



Phase 1 Preliminary Risk Assessment Proposed New Storage Facility HMG Paints, Collyhurst Rd, Manchester

Prepared for HMG Paints

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Document Origin

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Executive Summary

Client	HMG Paints
Location	HMG Paints, Collyhurst Road, Manchester M40 7RU.
Description	The site covers an area of approximately 0.18Ha, located on a largely undeveloped area of the larger HMG Paints facility off Collyhurst Road, Manchester. The development area is used for the loading / unloading of delivery vehicles, surfaced with a mix of soft landscaping and concrete hardstanding. A number small of steel framed buildings and temporary steel shipping containers are present mainly in the west of the site, located on an area of concrete hardstanding. The main HMG Paints facility surrounds the site area, away from this are an MOT garage, a coatings plant, Metrolink sidings and station and open areas of land used for recreation.
Development	It is proposed to develop the site as a storage facility.
Site History	The site was part of Collyhurst Mills. The southern section comprised an offshoot of the River Irk, leading up to the mill up until the early 1900's. Subsequent developments at the site included residential housing, mills and part of the larger HMG paints plant. Surrounding land saw extensive commercial / industrial activities including quarrying, mills, railway lines / sidings, chemical works and later a school.
Geology	British Geological Survey mapping indicates the site to be underlain the Collyhurst Sandstone Formation. Given its development history, the site is also anticipated to be underlain by significant thicknesses of Made Ground.
Radon	The radon guidance on protective measures for new dwellings indicates that the site is in a 'low' probability radon area where less than 1% of homes are estimated to be at or above the Action Level. Radon gas protection measures are therefore not required in the construction of new dwellings or extensions.
Mining & Ground Stability	The Coal Authority indicates that the site is not located within an area where coal mining presents a significant risk. No further assessment of the potential risk posed by coal mining is considered to be required.
Flood Risk	According to the Flood Map for Planning, available on the gov.uk website, the site is located within Flood Zone 3, whereby there is greater than a 1% (1 in 100) chance of flooding from rivers or the sea occurring each year. If one is not already available, it is recommended that a Flood Risk Assessment is undertaken for the proposed development.
Environmental Setting	The site is underlain a Principal Aquifer, relating to the Collyhurst Sandstone. The site is not located within a groundwater SPZ. However, a nearby groundwater abstraction is indicated to be approximately 150m from the site, used for cooling purposes. Therefore, this aquifer is considered to represent a sensitive groundwater resource receptor. The River Irk is present approximately 9m to the west of the site at and is considered to represent a sensitive receptor.
UXO	Zetica Bomb Risk Mapping indicates the site to be in an area of moderate UXO risk. Therefore, a detailed UXO desk study should be undertaken prior to undertaking intrusive ground investigations.

**Further Works /
Considerations**

The following should be considered for the proposed development:

- A Detailed UXO Desk Study;
- A Flood Risk Assessment should be undertaken;
- Carry out an intrusive site investigation to confirm ground conditions at the site.
- Installation of wells in boreholes to allow the assessment of potential risk to future site users posed by ground gases.
- Soil samples should be recovered from selected exploratory holes and tested for potential contaminants of concern. This should include pH, metals, asbestos screening, speciated PAH and speciated TPH.
- In-situ testing and geotechnical soil sampling should be carried out during intrusive investigation to provide adequate recommendations for foundation design.

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1.0 Introduction

1.1 Background

Clancy Consulting Limited has been instructed by HMG Paints to carry out a Phase 1 Preliminary Risk Assessment for the site of a proposed new storage facility. The site is located on a largely undeveloped area of the larger HMG Paints facility, Collyhurst Road, Manchester M40 7RU.

A proposed development plan is included in Appendix I.

1.2 Objectives

The objectives of this investigation are summarised below:

- Provide a review of the site's land use history by reference to ordnance survey maps of the area.
- Assess the environmental setting, geology, hydrology, hydrogeology, mining and subsidence history of the site and surrounding area.
- Consider the potential risk to end users of the site from unexploded ordnance (UXO).
- Consider the potential risk to end users of the site from hazardous ground gas.
- Consider potential geotechnical constraints for the proposed development.
- Develop a preliminary risk assessment and a detailed 'conceptual site model' with regard to potential contamination sources, pathways and receptors.
- Provide recommendations regarding the requirement for further investigations, if required, to satisfy the Local Planning Authority.

