

**BERNARD MATTHEW FOODS  
(DERBY) LIMITED**

**BESPOKE ENVIRONMENTAL  
PERMIT APPLICATION**

**Site Condition Report**

Prepared for: Bernard Matthews Foods (Derby)  
Limited

Client Ref:410.07469.00006

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**SLR** 

## BASIS OF REPORT

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- Appendix 02: Groundsure Reports
- Appendix 03: Material Safety Datasheets
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- Drawing 01: Site Location Plan
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- Drawing 04: Conceptual Site Model

## 1.0 Introduction

### 1.1 Appointment

SLR Consulting Limited (SLR) was commissioned by Bernard Matthews Foods (Derby) Limited (BM) to complete a Site Condition Report (SCR) for their premises located at 35 Shaftesbury Street South, Derby DE23 8YH (the Site). The location of the Site is shown on Drawing 01.

This report has been prepared by the Land Quality Group of SLR based at the Shrewsbury Office, Hermes House, Holsworth Park, Oxon Business Park, Shrewsbury, SY3 5HJ (Tel: 01743 239250).

### 1.2 Objectives

The objective of this SCR was to review and summarise the available relevant environmental information relating to the Site and investigate the underlying soil and groundwater quality in order to support the application for an Environmental Permit at the Site. This information was then used to develop a conceptual model of potential risks to human and environmental receptors and establish if there is evidence of significant subsurface contamination impacts from past and present activities on and adjacent to the Site.

SLR understands that the Site is to continue in ongoing use as an operational food manufacturing facility and this assessment is reported in that context, i.e. whether the site is considered to present potentially unacceptable risks to human health and environmental receptors during continued use as a food manufacturing facility and commercial premises.

The structure of this SCR generally follows the layout defined by the H5 SCR template v.2.0 (dated August 2008), in accordance with the Environment Agency (EA) guidelines.

### 1.3 Scope of Work

The scope of work for this SCR included:

- Completing a site walkover and environmental audit of the facility;
- Undertaking a desk-based assessment of the environmental setting and historic development of the Site to determine the scope of the intrusive baseline investigation;
- Commissioning a search of environmental data records;
- Obtaining public utilities information;
- The drilling of nine boreholes to assess the likelihood of contaminants posing potentially unacceptable risks to soil and groundwater quality within the vicinity of the petrol station site;
- Completion of the boreholes as groundwater monitoring wells;
- Undertaking a round of groundwater and gas monitoring;
- The collection of soil and groundwater samples for subsequent chemical laboratory analysis for a suite of potential contaminants of concern; and
- Completing a Site Condition Report (this report).

All laboratory analyses were undertaken by a UKAS accredited laboratory.

All site investigation works and laboratory testing were carried out in accordance with the following British Standard documents:

- BS5930:2015+A1:2020 "Code of Practice for Ground Investigations";

- BS10175:2011+A2:2017 “Investigation of potentially contaminated sites - code of practice”;
- BS5667-11:2009 “Water quality — Sampling: Part 11: Guidance on sampling of groundwater”; and
- Environment Agency: 2006 “Guidance on the design and installation of groundwater quality monitoring points”.

## 1.4 Data Sources

The report has been produced following consultation with the sources of information summarised in Table 1-1.

**Table 1-1: Information Sources**

Information Type	Source
General topography and site setting	Ordnance Survey (OS) mapping, accessed via Magic online mapping: <a href="https://www.magic.gov.uk">https://www.magic.gov.uk</a>
Site and background information	GroundSure Ltd Historical Ordnance Survey Map Extracts EMS-662907_874374 20 <sup>th</sup> January 2021 (Supplied by eMapSite & presented as Appendix 01)  GroundSure Ltd Enviro & Geo Insight Report, EMS-662907_874375 20 <sup>th</sup> January 2021 (Supplied by eMapSite and presented as Appendix 02)
Geology and hydrogeology	British Geological Survey (BGS) website <a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a> .
Available previous environmental assessment reports	The Site has no evidence of past investigations and no previous environmental reports have been made available to SLR.

## 2.0 Site Details

The site details are presented in Table 2-1 below which summarises the key site details based on information provided by BM and a site walkover completed by SLR Consulting on the 1<sup>st</sup> February 2021.

**Table 2-1: Site Details**

Detail	Description
Applicant Name	Bernard Matthews Foods (Derby) Limited
SCR Reference	406.07469.00010
Activity Address	35 Shaftesbury Street South, Derby DE23 8YH
National Grid Reference (NGR)	NGR 435712, 333806 identifies the approximate location of the Site (see Drawing 01).
Surrounding Land Use	<p>The land use to the northwest of the Site generally comprises residential housing, schools and small commercial properties; whereas to the northeast extends Sir Francis Lay Industrial Estate. A place of worship (Gurdwara) is located immediately to the north.</p> <p>Directly east runs a railway line (orientated approximately northeast-southwest) with some smaller industrial units beyond and residential housing further out. A large stretch of disused land is present within the residential housing estate, which was previously a Rolls-Royce factory.</p> <p>A materials engineering factory (Rolls-Royce) is present beyond the railway lines, along with several industrial units, a filling station, and commercial properties further south.</p> <p>Residential houses extend towards the west.</p>

### 2.1 Site Description

The Site comprises an active food production factory with associated access roads, car park, goods and materials storage facilities (including numerous chillers and freezers). The Site is situated approximately 2.4km southeast of Derby city centre within a predominantly industrial and commercial setting and is part of the Sir Francis Lay Industrial Estate. Access and egress to the Site is through a manned security barrier leading from Shaftesbury Street South, which connects to the A514 (Osmaston Road) further to the north. The total area of the Site is approximately 2.94Ha.

### 2.2 Site Features

The Site itself comprises four main structures: a large central factory; materials & goods stores in the east; an IT block in the west; site security in the northeast; and a large disused factory in the southwest:

- The main factory consists of a metal clad, metal roofed structure with glass windows on the upper level and fronting the building into the reception area; several enclosed metal spiral staircases bound the western and northern parts of the factory providing access to the upper levels. A maintenance area comprising static plant (water softener, boilers, oil heaters, condensers, wash-down facilities, air conditioning etc.) is present along the central eastern wall of the main factory, opposite the site entrance.

- The materials and goods store consists of a metal clad, metal roofed building with a three-storey brick-built section containing offices on the western wall. Adjacent to this building to the west are two large water tanks and a single storey brick-built structure, which makes up part of the Sites emergency sprinkler system and the site security hut.
- The IT block comprises a single-storey brick built, asphalt roofed structure with a conservatory housing offices and workstations.
- The disused factory in the southwest comprises a metal clad, metal roofed structure with a redundant air purification system and chimney, water tank and boiler house on the external walls. Anecdotal evidence provided by site staff indicates that the disused factory was previously leased by a separate food production company that vacated the Site once their lease had expired and it has been mothballed since that time.

A large main car park comprising 144 bays (including three disabled bays) is present in the north-western part of the Site with an additional seven bays present adjacent to site security for visitors and contractors checking in. Trailer parking for goods vehicles is present in the southern part of the Site with a small area in the north adjacent to the main entrance. The car park, main access road around the Site, and the areas surrounding the main buildings are predominantly paved with bituminous surfacing, with occasional evidence of utility scars and the previous road layout. Concrete hardstanding, pads and bunds are present in areas containing static plant and above ground storage tanks, and between maintenance areas. In general, the concrete was observed to be in good condition with some localised cracking and staining. A weighbridge is present within the paved area adjacent to the main access road.

There are several large above ground water tanks present on-site providing either process water for the factory, water for the boilers or emergency fire water for the sprinkler system. Other above ground storage tanks recorded during the site walkover include large carbon dioxide and liquid nitrogen tanks present at the southern end of the main factory building, and a bunded 2,500 litre diesel tank utilised for refuelling fork trucks. An area of redundant tanks within a concrete bund is present in this same area along with an ammonia plant.

Storage of chemicals observed throughout the walkover was limited to IBC's, which were bunded when in use and stored behind a locked cage with an emergency spill response kit when not.

Four electrical substations were recorded during the site walkover: one near the main entrance, one in the static plant/maintenance area, one in the western part of the Site adjacent to the disused factory and a larger one to the south of the main factory.

The site layout is shown on Drawing 02 and photographs from the walkover survey highlighting these features are presented as Appendix 03.

