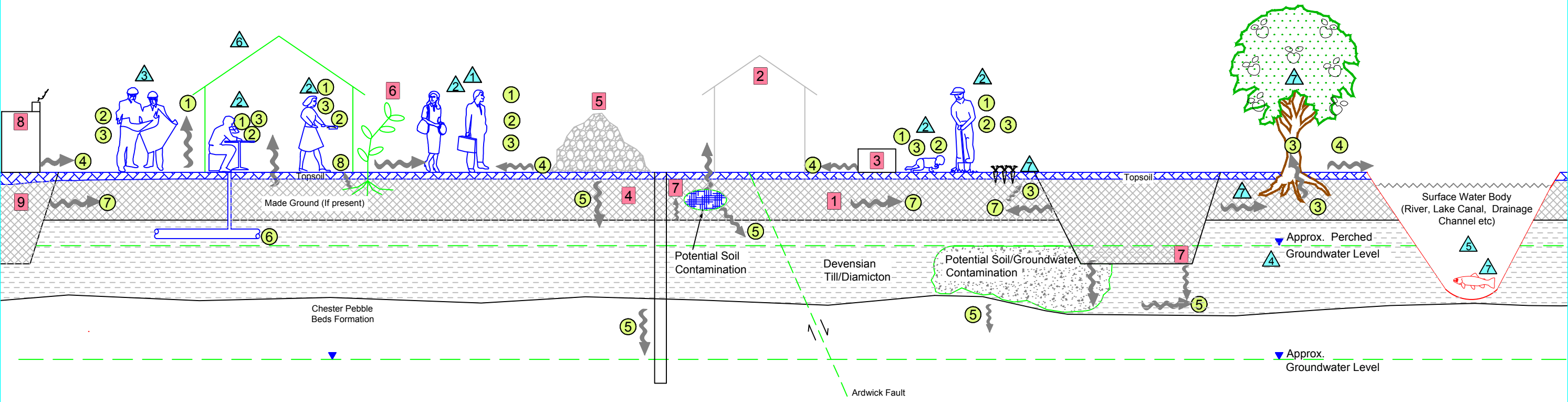
APPENDIX 9

List of Land Uses and Associated Chemicals of Potential Concern

		Metals and non-metals					Inorganics					Organics						Other chemicals and compounds
Industry		Common metal suite (Cd, Cr, Cu, Ni, Pb, Zn)	Hg	As	B	Se	CN	Nitrate	Sulphate	Asbestos	pH	Phenol	Acetone	Hydro-carbons	PAHs	Chlorinated hydro-carbons	PCBs	
Airports		✓					✓			✓	✓		✓	✓		✓	✓	
Animal and animal products processing works		✓		✓					✓			✓		✓	✓	✓		Dieldrin
Asbestos manufacturing works		✓							✓	✓				✓	✓	✓	✓	
Ceramics, cement and asphalt manufacturing works		✓	✓	✓					✓	✓	✓		✓	✓	✓		✓	
Charcoal works		✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Chemical works	coatings (paints and printing inks) manufacturing	✓							✓	✓	✓	✓		✓	✓	✓		Ba, S, organotin compounds
	cosmetics and toiletries manufacturing works	✓							✓	✓	✓		✓	✓	✓	✓		
	disinfectants manufacturing works	✓	✓						✓	✓	✓	✓		✓	✓	✓	✓	Ba, chloro-phenol, dioxins/furans
	explosives, propellants and pyrotechnics works	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	Ba
	fertiliser manufacturing works	✓								✓	✓			✓	✓		✓	
	fine chemical manufacturing works	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	V, dioxins/furans
	inorganic chemicals manufacturing works	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	Ba
	linoleum, vinyl and bitumen-based floor coverings	✓		✓					✓	✓	✓	✓		✓	✓	✓	✓	organotin compounds
	mastics, sealants, adhesives, roofing felt works.	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓	Ba
	organic chemicals manufacturing works	✓		✓					✓	✓	✓	✓	✓	✓		✓	✓	V
	pesticides manufacturing works	✓	✓	✓						✓	✓	✓		✓		✓	✓	chloro-phenol, hexachloro-cyclohexane, Dieldrin, dioxins/furans, organotin
	pharmaceuticals manufacturing works	✓	✓	✓						✓	✓			✓	✓		✓	
rubber processing works (including tyres)								✓			✓		✓			✓	S, Zn,	
soap and detergent manufacturing works										✓		✓		✓				
Dockyards and dockland		✓	✓	✓					✓	✓		✓		✓	✓	✓	✓	hexachloro-cyclohexane
Dry cleaners		✓	✓	✓		✓	✓	✓	✓	✓	✓			✓		✓	✓	
Engineering works	aircraft manufacturing works	✓					✓	✓	✓	✓	✓		✓	✓		✓	✓	
	electrical and electronic equipment works	✓	✓	✓	✓			✓	✓	✓	✓			✓		✓	✓	
	mechanical engineering and ordnance works	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	V, Be
	railway engineering works	✓		✓					✓	✓	✓			✓	✓	✓	✓	S
	shipbuilding repair and shipbreaking	✓		✓			✓			✓	✓		✓	✓		✓	✓	organotin compounds
	vehicle manufacturing works	✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
Fibreglass and fibreglass resin manufacturing works		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Gasworks, coke works and coal carbonisation plants		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓		✓	V, S
Glass manufacturing works		✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		✓	✓	
Metal works	electroplating and other metal finishing works	✓			✓		✓	✓	✓	✓	✓	✓		✓		✓		
	iron and steelworks	✓					✓		✓	✓	✓	✓		✓			✓	V, S
	lead works	✓		✓					✓	✓	✓			✓	✓		✓	
	non-ferrous metals (excluding lead works)	✓	✓		✓				✓	✓				✓	✓		✓	V
	precious metal recovery works	✓	✓	✓				✓	✓	✓	✓					✓	✓	