1.3 Limitations of the Study

Clancy Consulting Limited cannot be held responsible for any omissions, misrepresentation, errors or inaccuracies with the supplied third-party report information. The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information or improved practices and changes in legislation may require a reinterpretation of the report in whole or in part.

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2.0 Desk Study

2.1 General

Background information was sought from the following sources:

- Ordnance Survey historical maps (selected copies included in Appendix II).
- Zetica Bomb Risk Mapping (Appendix III).
- British Geological Survey (BGS) sheets (Appendix IV).
- Environment Agency site sensitivity & flood risk maps (Appendix V).
- Environmental datasheets (Appendix VI).

2.2 Site Setting and Description

The site is approximately 0.18Ha in area, located on part of the larger HMG Paints facility, which is approximately 1.20km to the northeast of Manchester Victoria Railway Station at Ordnance Survey (OS) Coordinates 384950, 399940. The site is located approximately 9m from the eastern bank of the River Irk, which meanders in open channel at this point. A site location plan is included in Appendix I.

The development area is used for the loading / unloading of delivery vehicles, surfaced with a mix of soft landscaping and concrete hardstanding. A number small of steel framed buildings and temporary steel shipping containers are present mainly in the west of the site, located on an area of concrete hardstanding.

To the north of the site is a meander in the River Irk and further facilities of HMG Paints and Keolis Amey Metrolink Station and sidings. To the east is Collyhurst Road, an MOT and vehicle repair garage and an open area of land used for recreation (Sand Hills and Peachstone Henge). Immediately south of the proposed development site is an existing building belonging to HMG Paints, Collyhurst Road and the recreation grounds. To the west is the River Irk, further HMG Paints buildings and the Metrolink tracks.

2.3 Site History

In order to investigate the development history and previous land uses at the site and surrounding area, historical OS maps were examined. Copies of the maps are presented in Appendix II.

Table 1 below is not intended to provide a comprehensive review of all the changes which have occurred at the site and instead provides a summary of the most salient points relating to the development history of the site. The most significant historical land uses are highlighted in bold text for ease of reference.

Table 1 – Site History

Date(s)	Site	Surrounding Land
1850	The north of the site contains a number of buildings associated with Collyhurst Mills. The central area of the site is 'parkland'. In the south and southeast corner is an offshoot of the River Irk, leading to Collyhurst Mill.	To the north of the site are buildings and facilities associated with Collyhurst Mills, including a weighing machine and cistern. To the east is a boiler house and spindle works. To the south is parkland, beyond which are two dye works and to the west is the River Irk and parkland. To the southeast are areas of quarrying (Red Sand Delf).
1893	Collyhurst Mills is no longer indicated to be present and the river offshoot has been filled in. The southern boundary of the site now features residential housing along Appleton Street.	Little Green Dye and Bleach Works features from approximately 70m north of the site on the northern bank of the River Irk, which includes a reservoir 90m from the site. A Quarries are featured approximately 100m southeast and east of the site and 180m north east. An old clay pit features 120m west of the site. Railway lines feature approximately 80m west of the site.

Date(s)	Site	Surrounding Land
1908 to 1949	Much of the site now features a Cotton Waste Mill, with Appleton Street running along the southern boundary.	Additional works buildings (Little Green Dye Works and Collyhurst Finishing Works are shown approximately 50m to 60m south and south west of the site, with two gasometers (later identified as a gas works) featuring 180m southwest. Further railway lines are shown approximately 110m east of the site, beyond which are Yew Tree Chemical Works, a brick works and Moss Brook Works. Extensions to the clay pits and brick works to the west of the site are shown.
1951 - 1965	No significant changes.	Quarrying works to the east appear to have ceased (it is uncertain if infilling has occurred) with the area now annotated as playing fields and a second containing industrial premises (foundry and cooperage).
1958 - 1977	The residential housing along Appleton street has been replaced by additional un-named industrial buildings.	The quarry and sand pit no longer feature as active works. By 1970 the gasometers no longer feature.
1985 - 1987	The mill building no longer features on the site.	Much of the immediate surrounding buildings feature in their current configuration. The previous quarries and clay pits now appear to be open areas of land (recreational land).
1989 to 1999	No significant changes.	The railway lines and sidings to the west and southwest have diminished in extent
2006 - 2021	No significant changes.	A Large commercial development including a school (Eden Boys Leadership Academy) feature from approximately 200m west of the site.