## 2.3 Drainage

Surface drainage at the Site comprises slotted gullies and pots, and roof drainage that connect to a large (2050mm) combined sewer owned by Severn Trent Water. Effluent from the Site also connects to the combined sewer in the north-western corner of the main factory where an effluent sampling point is located. The Site has Trade Effluent discharge limits into this sewer; Table 2-2 overleaf shows the testing required for the effluent along with the allowed volumes and flow rates set by Severn Trent. Two of these large diameter combined sewers are indicated to run from Princess Street in the north, then run southwest through the Site following the access road and exiting at the south-western boundary before running beneath the railway line.



**Table 2-2: Trade Effluent Discharge Limits for the Site**

Description	Discharge Limit
Chemical Oxygen Demand (COD)	6000mg/l
Suspended Solids	1,500mg/l
Temperature	43°C
Phosphorus	25mg/l
pH	6, 12.5 pH units
Discharge rate	25l/s
Total daily flow	1000m <sup>3</sup> /day

## 2.4 Waste Facilities

An area for waste recycling comprising skips, waste compactors and wheelie bins is present in the southernmost tip of the Site and a further general waste area is present close to the site entrance. Storage of waste IBC's (either empty or containing waste oil) is situated in the southern part of the Site, adjacent to the recycling area.

## 2.5 Asbestos Surveys

No asbestos surveys were made available on site during the site walkover survey; however, the main factory building was constructed circa 2001, following the banning of asbestos in the UK in 1999 and as such the likelihood of asbestos being used in its construction is considered low.

The old factory building located in the south-western part of the Site, however, has been present since the late 1980's and therefore asbestos containing materials (ACM) may be present in this area.

## 2.6 Substances Accepted at the Installation

The hazardous and non-hazardous components of raw and auxiliary materials which are used at the Site are identified in Table 2-3 below; full safety data sheets are presented in Appendix 04.

The substances identified in Table 2-3 are considered in the context of the Site to determine whether circumstances exist which may result in the release of the substance in sufficient quantities to represent a pollution risk, either as a result of a single emission or as a result of accumulation from multiple emissions.

**Table 2-3: Assessment of Pollution Risk for Substances Accepted at Installation**

<b>Substance</b>	Diesel
<b>State (S/L)</b>	Liquid
<b>Ingredients</b>	Hydrocarbons
<b>Environmental Fate and Behaviour</b>	Lethal Dose: 50% Kill in rats (LD50) >2000 mg kg-1. Possible carcinogen.

	Toxic to aquatic organisms with the potential to cause long term adverse effects in the aquatic environment. Will tend to form a film and float on surface and sorb to sediments and soil. Slow biodegradation in water and soil.
<b>Potential Pollution Risk</b>	Yes
<b>Quantity</b>	2,500 litres
<b>Storage Arrangements</b>	Impermeable surface. Stored in a bunded above ground storage tank in compliance with The Control of Pollution (Oil Storage) (England) Regulations 2001.
<b>Delivery, Storage and Use Details</b>	Diesel is used as a fuel within the site for vehicle refuelling (forklift trucks). Areas which contain diesel storage tanks are located on impermeable hard surfacing with emergency spill kits present adjacent to the tank in case of accidental releases. Diesel is stored in a self-bunded double skinned storage tank. The tank is checked routinely to ensure the integrity of the tank is not compromised.
<b>Comments/ Risk Mitigation</b>	Procedures are in place to control and prevent the escape of oil into the environment; any localised small spills onto the hardstanding during refuelling are managed with spill kits. The potential risk posed to the environment is considered to be sufficiently mitigated by the tank containment systems and the environmental management procedures.

<b>Substance</b>	Oil UK: Thermaltrans FG
<b>State (S/L)</b>	Liquid
<b>Ingredients</b>	Hydrocarbons (non-mineral oil / non-petroleum based synthetic hydrocarbons)
<b>Environmental Fate and Behaviour</b>	Non-toxic and non-hazardous Will tend to form a film and float on surface and sorb to sediments and soil. Moderate biodegradation in water and soil.
<b>Potential Pollution Risk</b>	Yes
<b>Quantity</b>	200 litre drums
<b>Storage Arrangements</b>	Impermeable surface. Stored in bunds constructed in compliance with The Control of Pollution (Oil Storage) (England) Regulations 2001.
<b>Delivery, Storage and Use Details</b>	Delivered in 200 litre drums, it is used as fuel for an oil powered boiler in which the heated oil is also used for heat transfer to cook food produce.

Substance	Oil UK: Thermaltrans FG
	<p>Areas which contain the barrels of Thermaltrans are on impermeable hard surfacing. Spill kits are also provided for accidental releases.</p> <p>Thermaltrans is delivered in 200litre drums and stored upright in the bund prior to being set onto a rack for dispensing to the boiler.</p>
<b>Comments/ Risk Mitigation</b>	<p>Procedures are in place to control and prevent the escape of oil into the environment; although localised areas of deterioration were noted within the concrete storage bund.</p> <p>The potential risk posed to the environment is considered to be sufficiently mitigated; although regular maintenance of the bund floor and walls is recommended.</p>

Substance	Holchem: TURBO	
<b>State (S/L)</b>	Liquid	
<b>Ingredients</b>	Sodium Hydroxide; Glycoside	
<b>Environmental Fate and Behaviour</b>	<p>Sodium Hydroxide            Derived No-Effect Level (DNEL)            – Inhalation: 1.0mg/m<sup>3</sup>            – Dermal: short term effects: 2%</p>	<p>Glycoside            DNEL            – Inhalation: 420mg/m<sup>3</sup>            – Dermal: 595,000 mg/kg bw/day</p> <p>Predicted No-Effect Concentration (PNEC)            – Fresh water: 0.1mg/l            – Marine water: 0.01mg/l            – Sediment (freshwater): 0.487mg/kg dwt            – Sediment (marinewater): 0.048mg/kg dwt</p>
	<p>Product not classified as environmentally hazardous and complies with the biodegradability criteria as per European Detergents Regulation No. 648/2004 although it does contain substances which are water soluble and may spread in groundwater. If significant quantities of undiluted product is released, the high pH value (&gt;10.5) may be fatal to fish and aquatic organisms and potentially to aquatic plants.</p>	
<b>Potential Pollution Risk</b>	Unlikely – no surface water receptors within the immediate vicinity of the Site.	
<b>Quantity</b>	1,000 litres	
<b>Storage Arrangements</b>	Contained within Intermediate Bulk Containers (IBC's) behind locked cage whilst stored and placed on top of a bund when in use.	
<b>Delivery, Storage and Use Details</b>	Delivered in IBC's and used as a caustic detergent within the high-pressure wash plant room; IBC's placed on a bund when in use in an area of hard standing.	
<b>Comments/ Risk Mitigation</b>	Product kept on bund when in use, and a chemical spill response kit is present near storage and usage areas. Given the classification as non-hazardous to the environment and the procedures in place, the potential risk posed to the environment is considered to be sufficiently mitigated.	

<b>Substance</b>	<b>Holchem: TURBO</b>	
<b>Substance</b>	<b>Holchem: CAUSDETA 25</b>	
<b>State (S/L)</b>	Liquid	
<b>Ingredients</b>	Sodium Hydroxide; Ethylenediaminetetraacetic Acid Tetrasodium Salt	
<b>Environmental Fate and Behaviour</b>	Sodium Hydroxide DNEL – Inhalation: 1.0mg/m <sup>3</sup> – Dermal: short term effects: 2%	Ethylenediaminetetraacetic Acid Tetrasodium Salt DNEL – Inhalation: 1.5mg/m <sup>3</sup>  PNEC – Fresh water: 2.86mg/l – Marine water: 0.286mg/l – Soil: 0.937mg/kg dwt
	Acute Toxicity Estimate (ATE) – Oral: 61,919mg/kg – Inhalation: 46.44mg/l  Product not classified as environmentally hazardous and complies with the biodegradability criteria as per European Detergents Regulation No. 648/2004 although it does contain substances which are water soluble and may spread in groundwater. If significant quantities of undiluted product is released, the high pH value (>10.5) may be fatal to fish and aquatic organisms and potentially to aquatic plants.	
<b>Potential Pollution Risk</b>	Yes	
<b>Quantity</b>	1,000 litres	
<b>Storage Arrangements</b>	Contained within Intermediate Bulk Containers (IBC's) behind locked cage whilst stored and placed on top of a bund when in use.	
<b>Delivery, Storage and Use Details</b>	Delivered in IBC's and used as a caustic detergent within the high-pressure wash plant room; IBC's placed on a bund when in use in an area of hard standing.	
<b>Comments/ Risk Mitigation</b>	Product kept on bund when in use, chemical spill response kit present near storage and usage areas. Given the classification as non-hazardous to the environment and the procedures in place the potential risk posed to the environment is considered to be sufficiently mitigated.	