Oil refineries and bulk storage		✓					✓		✓	✓	✓	✓	✓	✓			✓	organolead compounds
Photographic processing industry		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓	
Power stations (excluding nuclear power stations)		✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	V, Ba, Be
Printing and bookbinding works		✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Pulp and paper manufacturing works		✓							✓	✓	✓			✓		✓	✓	hexachloro-cyclohexane, dioxins/furans
Railway land		✓							✓	✓					✓	✓	✓	V
Road vehicle: garages and filling stations		✓								✓	✓			✓	✓	✓	✓	organolead compounds
Road vehicle: transport and haulage centres		✓								✓	✓		✓	✓	✓	✓	✓	V, S, organolead compounds
Sewage works and sewage farm		✓	✓	✓			✓	✓	✓	✓	✓			✓		✓	✓	
Textile works and dye works		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	Dieldrin
Timber products and manufacturing works		✓		✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Timber treatment works		✓		✓	✓					✓	✓	✓		✓	✓	✓		chloro-phenol, hexachloro-cyclohexane, Dieldrin, organotin
Waste management	drum and tank cleaning and recycling plants								✓	✓			✓	✓			✓	
	hazardous waste treatment plants	✓	✓	✓		✓		✓			✓	✓				✓	✓	V, Ba, hexachloro-cyclohexane, Dieldrin
	landfills and other waste treatment/disposal sites	✓		✓					✓	✓	✓			✓	✓	✓	✓	dioxins/furans
	solvent recovery works	✓									✓					✓	✓	
	metal recycling sites	✓	✓	✓			✓		✓	✓	✓			✓		✓	✓	Ba

* The information in this table is indicative only and does not present a comprehensive review. The data is summarised from R&D Publication CLR 8, Potential Contaminants for the Assessment of Land, DEFRA and EA, 2002.

Assessment of individual sites requires knowledge of historic land use and specific site processes. Irrespective of the information present above there are several contaminants of concern such as hydrocarbons and PCBs, that can be found on any industrial site of significant size.



Source

- 1
- Made ground
- 2
- Historical industrial uses
- 3
- Historic tanks
- 4
- Historic building material and made ground
- 5
- Fly tipped asbestos containing materials
- 6
- Invasive species (Japanese knotweed)
- 7
- Potentially infilled land (on site)
- 8
- Surrounding commercial and industrial uses
- 9
- Potentially infilled land (off site)

Pathway

- 1
- Inhalation of vapours and/or dust
- 2
- Dermal contact with soil or dust
- 3
- Ingestion of soil, dust and/or plant matter
- 4
- Surface water runoff
- 5
- Groundwater migration
- 6
- Subsurface attack
- 7
- Gas migration through geology
- 8
- Habitat degradation

Receptor

- 1
- Current Occupiers
- 2
- Future Occupiers
- 3
- Construction Workers
- 4
- Groundwater
- 5
- Surface Water Body (River, Lake, Canal, Drainage Channel etc)
- 6
- Building (Proposed)
- 7
- Flora & Fauna

A	First Issue	01.11.17	OP	ES	JL
REVISION	DETAILS	DATE	DRAWN	CHECKED	APPROVED

CLIENT

Prosperity Capital Partners Ltd

PROJECT

UX Manchester - Phase 1

DRAWING TITLE

Schematic Conceptual Site Model

DRG No.	SCALE	DATE
LO10517-003	NTS	01/11/17
DRAWN BY	CHECKED BY	APPROVED BY
SJB	ES	JL

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