2.4 UXO Risk Assessment

A review of publicly available bomb risk mapping from Zetica indicates the site to be in an area of moderate UXO risk. Therefore, it is recommended that a Detailed UXO Desk Study is undertaken prior to undertaking any physical investigations into the ground beneath the site.

Zetica bomb risk mapping for the site is included in Appendix III.

2.5 Geology

Based on British Geological Survey 1:50,000 Map (085 Manchester), the site is shown to be free from superficial deposits. However much of the surrounding area is underlain by Devensian Till.

The bedrock geology comprises the Collyhurst Sandstone Formation.

Given its development history, the site and much of the surrounding area are believed to be underlain by Made Ground.

Copies of the geological plans are provided in Appendix IV.

2.6 Mining and Ground Stability

The site is located within a Coal Authority Reporting Area, but not within a High-Risk Development Area. On this basis, CCL have purchased a CON29M coal mining report a copy of which is presented in Appendix V.

The report identified the following:

- The property is in a surface area that could be affected by underground mining in two seams of coal at 370m to 650m depth, last worked in 1967;
- The property is not in an area likely to be affected by present underground mining;
- No future applications to abstract coal have been received;
- There are no recorded coal mine entries within 20m of the site boundary;
- The Coal Authority are not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining;
- The site is not within the boundaries of an opencast site, or within 200m of any current opencast working sites;
- No damage notices or claims have been received within 50m of the site boundary;
- No records exist of mine gas emissions requiring action; and,
- The site has not been subject to any remedial works, undertaken on behalf of the Coal Authority.

On the basis of the above CCL consider that no further assessment of the risk posed by historical coal mining is considered to be required.

The environmental database report indicates that the site represents a low risk with regard to ground stability issues relating to ground dissolution features, collapsible ground, landslides, shrinking/swelling clay, running sand and compressible ground.

11 BGS recorded mineral sites are indicated to be present within 500m of the site. The closest of these were 86m southeast and 131m east of the site and are reported to have ceased operations. Materials mined included common clay and shale, sand, sandstone and coal (deep).

2.7 Hydrogeology

The Collyhurst Sandstone Formation is classified by the EA as a Principle Aquifer. These are deposits that have a high intergranular and/or fracture permeability providing a high level of water storage which may support water supply and/or river flow on a strategic scale.

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

Information provided by the EA indicates that there is one licensed groundwater abstractions within 500m of the site. This is located approximately 150m north of the site at Packaging Products Ltd and used for general cooling purposes

2.8 Hydrology

The River Irk is present approximately 9m to the northwest of the site. The chemical quality of this surface water feature has been classified as 'Poor' or 'Bad' under the EA River Basin Management Plan for the area.

There are no records of licensed surface water abstractions indicated to be present within 1km of the site.

There are records of six potentially active discharge consents within 500m of the site. These relate to the discharge of sewage into the River Irk and Moston Brook.

There are no records of significant or major incidents to controlled waters recorded within 500m of the site.

2.9 Soil Geochemistry

According to the BGS National Geoscience Information Service, the following background soil concentrations can be expected within natural soils at the site:

- Arsenic – 25-45 mg/kg
- Cadmium - <1.8 mg/kg
- Chromium – 40-90 mg/kg

- Lead – 100-200 mg/kg
- Nickel – 15-45 mg/kg

These concentrations are not considered to be elevated.

It should be noted that the soil geochemistry has been estimated solely on the basis of published geology and not empirical data.

2.10 Flood Risk

According to the Flood Map for Planning, available on the gov.uk website, the site is located within Flood Zone 3, whereby there is a less than 1% (1 in 100) chance of flooding from rivers or the sea occurring each year.

The environmental database report indicates that there is potential for groundwater flooding to occur from rivers or sea without defenses.

The site may be located within a critical drainage area. The appointed drainage engineer should consult with the Lead Local Flood Authority (LLFA) to confirm this.

If one is not already available, it is recommended that a Flood Risk Assessment is undertaken for the proposed development.

Copies of the site sensitivity and flood risk maps are included in Appendix VI.

2.11 Radon Risk Potential

The radon guidance on protective measures for new dwellings indicates that the site is in a 'low' probability radon area where less than 1% of homes are estimated to be at or above the Action Level.

Radon gas protection measures are therefore not necessary in the construction of new dwellings or extensions.