Substance	Holchem: MAXICHLOR	
<b>State (S/L)</b>	Liquid	
<b>Ingredients</b>	Sodium Aryl Sulphonate, Sodium Hypochlorite Solution; Alkyl Dimethyl Amine Oxide; Potassium Hydroxide; Sodium Alkyl Ether Sulphate, Sodium Decanoate; Sodium Octanoate; 1-Dodecanol	
<b>Environmental Fate and Behaviour</b>	<p>Sodium Aryl Sulphonate            DNEL (professional)            – Inhalation: Long term effects: 53.6mg/m<sup>3</sup>            – Dermal: Long term effects: 7.6mg/kg/day</p> <p>PNEC            – Fresh water: 1000mg/l</p> <p>Sodium Hypochlorite Solution            DNEL (industry)            – Inhalation: Long term effects: 1.55mg/m<sup>3</sup>            – Inhalation: Short term effects: 3.1mg/m<sup>3</sup>            – Dermal: Long term effects: 0.5% wt/wt</p> <p>PNEC            – Sediment (freshwater): 0.21µg/l            – Sediment: 0.042µg/l            – Fresh water: 30µg/l</p>	<p>Alkyl Dimethyl Amine Oxide            DNEL (professional)            – Inhalation: Long term effects: 15.5mg/m<sup>3</sup>            – Dermal: Long term effects: 11mg/kg/day</p> <p>PNEC            – Fresh water: 0.0335mg/l            – Marine water: 0.00335mg/l            – Sediment (freshwater): 1.02mg/kg            – Sediment (marinewater): 24mg/kg            – Soil: 1.02mg/kg</p> <p>Sodium Alkyl Ether Sulphate            DNEL (professional)            – Inhalation: Long term effects: 175mg/m<sup>3</sup>            – Dermal: Long term effects: 2750mg/kg/day</p> <p>PNEC            – Fresh water: 0.24mg/l            – Marine water: 0.024mg/l            – Sediment (freshwater): 5.45mg/kg            – Sediment (marinewater): 0.0545mg/kg            – Soil: 0.946mg/kg</p>
	<p>Acute Toxicity Estimate (ATE)            – Oral: 4,673/kg</p> <p>This product is classified as very toxic to aquatic life (predominantly from Sodium Hypochlorite) for which the Lethal Concentration (concentration that kills 50% of the test animals) and the Effective Concentration (concentration that reduces 50% algae growth or algae growth rate) are as follow:</p> <p>– Fresh Water LC50: 0.06mg/l            – Marine Water LC50: 0.032mg/l            – Fresh Water EC50: 0.141mg/l            – Marine Water EC50: 0.026mg/l</p>	
<b>Potential Pollution Risk</b>	Yes	
<b>Quantity</b>	1,000 litres	

Substance	Holchem: MAXICHLOR
<b>Storage Arrangements</b>	Contained within Intermediate Bulk Containers (IBC's) behind locked cage whilst stored and placed on top of a bund when in use.
<b>Delivery, Storage and Use Details</b>	Delivered in IBC's and used as a detergent within the high-pressure wash plant room; IBC's placed on a bund when in use in an area of hard standing.
<b>Comments/ Risk Mitigation</b>	Product kept on bund when in use, chemical spill response kit present near storage and usage areas. Although the product is classified as very toxic to aquatic life, the storage conditions on-site and procedures in place ensure the potential risk posed to the environment are sufficiently mitigated.

Substance	Holchem: ACTIVE	
<b>State (S/L)</b>	Liquid	
<b>Ingredients</b>	Ethylenediaminetetraacetic Acid Tetrasodium Salt; N-(3-Aminopropyl)-N-Dodecylpropane-1,3-diamine; Sodium Aryl Sulphonate; Sodium Hydroxide	
<b>Environmental Fate and Behaviour</b>	<p>Ethylenediaminetetraacetic Acid Tetrasodium Salt            DNEL (professional)            – Inhalation: Long term effects: 1.5mg/m<sup>3</sup></p> <p>PNEC            – Fresh water: 2.86mg/l            – Marine water: 0.286mg/l            – Soil: 0.937mg/kg</p> <p>N-(3-Aminopropyl)-N-Dodecylpropane-1,3-diamine            DNEL (industry)            – Inhalation: Long term effects: 2.35mg/m<sup>3</sup></p> <p>PNEC            – Fresh water: 0.001mg/l            – Marine water: 0.0001mg/l            – Sediment (freshwater): 8.5mg/l            – Sediment (marinewater): 0.85mg/l            – Soil: 45.34mg/l</p>	<p>Sodium Aryl Sulphonate            DNEL (workers)            – Inhalation: Long term effects: 26.9mg/m<sup>3</sup>            – Dermal: Long term effects: 136.25mg/kg/day</p> <p>PNEC            – Fresh water: 0.23mg/l            – Marine water: 0.023mg/l            – Sediment (freshwater): 0.862mg/kg            – Sediment (marinewater): 0.0862mg/kg            – Soil: 0.037mg/kg</p> <p>Sodium Hydroxide            DNEL (industry)            – Inhalation: Long term effects: 1.0mg/m<sup>3</sup>            – Dermal: Short term effects: 2%</p>
	<p>Acute Toxicity Estimate (ATE)            – Oral: 4,092kg            – Inhalation: 9.87mg/l</p> <p>This product is classified as very toxic to aquatic life (predominantly from N-(3-Aminopropyl)-N-Dodecylpropane-1,3-diamine) for which the Lethal Concentration (concentration that kills 50% of the test animals) and the Effective Concentration (concentration that reduces 50% algae growth or algae growth rate) are as follow:</p>	

Substance	Holchem: ACTIVE
	<ul style="list-style-type: none"> <li>– Fresh Water LC50 (rainbow trout): 0.68mg/l</li> <li>– Fresh Water EC50: 0.073mg/l</li> </ul>
<b>Potential Pollution Risk</b>	Yes
<b>Quantity</b>	1,000 litres
<b>Storage Arrangements</b>	Contained within Intermediate Bulk Containers (IBC's) behind locked cage whilst stored and placed on top of a bund when in use.
<b>Delivery, Storage and Use Details</b>	Delivered in IBC's and used as a detergent within the high-pressure wash plant room; IBC's placed on a bund when in use in an area of hard standing.
<b>Comments/ Risk Mitigation</b>	Product kept on bund when in use, chemical spill response kit present near storage and usage areas. Although the product is classified as very toxic to aquatic life, the storage conditions on-site and procedures in place ensure the potential risk posed to the environment are sufficiently mitigated.

Substance	Holchem: Sodium Hypochlorite
<b>State (S/L)</b>	Liquid
<b>Ingredients</b>	Sodium Hypochlorite Solution
<b>Environmental Fate and Behaviour</b>	<p>Sodium Hypochlorite Solution</p> <p>DNEL (industry)</p> <ul style="list-style-type: none"> <li>– Inhalation: Long term effects: 1.55mg/m<sup>3</sup></li> <li>– Inhalation: Short term effects: 3.1mg/m<sup>3</sup></li> <li>– Dermal: Long term effects: 0.5% wt/wt</li> </ul> <p>PNEC</p> <ul style="list-style-type: none"> <li>– Sediment (freshwater): 0.21µg/l</li> <li>– Sediment: 0.042µg/l</li> <li>– Fresh water: 30µg/l</li> </ul> <p>This product is classified as toxic to aquatic life for which the Lethal Concentration (concentration that kills 50% of the test animals) and the Effective Concentration (concentration that reduces 50% algae growth or algae growth rate) are as follow:</p> <ul style="list-style-type: none"> <li>– Fresh Water LC50: 0.06mg/l</li> <li>– Marine Water LC50: 0.032mg/l</li> <li>– Fresh Water EC50: 0.141mg/l</li> <li>– Marine Water EC50: 0.026mg/l</li> </ul>
<b>Potential Pollution Risk</b>	Yes

<b>Substance</b>	<b>Holchem: Sodium Hypochlorite</b>
<b>Quantity</b>	1,000 litres
<b>Storage Arrangements</b>	Contained within Intermediate Bulk Containers (IBC's) behind locked cage whilst stored and placed on top of a bund when in use.
<b>Delivery, Storage and Use Details</b>	Delivered in IBC's and used as a detergent and disinfectant within the high-pressure wash plant room; IBC's placed on a bund when in use in an area of hard standing.
<b>Comments/ Risk Mitigation</b>	Product kept on bund when in use, chemical spill response kit present near storage and usage areas. Although the product is classified as very toxic to aquatic life, the storage conditions on-site and procedures in place ensure the potential risk posed to the environment are sufficiently mitigated.

<b>Substance</b>	<b>Holchem: HSL SB12P</b>
<b>State (S/L)</b>	Liquid
<b>Ingredients</b>	Sodium Metabisulphite; Potassium Hydroxide; Cobalt Sulphate
<b>Environmental Fate and Behaviour</b>	<p>Sodium Metabisulphite</p> <ul style="list-style-type: none"> <li>– Dermal LD50 in rats: &gt;2mg/kg</li> <li>– Oral LD50 in mice: 1,131mg/kg</li> <li>– Intravenous LD50 in rats: 115mg/kg</li> </ul> <p>Potassium Hydroxide</p> <ul style="list-style-type: none"> <li>– Oral LD50 in rats: 273mg/kg</li> </ul> <p>Cobalt Sulphate</p> <ul style="list-style-type: none"> <li>– Oral LD50 in rats: 424mg/kg</li> <li>– Oral LD50 in mice: 584mg/kg</li> <li>– Intravenous LD50 in rats: 18,200µg/kg</li> </ul> <p>Product not classified as environmentally hazardous and complies with the biodegradability criteria as per European Detergents Regulation No. 648/2004 although it does contain substances which are water soluble and may spread in groundwater. If significant quantities of undiluted product is released, the high pH value (&gt;10.5) may be fatal to fish and aquatic organisms and potentially to aquatic plants.</p>
<b>Potential Pollution Risk</b>	Yes
<b>Quantity</b>	200 litres
<b>Storage Arrangements</b>	Contained within plastic drums behind locked cage whilst stored and placed within a bund when in use.
<b>Delivery, Storage and Use Details</b>	Delivered in 200l plastic drums, it is a multipurpose liquid treatment for steam raising plant where the steam may come into contact with food. Plastic drums are placed within a plastic bund when in use in an area of hard standing within the boiler house.



Substance	Holchem: HSL SB12P
<b>Comments/ Risk Mitigation</b>	Product kept in bund when in use, chemical spill response kit present near storage and usage areas. Given the classification as non-hazardous to the environment and the procedures in place the potential risk posed to the environment is considered to be sufficiently mitigated.

## 2.7 Environmental Controls

The possibility of any significant releases to the ground occurring is limited as hardstanding covers the majority of the site area and all bulk liquids are stored in bunded above ground tanks, bunded IBC's, or bunded drums. In addition, any minor spillages that do occur will be dealt with immediately by trained staff using appropriate spill kits located in convenient locations on-site.

All waste storage bins are located on areas of hardstanding to eliminate potential pathways to soil and groundwater.

Detergents and disinfectants are used for cleaning as necessary, with all effluent collected and discharged to foul sewer with dilution. All chemical cleaning agents are stored in suitable containers within a secure bunded area with sufficient capacity for containment of any liquid chemicals in the event of a release.

The nature of the site activities and the environmental control measures that are in place mean that the potential for contaminants to impact soil and groundwater in the future is considered to be low.

Therefore, use of the Site as a food production facility is unlikely to have a significant detrimental effect on the environmental condition of the Site as long as the appropriate environmental management systems continue to be implemented and the site containment systems are maintained.

## 3.0 Condition of the Land

### 3.1 Environmental Setting

Table 3-1 below provides a summary of the environmental setting based on a review of published information.

**Table 3-1: Environmental Setting**

Detail	Description	
Geography and Hydrology	Topography and gradient	The Site is generally flat lying with the local surrounding area having a gentle topographic fall to the north and northeast of around 1%.
	Elevation	Approximately 50m above Ordnance Datum.
	Surface waters	The nearest natural water course is Cuttle Brook located approximately 1.3km to the southwest; however, the most prominent surface water course in the area is the River Derwent situated approximately 2km to the northeast.  A culverted stream is also located approximately 90m north of the Site at its closest point, which was culverted around the 1880's prior to development of the area.
	Surface water abstractions	No active surface water abstractions within 2km of the Site.
	Regional hydrogeology	Groundwater expected to flow to the northeast following the local topography.
Published Geology and Hydrogeology	Superficial drift geology	Head Deposits (clays, silts, sands and gravels).
	Solid geology	Edwalton Member (mudstone).
	Aquifer status	Superficial: Secondary (Undifferentiated) aquifer. Solid: Secondary B aquifer.
	Groundwater abstractions	There is one licensed groundwater abstraction within 2km of the Site. This is located approximately 1.5km to the northeast at Pride Park (licence No. 03/28/48/0035) and extracts water to transfer between sources at 2,860m <sup>3</sup> per day.
	Source protection zones (SPZ)	None within 1km of the Site.

### 3.2 Environmental Searches

The EA website has been consulted regarding groundwater abstractions, SPZ and former landfill sites. The EnviroInsight Report was also reviewed to gain information on publicly available environmental data for the Site and immediately surrounding area.

A copy of the EnviroInsight Report information obtained by SLR is contained in Appendix 02 and a summary of the search information is provided below:

- *Contaminated Land Register* – There are no properties determined as Contaminated Land under Part 2A EPA 1990 within 500m of the Site.
- *Records of IPC/IPPC Authorisations* – There is one historical record of Integrated Pollution Control activities within 500m of the Site; located approximately 490m to the east, this record pertains to acid processes at the former Rolls Royce factory on Nightingale Road. There are eight historical records of Part A(1) authorisations within 500m of the Site. The closest relates to an organic chemicals process (oxygen containing compounds e.g. alcohols) at Green Star Energy Ltd on Shaftesbury Street South approximately 150m to the northeast. This permit (SP3130XL) is indicated as revoked as of 26/10/2020.
- There are no records of red list discharges, or List 1 or List 2 dangerous substances inventory sites within 500m of the Site.
- *Records of Part A(2) and Part B Activities and enforcements* – There are seven records of Part A(2) installations within 500m of the Site; the closest is located approximately 145m south at Derby Car Repairs Ltd, Elton Road which pertains to a licence for a waste oil burner (Part B).
- *Discharge consents* – there is one licenced discharge consent within 500m of the Site; this is located approximately 160m to the north and relates to the discharge of sewage from a storm sewer overflow to Cotton Brook.
- *Landfill sites* – There are no current landfills within 500m of the Site.
- Three historical landfills are reported, the closest is approximately 330m south of the Site; this last received inert waste in March 1996. There is also a historic licensed waste site 456m northwest of the Site which acted as a waste treatment facility last recorded September 2015.
- *Licensed waste management/treatment facilities* – There is one licensed waste site within 500m of the Site; this is located approximately 140m to the northeast and pertains to an End-of-Life Vehicles (ELV) facility (Adams Autos) on Cotton Lane.
- *Historical Waste Sites* – There are four historical waste sites within 500m of the Site; the closest was located approximately 340m south and relates to a recycling facility on Victory Road.
- *Industrial land uses* – A total of 68 industrial sites are recorded within 500m of the Site; the Site itself is noted for several industrial and infrastructure features including a chimney (mothballed), electricity substations, a gas governor and factory. The closest industrial land use not related to the Site is located approximately 10m to the northeast for Aeroweld Ltd for industrial products (aeroplanes).
- *Mining Records* – There are no records of mining within 500m of the Site; however, there are 16 records of surface ground working reported. The closest are located off-site to the southeast and relate to railway cuttings.
- *Sensitive Land Uses* – The Site is not located within 2km of designated a Site of Specific Scientific Interest (SSSI) or Special Area of Conservation (SAC). It is however in an area designated as a SSSI impact risk zone.
- The Site is not located within a Nitrate Vulnerable Zone.