2.12 Landfill Sites

The nearest BGS recorded landfill site is located approximately 86m northwest of the site – Queens Road Tip. Three Historical Landfill Sites are noted within 500m of the site, those being the following:

- Sand Street, Collyhurst Manchester: 30m E (Waste not specified);
- Queens Road Tip: 88m NW (Inert, industrial, commercial, household and special waste, and liquid sludge; and,
- Land at Fitzgeorge Street: 128m E (Waste not specified).

No current or former landfill or waste management sites are indicated to be present within 500m of the site.

Areas of infilled land associated with the former quarries / clay pits beneath the site and in the surrounding area could represent a potential source of contamination and ground gas.

2.13 Industrial Land Uses

There is three active Local Authority Pollution Prevention and Control permit recorded within 500m of the site. Located at the following:

- Packaging Products (Coatings) Ltd, 42m southwest – Air Pollution Control;
- HMG Paints Ltd, 88m north – Air Pollution Control; and,
- HMG Paints Ltd, 126m north – Pollution Prevention and Control

There are seven active Contemporary Trade Directory entries recorded within 500m of the site. These relate to paint manufacture, cleaning materials and equipment, tyre dealers, razor blade manufacture, clothing and fabric manufacture, and garage services. The nearest of which relates to the HMG Paints facility.

Full details of the waste management and industrial land uses are detailed in the environmental database presented in Appendix VII.

2.14 Sensitive Land Uses

Natural England data indicates that there are no ecologically sensitive sites indicated within 500m of the site that constitute environmental receptors as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012).

2.15 Potential Geotechnical Constraints

Made Ground beneath the site would not form a suitable bearing stratum for traditional foundations. If present at relatively shallow depth, the underlying Devensian Till would likely support strip or pad foundations for light to moderate loads. If the thickness of Made Ground is significant, or if heavy column loads are anticipated, piled foundation terminating in the deeper Collyhurst Sandstone Formation would likely be required. A geotechnical site investigation would be required to confirm a suitable foundation solution for the proposed development.

3.0 Phase 1 Risk Assessment

3.1 General

The “suitable for use” approach is adopted for the assessment of contaminated land and remedial measures are only undertaken where unacceptable risk to human health or the environment can be proven when taking into account the proposed use of the site and environmental setting.

A risk assessment process should be carried out to determine potential hazards to human health and the environment and be based on the “source” “pathway” “receptor” principal. For a potential risk to be present there must be a viable pollutant linkage whereby a contamination source may impact upon a receptor. The absence of one or more of these key components (source, pathway or receptor) prohibits a viable pollution linkage being formed.

3.2 Preliminary Conceptual Site Model

In accordance with the ‘Land Contamination Risk Management’ (LCRM) guidance on the gov.uk website (updated October 2020) and BSI 10175 “Code of Practice for Investigation of Potentially Contaminated Land” (2011), a Preliminary Conceptual Site Model was developed to identify potential contamination sources, migration pathways and receptors within the study area.

3.3 Potential Contaminant Sources

The site has had a significant development history and is in an area suspected to be underlain by significant thicknesses of Made Ground, which may represent a potential source of contamination and ground gas.

Historical surrounding land was mixed, comprising industrial, quarrying and residential uses. Several areas of potentially backfilled land were indicated to be present in the vicinity of the site, which could also represent potentially significant sources of contamination and ground gases.

Current surrounding land use is predominantly industrial in nature. Potential sources of contamination associated with these land uses are possible in the form of accidental spillages, inefficient or broken drainage systems, unidentified leakages and surface water run-off from areas of hardstanding.

The following potential sources of contamination have been identified at the site:

- Potential Made Ground and contamination associated with historic industrial activities.
- Migration of potential contamination associated with historic land uses around the site, including a paint and coatings manufacturer.
- Potential generation of hazardous ground gases associated with Made Ground and putrescible materials present beneath the site and in the surrounding area.

3.4 Potential Pathways

The site is proposed to be developed with a new storage facility. The following potential pathways are considered applicable at the site:

- Direct contact (within areas of soft landscaping at the site)
- Inhalation (dust / vapors)
- Ingestion
- Vertical / lateral migration (of both contamination and potentially hazardous ground gases)

3.5 Potential Receptors

Potential human health receptors include future site users and neighboring commercial / industrial property occupiers, whilst the proposed new buildings at the site are also be considered as receptors.

The underlying Principal Aquifer is considered the main environmental receptors of concern.

Given the distance to the nearest surface watercourse (the River Irk 9m north and west), this is also considered to be a potential receptor.

3.6 Preliminary Risk Assessment

A preliminary risk assessment can be carried out using guidance outlined in Section 6.3 of CIRIA Document C552 "Contaminated Land Risk Assessment – A Guide to Good Practice" (2001). For a risk to be present there must be a viable pollutant linkage whereby a contamination source can impact on a receptor via a pathway. To carry out the risk assessment an estimate must be made of the potential severity of the risk and the likelihood of the risk occurring. The following Tables set out the criteria for this principal.

Table 2 - Severity of Risk

Severity	Description
Severe	Acute risk to human health likely to result in 'significant harm' i.e. very high concentrations of contamination or ground gases. Catastrophic damage to building i.e. by explosion from high gassing sites or VOC concentrations. Major pollution of controlled waters i.e. surface watercourses and Principal aquifers, source protection zones. Short term damage to ecosystems.
Medium	Long term risk to human health likely to result in 'significant harm' i.e. elevated concentrations of contaminants or ground gases. Pollution of sensitive controlled watercourses i.e. Principal or Secondary Aquifers. Significant effects on sensitive ecosystems or species.
Mild	Pollution of non-sensitive waters i.e. smaller surface watercourses or unproductive strata. Significant damage to crops, buildings, structures or services i.e. by explosion from sites with medium gassing potential, elevated concentrations of contaminants.
Minor	Non-permanent human health effects i.e. requirement for protective equipment during site works to mitigate health effects. Damage to non-sensitive ecosystems or species. Minor damage to buildings, structures or services.

Table 3 - Probability of Risk Occurring

Probability	Description
High Likelihood	Pollutant linkage may be present that appears very likely in the short term and risk is almost certain to occur in long term or evidence of harm to receptor exists.
Likely	Pollutant linkage may be present and is likely that the risk will occur over the long term.
Low Likelihood	Pollutant linkage may be present and there is a possibility of the risk occurring although no certainty that it will do so.
Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur even in the long term are improbable.

Table 4 - Comparison of Risk & Probability

Probability	Severity			
	Severe	Medium	Mild	Minor
High Likelihood	Very High	High	Moderate	Moderate/Low
Likely	High	Moderate	Moderate/Low	Low
Low Likelihood	Moderate	Moderate/Low	Low	Very Low
Unlikely	Moderate/Low	Low	Very Low	Very Low

A summary of potential pollutant linkages and perceived risks for this site are outlined in the Table below:

Table 5 - Pollutant Linkages & Perceived Risk

Sources of Contamination	Pathways	Receptors	Severity	Probability	Risk	Justification	Further Action Required
On site: Contaminants associated with the former mill. Made Ground, including that associated with the infilling of the former offshoot of the River Irk	Inhalation, ingestion and dermal contact of soil	Future site users	Medium Long term risk to human health	Low Likelihood	Moderate/Low	Contaminants of concern may be present beneath the site, associated with the Made Ground. However, given the commercial nature of the development, it is considered likely that these risks may be controlled via the provision of building cover and hard surfacing. These pathways may remain active in areas of soft landscaping (if included as part of the development)	Site investigation to confirm the contamination status of soils and groundwater beneath the site.
		Construction workers during development	Minor Non-permanent human health effects i.e. requirement for protective equipment during site works to mitigate health effects	Low Likelihood	Very Low	If construction workers come into contact with potential contaminated soils during the construction phase, such contact would be short term, limiting potential exposure. Construction workers are expected to undertake good working practices including regular hand washing and other hygiene techniques which would reduce the likelihood of long-term exposure to any contamination.	
	Acidic ground conditions affecting future site buildings	Building infrastructure	Minor Minor damage to buildings	Low Likelihood	Very Low	Made Ground and natural soils beneath the site may contain elevated concentrations of sulphates and low pH. Chemical testing for water soluble sulphate and pH should be undertaken to inform concrete classification. Chemical testing for water supply pipes should be undertaken prior to final selection.	
	Vertical and lateral migration	Neighbouring commercial properties	Medium Long term risk to human health	Unlikely	Low	Neighbouring land use is predominantly commercial in nature. It is considered unlikely that contamination would be present in sufficient concentrations beneath the site to adversely affect neighbouring site users.	
		Controlled waters	Medium Pollution of sensitive controlled water receptors	Likely	Moderate	The site is underlain by a Principal Aquifer, relating to the Collyhurst Sandstone Formation. The site is not located within a groundwater SPZ. However, a nearby groundwater abstraction is indicated to be present approximately 125m from the site, used for general cooling. Therefore, this is considered to represent a sensitive groundwater resource receptor. The River Irk is present approximately 9m to the west / northwest of the site and is considered to represent a sensitive surface water receptor.	
Off site: Infilled land and industrial land use	Lateral migration onto site with subsequent dermal contact of soils	Future site users	Medium Long term risk to human health	Unlikely	Moderate	Current surrounding land use is predominantly industrial in nature. There is potential for contaminants from neighbouring industrial land use to have migrated onto site in groundwater within granular horizons of the Made Ground or underlying Collyhurst Sandstone Formation.	
Potential hazardous ground gas and vapours from Made Ground beneath the site and surrounding area	Migration of ground gas	Future site users	Severe Acute risk to human health (asphyxiation)	Low Likelihood	Moderate	Made Ground beneath the site and surrounding area may represent potentially significant sources of ground gas.	Monitoring wells should be installed as part of the site investigation and monitoring undertaken to assess the risk posed by ground gases.
		Building Infrastructure	Severe Significant damage to buildings (explosion)	Low Likelihood	Moderate		