Groundwater and surface water abstraction data is described in Table 3-1.

The environmental data searches indicate that the Site, is located within an area of historical industrial activity with various potential off-site contamination sources in the immediate vicinity, indicating that the environmental condition of the Site and surrounding areas is likely to have been impacted prior to the commencement of the current site operations.

## 3.3 Pollution History

### 3.3.1 Site History

The age and general type of activity and land use can often be determined from the type and layout of structures depicted on OS maps. However, specific elements of site operations cannot normally be determined from such extracts. Large scale (1:2,500/1:1,250) and small scale (1:10,560/1:10,000) historical map extracts were reviewed for selected years between 1882 and 2021, together with current mapping.

A summary of the findings is given below, and copies of the OS maps provided by GroundSure are included in Appendix 01.

#### On-site

The earliest mapping available (1882) shows the majority of the Site to be undeveloped apart from the north-eastern corner which houses an engine shed and turntable, part of the sidings at the London and North Western Junction. This remains the case until circa 1940 where the sidings are removed and replaced with an engineering works (Malleable Castings); which were extended in the mid 1960's. The engineering works were removed around the 1980's and a factory was constructed in the southern part of the Site (food production) with Pear Tree Industrial Park built in the north western part of the Site. The factory in the southern part of the Site was extended in the early 1990's and the Industrial Park removed in the late 1990's. The main BM factory and associated buildings were constructed circa 2001 and there have not been any significant changes to the site layout since that time.

#### Off-site

The surrounding land use within 200m of the Site comprised a mixture of agricultural, residential, commercial and industrial properties since 1882 with the Birmingham to Derby railway already present. Major developments include the Malleable Castings works extending to the northeast, several foundries (brass and aluminium; located to the east and northeast respectively) along with a Cotton Works (north) and Steel Plate Engineering Works (northwest) around the 1940's. Increasing residential property development has been noted between the 1890s and 1990s.

The historical site uses and potentially contaminative uses in the vicinity of the Site are summarised in Table 3-2 below.

**Table 3-2: Historical Site Uses and Potential Sources of Contamination**

Detail	On-Site	Off-Site
Historical Site Uses	<ul style="list-style-type: none"> <li>• Railway Sidings (engine shed, lines &amp; turntable)</li> <li>• Malleable Castings Works</li> <li>• Industrial Park</li> <li>• Food Production Factories</li> </ul>	<ul style="list-style-type: none"> <li>• Railway lines &amp; sidings</li> <li>• Malleable Castings Works</li> <li>• Brass &amp; aluminium foundries</li> <li>• Cotton Works</li> <li>• Steel Plate Works</li> </ul>
Potential Contaminants of Concern	<ul style="list-style-type: none"> <li>• Metals</li> <li>• Hydrocarbons</li> <li>• Phenols</li> <li>• Asbestos</li> <li>• Inorganic compounds</li> <li>• Sulphates</li> <li>• High pH chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Metals</li> <li>• Hydrocarbons</li> <li>• Phenols</li> <li>• Asbestos</li> <li>• Inorganic compounds</li> </ul>

### 3.3.2 Pollution Incidents

There are 12 historical pollution incidents recorded by the EA within 500m of the Site; the closest is located on-site and pertains to the release of inorganic chemicals/products (alkalis) in March 2003 (incident ID: 144886) with minor impact to water.

### 3.3.3 Previous Environmental Assessments

SLR are not aware of any previous environmental assessments having been undertaken at the Site.

### 3.3.4 Infrastructure Condition

There was no visual/olfactory evidence of existing contamination recorded during the site walkover survey and the existing pollution prevention measures were observed to be in serviceable condition.

## 3.4 Baseline Environmental Investigations

SLR conducted environmental investigations at the Site between 22<sup>nd</sup> February and 4<sup>th</sup> March 2021. The scope of work included the following:

- Advancing nine boreholes (BH01 to BH09) to a target depth of 5.0m below ground level (bgl)<sup>1</sup>, using a dynamic percussive drilling rig, and installation of 50mm diameter groundwater monitoring wells;
- Sampling and logging the soil strata in general accordance with BS5930:2015+A1:2020<sup>2</sup> and for visual and olfactory indications of contaminants;
- Field screening soil samples for hydrocarbon vapours;
- Completing a follow up round of gas and groundwater monitoring on 4<sup>th</sup> March 2021;
- Retaining a minimum of two soil samples and a groundwater sample from each borehole location. Scheduling of a minimum of one sample from each borehole for laboratory analysis, including petroleum hydrocarbons, metals, asbestos, volatile fatty acids, volatile organic compounds (VOCs), total organic carbon (TOC), ammoniacal nitrogen and polychlorinated biphenyl (PCB) analysis.

All excavations and boreholes were advanced using equipment supplied and operated by Endeavour Drilling Ltd under the supervision of SLR.

All laboratory analyses were undertaken by Element Materials Technology of Deeside.

The results of the assessment are described below.

#### 3.4.1 Borehole Locations

A total of nine boreholes were advanced between 22<sup>nd</sup> and 24<sup>th</sup> February 2021, located as follows:

- BH1: Located in the vicinity of the historical railway sidings (engine sheds & turntables), historical malleable castings factory, hydraulically downgradient of the current factory and close to one of the site's electricity substations.
- BH2: Located in the area of the former Pear Tree Industrial Park.
- BH3: Located in the vicinity of the historical railway sidings (engine sheds & turntables), historical malleable castings factory and hydraulically downgradient of the current factory, high pressure wash plant and chemicals storage area, and close to one of the site's electricity substations.

<sup>1</sup> All depth measurements are in meters below ground level (m bgl) unless otherwise stated.

<sup>2</sup> British Standards Institution (2015+A1:2020). BS5930 BSI Standards Publication – Code of Practice for Ground Investigations

- BH4: Located in the vicinity of the historical railway sidings (engine sheds & turntables), historical malleable castings factory and hydraulically downgradient of the current factory, high pressure wash plant and chemicals storage area.
- BH5: Located in the area of the former Pear Tree Industrial Park and close to one of the site's electricity substations.
- BH6: Located in proximity and downgradient to the current ammonia plant.
- BH7: Located in proximity and downgradient to the current above ground diesel tank.
- BH8: Located within the current waste IBC storage area.
- BH9: Located within the current waste recycling area.

The locations of the exploratory holes are shown on Drawing 02.

The exploratory locations were selected to provide coverage across the Site and enable assessment of the potential risks to the surrounding environmental receptors, targeting potential sources of soil and groundwater contamination resulting from current and historical use of the Site.

## 3.5 Baseline Soil Reference Data

### 3.5.1 Stratigraphy

The strata encountered are presented on borehole and trial pit logs included in Appendix 05 and summarised in Table 3-3.

**Table 3-3: Summary of Strata Encountered**

Strata	Description	Depth (m)
Made Ground	Hardstanding: Bituminous surfacing.	0.07m to 0.28m
	Hardstanding: Concrete.	0.20m to 0.21m
	Light brown sandy angular to subangular, fine to coarse GRAVEL of sandstone & limestone (MOT Type 1 sub-base)	0.36m to 1.0m
	Firm grey and brown sandy gravelly CLAY with the gravel component comprising brick, concrete, tile, mudstone, sandstone, limestone and chert.	0.62m to 0.69m
Head Deposits	Brown, sandy, gravelly CLAY with occasional lenses of sands and more gravelly layers.	5.0m

Two broad geological horizons have been recognised and are summarised below:

**Made Ground** – Hardstanding comprising bituminous and concrete surfacing was generally underlain by granular sandy gravels (interpreted as MOT Type 1 sub-base). Firm dark grey and brown sandy gravelly clays were encountered in BH02, BH05 and BH09 between 0.36m and 1.0m depth.

**Head Deposits** – Encountered in all locations underlying the Made Ground, these deposits generally comprised brown sandy gravelly clays with the gravel component composed of sandstone, limestone, mudstone and chert. Consistency was generally recorded as soft to firm, turning stiff to very stiff with depth. Occasional sand lenses were recorded in BH02, BH05 and BH06.

Bedrock of the Edwalton Member (mudstone) was not encountered during this investigation.