4.0 Conclusions and Recommendations

Clancy Consulting Limited was instructed by HMG Paints to carry out a Phase 1 Preliminary Risk Assessment at the site of a proposed new storage facility on their main facility at, Collyhurst Road, Manchester, M40 7RU.

The site covers an area of approximately 0.18Ha, located on a largely undeveloped area of the larger HMG Paints facility off Collyhurst Road, Manchester. The development area is used for the loading / unloading of delivery vehicles, surfaced with a mix of soft landscaping and concrete hardstanding. A number small of steel framed buildings and temporary steel shipping containers are present mainly in the west of the site, located on an area of concrete hardstanding.

The main HMG Paints facility surrounds the site area, away from this are an MOT garage, a coatings plant, Metrolink sidings and station and open areas of land used for recreation.

It is proposed to develop the site as a storage facility.

The site was part of Collyhurst Mills. The southern section comprised an offshoot of the River Irk, leading up to the mill up until the early 1900's. Subsequent developments at the site included residential housing, mills and part of the larger HMG paints plant.

Surrounding land saw extensive commercial / industrial activities including quarrying, mills, railway lines / sidings, chemical works and later a school.

Zetica Bomb Risk Mapping indicates the site to be in an area of moderate UXO risk. Therefore, a detailed UXO desk study should be undertaken prior to undertaking intrusive ground investigations.

British Geological Survey mapping indicates the site to be underlain the Collyhurst Sandstone Formation. Given its development history, the site is also anticipated to be underlain by significant thicknesses of Made Ground.

According to the Flood Map for Planning, available on the gov.uk website, the site is located within Flood Zone 3, whereby there is greater than a 1% (1 in 100) chance of flooding from rivers or the sea occurring each year. If one is not already available, it is recommended that a Flood Risk Assessment is undertaken for the proposed development.

The site is underlain by a Principal Aquifer, relating to the Collyhurst Sandstone Formation. The site is not located within a groundwater SPZ. However, a nearby groundwater abstraction is indicated to be present approximately 125m from the site, used for general cooling. Therefore, this is considered to represent a sensitive groundwater resource receptor.

The River Irk is present approximately 9m to the west / northwest of the site and is considered to represent a sensitive surface water receptor.

Given the commercial/industrial nature of the proposed development, predominantly comprising building cover and hard surfacing, the potential risk posed by contamination to future site users is considered to be limited. However, ground gas associated with Made Ground beneath the site and surrounding area may pose a risk to site users in enclosed areas.

The site is located above a Principal Aquifer relating to the Collyhurst Sandstone Formation and the River Irk is located a short distance to the north-northwest. On this basis, contaminants present beneath the site are considered to pose a potentially significant risk to controlled water receptors.

On the basis of the above, the following further works are recommended:

- Undertake a Detailed UXO Desk Study prior to undertaking any physical investigations at the site;
- Undertake a Flood Risk Assessment for the site;
- Carry out an intrusive site investigation to confirm ground conditions at the site.
- Installation of wells in boreholes to allow the assessment of potential risk to future site users posed by ground gases.
- Soil samples should be recovered from selected exploratory holes and tested for potential contaminants of concern. This should include pH, metals, asbestos screening, speciated PAH and speciated TPH.
- In-situ testing and geotechnical soil sampling should be carried out during intrusive investigation to provide adequate recommendations for foundation design.