### 3.5.2 Field Observations

Forty in-field screening tests were undertaken on the soil during the investigation using a hand-held photo-ionisation detector (PID), with representative samples retained for laboratory analysis. None of the tests recorded volatiles above 1ppm; however, a slight hydrocarbon type odour was recorded in BH01 at 1.4m. The full results of each screening test and field observations can be found as part of the borehole logs in Appendix 05.

### 3.5.3 Analytical Chemistry Results - Soil

SLR retained 15 soil samples for chemical analysis for a suite of potential contaminants of concern (CoC), including petroleum hydrocarbons, metals, volatile fatty acids, volatile organic compounds (VOCs), total organic carbon (TOC), ammoniacal nitrogen and polychlorinated biphenyl (PCB) analysis and screening for the presence of asbestos.

All laboratory analyses were undertaken by Element Materials Technology of Deeside, and the results of the laboratory analysis of the soil samples are shown in Appendix 06.

#### Total Petroleum Hydrocarbons (TPH), BTEX and MTBE

Elevated concentrations of hydrocarbon were recorded in soil sampled from BH01 (1.35-1.40m) and BH09 (0.30-0.39m) at 6,856mg/kg and 419mg/kg respectively; BH01 is located in the area of the historical railway sidings and malleable castings works and BH09 is in the area of the present-day recycling facility. The hydrocarbon signature recorded predominantly heavy-chain hydrocarbons (TPH >C16-C35) indicative of degraded diesel or oil.

Low levels of BTEX were recorded in shallow Made Ground samples collected from five of the nine borehole locations. The highest concentration of total BTEX was recorded in BH08 within the waste storage area at 0.063mg/kg.

MTBE was not recorded above the laboratory method detection limit (MDL) in any of the samples tested.

#### Asbestos

Nine samples of Made Ground were scheduled for asbestos screening. Asbestos was not detected in any of the samples tested.

#### Metals

Low levels of metals were detected in all of the samples tested; although they are largely consistent with natural background concentrations within this region, with the only exception being an isolated elevated concentration of arsenic recorded in the Made Ground soil sampled from the waste storage area (52mg/kg in BH08 @ 0.60-0.70m depth).

#### VOCs

VOCs were recorded above the laboratory method detection limits in five of the eight samples tested from Made Ground soils from between 0.3 and 0.7m depth in locations BH01, BH05, BH07 & BH08. The highest concentration of total VOCs were recorded in the waste storage area (BH08 @ 0.6-0.7m depth) at 0.161mg/kg.

#### TOC

Organic carbon was recorded in all samples tested at concentrations ranging between 0.05mg/kg (BH08, 2.68m-2.75m) and 4.6mg/kg (BH08, 0.6m-0.7m).

## PCBs

No evidence of PCBs were detected in any of the samples tested during this investigation.

## Summary

A statistical summary for the potential contaminants of concern (CoC) recorded above the minimum laboratory detection limits within the soil samples is presented in Table 3-4 below:

**Table 3-4: Summary of Analytical Chemistry Results - Soil**

Contaminant	Number of samples	Number of non-detects	Range (mg/kg)		Average (mg/kg)	Highest Recorded Result
			Min	Max		
<b>Metals</b>						
Arsenic	15	0	1.9	52	8.4	BH8
Cadmium	15	5	<0.1	4.3	1.2	BH1
Chromium	15	0	15	200	57	BH8
Copper	15	0	2	140	26	BH8
Lead	15	5	<5	140	43	BH4
Nickel	15	0	3.4	55	23.0	BH1
Selenium	15	12	<1	5	1	BH8
Zinc	15	0	39	140	69	BH9
<b>Polycyclic Aromatic Hydrocarbons (PAH)</b>						
Naphthalene	15	13	<0.04	0.25	0.059	BH9
Acenaphthylene	15	13	<0.03	0.3	0.053	BH9
Acenaphthene	15	13	<0.05	0.86	0.11	BH9
Fluorene	15	13	<0.04	0.71	0.087	BH9
Phenanthrene	15	11	<0.03	10	0.74	BH9
Anthracene	15	13	<0.04	2.7	0.23	BH9
Fluoranthene	15	11	<0.03	18	1.3	BH9
Pyrene	15	11	<0.03	16	1.2	BH9
Benzo(a)anthracene	15	11	<0.06	7.4	0.59	BH9
Chrysene	15	11	<0.02	8.6	0.64	BH9
Benzo(bk)fluoranthene	15	11	<0.07	14	1.1	BH9



Contaminant	Number of samples	Number of non-detects	Range (mg/kg)		Average (mg/kg)	Highest Recorded Result
			Min	Max		
Benzo(a)pyrene	15	12	<0.04	8	0.61	BH9
Indeno(123cd)pyrene	15	13	<0.04	4.8	0.38	BH9
Dibenzo(ah)anthracene	15	13	<0.04	0.89	0.097	BH9
Benzo(ghi)perylene	15	13	<0.04	4.4	0.35	BH9
Benzo(b)fluoranthene	15	11	<0.05	10	0.76	BH9
Benzo(k)fluoranthene	15	11	<0.02	3.9	0.3	BH9
PAH 16 Total	15	13	<0.6	97	7.5	BH9
<b>Petroleum Hydrocarbons</b>						
aliphatics >C10-C12	2	1	<0.2	1.8	1	BH1
aliphatics >C12-C16	2	1	<4	13	8.5	BH1
aliphatics >C16-C21	2	1	<7	96	52	BH1
aliphatics >C21-C35	2	0	25	4400	2200	BH1
Total aliphatics C5-35	2	0	25	4500	2300	BH1
aromatics >EC12-EC16	2	1	<4	13	8.5	BH9
aromatics >EC16-EC21	2	0	45	81	63	BH9
aromatics >EC21-EC35	2	0	300	2300	1300	BH1
Total aromatics C5-35	2	0	390	2300	1400	BH1
Total aliphatics and aromatics(C5-35)	2	0	420	6900	3600	BH1
EPH Aliphatics >C8-C40	15	9	<30	6600	520	BH1
<b>Volatile Organic Compounds (including BTEX)</b>						
Toluene	10	5	<0.003	0.025	0.0071	BH8
Ethylbenzene	8	7	<0.003	0.009	0.0038	BH8
m & p Xylene	10	5	<0.004	0.022	0.0071	BH8
o-Xylene	8	7	<0.004	0.007	0.0044	BH8
Propylbenzene	8	7	<0.004	0.005	0.0041	BH8
1,3,5-Trimethylbenzene	8	6	<0.003	0.02	0.0058	BH8
1,2,4-Trimethylbenzene	8	6	<0.006	0.073	0.015	BH8

Contaminant	Number of samples	Number of non-detects	Range (mg/kg)		Average (mg/kg)	Highest Recorded Result
			Min	Max		
<b>Other</b>						
Ammoniacal Nitrogen as N	7	5	<0.6	12	2.4	BH9
Total Sulphate	15	0	110	2300	820	BH7
Total Organic Carbon	9	1	<0.02	4.6	0.710	BH8
pH	15	0	7.8	11	8.8	BH7

Results shown as mg/kg with the exception of pH

### 3.5.4 Generic Risk Assessment Criteria – Soils

In order to understand the potential significance of the recorded concentrations in the samples collected, the laboratory analysis results have been compared against the following selected generic assessment criteria (GAC) for a commercial/industrial land use:

- LQM/CIEH Suitable for Use Levels (S4ULs) – in 2015 Land Quality Management and the Chartered Institute of Environmental Health published S4ULs derived following CLEA technical guidance and using the Environment Agency’s CLEA UK model, with updated toxicological and exposure parameters and land uses following the publication of the draft C4SLs.

No evidence of significant or widespread soil contamination was identified during the 2021 intrusive investigations and all of the screened results were below the Commercial / Industrial GAC and S4UL (see Appendix 07).

Additionally, no evidence of asbestos containing materials was recorded in any of the soil samples analysed.

## 3.6 Baseline Groundwater Reference Data

### 3.6.1 Groundwater Monitoring Data

All viable wells were monitored by SLR on 4<sup>th</sup> March 2021. The recent groundwater monitoring results are presented in Table 3-4 below.

**Table 3-5: Groundwater Monitoring Data**

Well	Screen interval (m)	Cover level (m aTBM)	Date	Depth to water (m)	Water level (m aTBM)	LNAPL (mm)	Well Headspace (ppmTOV)
BH01	1.0 – 5.0	97.305	04/03/2021	1.371	95.934	ND	0.7
BH02	0.8 – 3.5	98.823	04/03/2021	2.030	96.793	ND	0.4
BH03	1.0 – 4.0	97.361	04/03/2021	1.313	96.048	ND	0.3
BH04	1.0 – 4.0	97.320	04/03/2021	1.327	95.993	ND	0.1
BH05	0.8 – 4.0	99.248	04/03/2021	1.723	97.525	ND	0.3
BH06	0.9 – 4.0	96.824	04/03/2021	1.158	95.666	ND	0.3

Well	Screen interval (m)	Cover level (m aTBM)	Date	Depth to water (m)	Water level (m aTBM)	LNAPL (mm)	Well Headspace (ppmTOV)
BH07	0.9 – 3.2	96.930	04/03/2021	1.172	95.758	ND	0.1
BH08	0.8 – 4.0	100.000	04/03/2021	3.080	96.920	ND	0.8
BH09	1.15 – 3.8	99.660	04/03/2021	DRY	ND	ND	0.8

Ground levels measured relative to a temporary site benchmark of 100.000m at BH08 (m aTBM).

LNAPL: Light Non-Aqueous Phase Liquid

ND: Not Detected

ppmTOV: parts per million total organic vapor measured using a photo ionisation detector (PID) calibrated to isobutylene.

The monitoring results indicate that groundwater was present beneath the Site at between 1.16m and 3.08m depth. Groundwater appears to flow towards the east-northeast (towards the culverted stream) with a hydraulic gradient of <1%. A groundwater contour map is shown in Drawing 03.

No evidence of LNAPL (i.e. floating product) was recorded in any of the monitoring wells, and none of the well headspace readings exceeded 1ppm.

### 3.6.2 Analytical Chemistry Results - Groundwater

Following the installation of the monitoring wells, SLR purged ten well volumes from each well using a peristaltic pump. The wells were then sampled during the return monitoring visit on the 4<sup>th</sup> March 2021 using a peristaltic pump to first purge three well volumes to ensure representative groundwater samples were collected. These samples were submitted for chemical analysis for dissolved metals, VOCs, TPH, ammoniacal nitrogen, total organic carbon, phosphorous, Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD). All laboratory analyses were undertaken by Element Materials Technology of Deeside.

The results of the chemical analysis undertaken are presented in Appendix 06 and key results are summarised below:

#### Dissolved Metals

Dissolved metals were recorded above the laboratory method detection limit in all eight groundwater samples collected during the March 2021 visit. Slightly elevated concentrations of lead were detected in the groundwater sampled from BH03 and BH07 at 0.013mg/l and 0.025mg/l respectively; however, natural background concentrations of lead within the underlying soils are high within this region and the concentrations recorded within the groundwater reflect this.

Slightly elevated concentrations of dissolved selenium were also recorded in BH08 at 0.014mg/l from groundwater sampled from beneath the waste storage area.

#### TPH

Small quantities of dissolved phase petroleum hydrocarbons were recorded above MDL in the groundwater sampled from BH01 and BH03 in March 2021, with concentrations of 7.1mg/l and 0.06mg/l respectively. The groundwater results were consistent with the BH01 soil analysis, recording heavy-chain hydrocarbons (TPH >C16-C35) indicative of degraded diesel or oil; however, dissolved lighter-chain hydrocarbons (TPH >C6-C10) were measured within the groundwater sampled from BH03. Both locations are in the vicinity of the historical railway sidings and malleable castings works close to the Site entrance.

There were no concentrations of BTEX, or MTBE recorded above the laboratory method detection limit in any of the sampled tested during this visit.

## VOCs

VOCs were detected above laboratory MDLs in four of eight the groundwater samples collected (BH01, BH02, BH03 and BH07); the compounds recorded consisted of Dichloromethane (DCM) and Chloroform. DCM was recorded at concentrations ranging between 0.047mg/l and 0.09mg/l within the groundwater sampled from BH01-BH03; these wells are hydraulically downgradient from the current factory and in proximity to the high-pressure wash plant and chemical IBC storage. Detections of Chloroform ranged between 0.005mg/l in BH07 and 0.049mg/l in BH03.

## BOD & COD

BOD ranged between 1mg/l and 29mg/l in monitoring wells BH06 and BH03 respectively. COD is comparable to this and ranged between 11mg/l and 160mg/l within the same wells.

## Summary

A statistical summary for the potential contaminants of concern (CoC) recorded above the minimum laboratory detection limits within the groundwater samples is presented in Table 3-6 below:

**Table 3-6: Summary of Analytical Chemistry Results - Groundwater**

Contaminant	Number of samples	Number of non-detects	Range (mg/l)		Average (mg/l)
			Min	Max	
<b>Dissolved Metals</b>					
Dissolved Arsenic	8	0	0.0023	0.0098	0.0049
Dissolved Cadmium	8	2	<0.00003	0.0013	0.0004
Dissolved Calcium	8	0	48	630	230
Total Dissolved Chromium	8	1	<0.0002	0.0013	0.0005
Dissolved Copper	8	2	<0.001	0.12	0.037
Dissolved Lead	8	4	<0.0004	0.025	0.0052
Dissolved Magnesium	8	0	23	240	100
Dissolved Nickel	8	0	0.005	0.046	0.020
Dissolved Phosphorous	8	0	0.0082	0.1	0.0320
Dissolved Selenium	8	3	<0.0012	0.014	0.0043
Dissolved Zinc	8	0	0.0018	0.1	0.02000
Total Hardness Dissolved (as CaCO <sub>3</sub> )	8	0	220	2100	1000
<b>Petroleum Hydrocarbons (TPH CWG)</b>					
Aliphatics >C5-C6	8	7	<0.01	0.01	0.01
Aliphatics >C6-C8	8	7	<0.01	0.04	0.014
Aliphatics >C8-C10	8	7	<0.01	0.02	0.011
Aliphatics >C12-C16	8	7	<0.01	0.05	0.015
Aliphatics >C16-C21	8	7	<0.01	0.26	0.041
Aliphatics >C21-C35	8	7	<0.01	4.5	0.57

Contaminant	Number of samples	Number of non-detects	Range (mg/l)		Average (mg/l)
			Min	Max	
Total aliphatics C5-35	8	6	<0.01	4.8	0.62
Aromatics >EC12-EC16	8	7	<0.01	0.09	0.02
Aromatics >EC16-EC21	8	7	<0.01	0.19	0.033
Aromatics >EC21-EC35	8	7	<0.01	2	0.26
Total aromatics C5-35	8	7	<0.01	2.3	0.29
Total aliphatics and aromatics (C5-35)	8	6	<0.01	7.1	0.9
<b>Volatile Organic Compounds (VOC)</b>					
Dichloromethane	8	5	<0.005	0.09	0.027
Chloroform	8	6	<0.002	0.049	0.0083
<b>Other</b>					
Ammoniacal Nitrogen as NH <sub>4</sub>	8	5	<0.03	0.08	0.041
Dissolved Inorganic Carbon	8	0	4	23	9.3
pH	8	0	7.3	8	7.6
Total Organic Carbon	8	0	2	25	9.9
BOD	6	2	<1	29	6
COD	6	0	11	160	47

### 3.6.3 Generic Risk Assessment Criteria – Waters

In order to assess the significance of the recorded dissolved groundwater concentrations, the results have been screened against generic water quality standards (WQS). These criteria are protective of the environmental quality of surface waters (EQS) or of human health (via Drinking Water Standards). The screening criteria are drawn from the following list with criteria from the latter standards/guidance only being used where Environmental Quality Standards and UK Drinking Water Standards are not available:

- Environmental Quality Standards (EQS) – used in the UK for amongst others, volatile organic compound contamination assessment within surface water. EQS are derived from toxicity data, noting chronic effects after long-term exposure or at sensitive life stages of target aquatic species. The EQS quoted have been taken from the most recently published EQS<sup>3</sup>. EQS for bioavailable metals were adjusted using the Environment Agency mBAT worksheet, based on pH, calcium concentrations and DOC concentrations in the receiving water courses.
- UK Drinking Water Standards (UK DWS) – are for the protection for human health and derive from either the Water Supply (Water Quality) Regulations 1989 or 2000.
- EU Drinking Water Standards (EU DWS) – are for the protection of human health and derive from the Council Directive 98/83/EC.

<sup>3</sup> The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

- World Health Organisation Guidelines (WHO Health) protect health and derive from the World Health Organisation Guidelines for Drinking Water Quality, 1984-2011.
- SoBRA Groundwater Vapour Generic Assessment Criteria<sup>4</sup> - used for assessing vapour risks to human health from volatile organic compounds within groundwater.

As an initial tier of generic screening, the lowest applicable WQS have been used to screen the laboratory results for groundwater, and the surface water results have been screened against EQS. Individual sample exceedances do not constitute an actual risk but indicate that further consideration or assessment of the result should occur.

The results of this screening exercise are presented in Appendix 07 and summarised below:

#### Recorded Exceedances of Drinking Water Standards

- Dissolved Lead (two locations) – downgradient (northeast) of chemical storage area (BH3) and above ground diesel tank (BH7).
- Dissolved Selenium - at BH8 within the waste storage area.
- Total Petroleum Hydrocarbons C5-35 (two locations) – downgradient of the chemical storage area (BH3) and in the vicinity of the historical railway sidings (BH1).
- Dichloromethane (three Locations) – downgradient of the chemical storage area (BH3), in the vicinity of the historical railway sidings (BH1), and near the former Pear Tree Industrial Park (BH2).

#### Recorded Exceedances of Environmental Quality Standards

- Dissolved Cadmium, Lead and Chloroform (two Locations) – downgradient (northeast) of chemical storage area (BH3) and above ground diesel tank (BH7).
- Dissolved Copper (four locations) – downgradient (northeast) of chemical storage area (BH3 and BH4), downgradient of the ammonia plant and above ground diesel tank (BH7).
- Dissolved Nickel – in all eight of the groundwater sampling locations (BH1 to BH8)
- Dichloromethane (three Locations) – downgradient of the chemical storage area (BH3), in the vicinity of the historical railway sidings (BH1), and near the former Pear Tree Industrial Park (BH2).

#### Recorded Exceedances of the SoBRA GW<sub>VAP</sub> GAC

- There were no exceedances of the commercial SoBRA GW<sub>VAP</sub> assessment criteria in any of the samples analysed during this visit.

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<sup>4</sup> Society of Brownfield Risk Assessment (2017). Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater.

### 3.7 Baseline Ground Gas Reference Data

Ground gas concentrations were measured on 4<sup>th</sup> March 2021. The results of the gas monitoring are summarised below in Table 3-7.

**Table 3-7: Ground Gas Monitoring Data**

BH	Pressure (mb)	Relative Pressure (mb)	CH <sub>4</sub> % v/v	CO <sub>2</sub> % v/v	O <sub>2</sub> % v/v	CO (ppm)	H <sub>2</sub> S (ppm)	Flow (l/h)
BH01	1026	-0.02	0.0	0.1	20.9	0	0	0.0
BH02	1026	-0.02	0.0	0.6	17.0	18	0	0.1
BH03	1026	-0.14	0.0	1.2	17.7	2	0	0.1
BH04	1026	-0.02	0.0	0.3	20.1	2	0	0.1
BH05	1026	-0.02	0.0	0.6	18.2	0	0	0.2
BH06	1026	-0.02	0.0	0.1	20.2	0	0	0.1
BH07	1026	-	0.0	0.1	15.3	0	0	0.1
BH08	1026	-0.03	0.0	0.4	19.7	0	0	0.0
BH09	1026	0.05	0.7	3.7	4.1	10	0	0.2

% v/v: Percentage volume by volume

Methane was not recorded in any of the wells tested apart from BH09 where a concentration of 0.7% v/v was recorded. Slightly elevated carbon dioxide levels were recorded ranging between 0.1 and 3.7% v/v. Oxygen depletion was recorded within the well network, dropping to a low of 4.1% v/v within BH09. Marginal flows were recorded in several of the monitoring wells ranging between 0.1 l/h and 0.2 l/h.

The potential source that could generate ground gas at the Site is the Made Ground; however, significant quantities of Made Ground were not recorded during the investigation works (typically less than 1m) and did not include evidence of organic or putrescible material. Therefore, based on current guidance<sup>5</sup>, there is considered to be a low potential for gas generation at the Site.

<sup>5</sup> BS 8576:2013 Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs). Published by The British Standards Institution, 2013.

## 4.0 Permitted Activities

Document references for:

- plan showing activity layout; and
- environmental risk assessment.

### 4.1 Permitted Activities

The Site will be permitted for the following activity:

1. Section 6.8 Part A (1)(d)(i) activity – treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed (where the weight of the finished product excludes packaging) – only animal raw materials (other than milk only) with a finished product production capacity greater than 75 tonnes per day.

### 4.2 Directly Associated Activities

The following directly associated activities will also be undertaken at the Site:

- Using direct fired gas ovens for cooking and food preparation purposes.
- Discharge of trade effluent to the public sewer, subject to the terms and conditions of a Discharge Consent issued by Severn Water Ltd in May 2016.



## 5.0 CONCEPTUAL MODEL AND QUALITATIVE RISK ASSESSMENT

### 5.1 Site Conceptual Model – Land Quality

As part of the evaluation of the Site and in accordance with current UK best practice, the Site has been considered in terms of a Conceptual Site Model using the principles of a risk assessment comprising the potential *Source – Pathway – Receptor* model of potential pollutant linkages.

### 5.2 Contamination Sources

#### 5.2.1 Potential Contamination

Based on the results of the site walkover and recent soil and groundwater investigations at the Site, the primary potential sources of contamination comprise:

- Chemical storage (detergent & glycol IBC's).
- High pressure wash plant (bunded detergent IBC's).
- The main factory building.
- Boiler houses (both gas and oil fired).
- Heating oil drum storage & bund.
- Above ground bunded diesel tank & dispenser (2,500 litre).
- Disused miscellaneous tanks in bunds.
- Waste storage areas (waste oil storage & general waste).

Details of the potential chemical contaminants used/present in each of the above are detailed in the Table 2-3 and 3-2.

#### 5.2.2 Identified Contamination

The results of recent environmental investigations undertaken in February and March 2021 have been screened against the relevant assessment criteria (presented as Appendix 07), which identified the following:

##### Soils

No evidence of significant or widespread soil contamination was identified during the 2021 intrusive investigations although localised hydrocarbon impact was recorded within the vicinity of the historical railway depot and malleable castings works in the north-eastern part of the Site. However, all of the screened results were below the Commercial / Industrial GAC and S4UL. In addition, no evidence of asbestos fibres or asbestos containing materials were identified in the samples analysed by the laboratory.

##### Groundwater

The groundwater samples recorded concentrations of dissolved metals, TPH and VOCs above the applicable water quality standards (DWS and EQS), although most of the exceedances were only marginal; the concentrations of dissolved metals recorded within groundwater are broadly consistent with natural background concentrations recorded in this region. The most significant levels of impact were recorded within the monitoring wells located in the north-eastern part of the Site, downgradient (northeast) of the chemical storage area and in the general vicinity of the historical railway sidings.

The most significant was the petroleum hydrocarbon impact recorded in BH1 (7.1mg/l TPH), close to the site entrance, although this predominantly comprised low mobility diesel range hydrocarbons (C12-C35).

## Ground Gas

No significant sources of ground gas were identified within the Made Ground on-site, no significant flows were recorded during the monitoring and slightly elevated concentrations of carbon dioxide and methane were recorded.

## 5.3 Pathways

### 5.3.1 Airborne Pathways

Most of the Site around the primary potential sources of contamination is covered with hard standing, with areas of soft standing limited to the site boundary and a small grass area to the south of the main factory. Therefore, dust generation and particulate inhalation is unlikely to be a potentially active pathway during normal operations at the Site.

Any additional risks associated with excavations or groundworks can be mitigated by appropriate risk control measures including personal protective equipment and standard dust suppression techniques.

### 5.3.2 Direct Contact, Ingestion and Inhalation Exposure Pathways

Most of the Site is covered with hard standing, including all of the main process and maintenance areas where key potential chemical contaminants are used. Therefore, potential direct contact with the ground across the majority of the Site is unlikely during normal operations.

Direct contact pathways may be active during construction works that involve breaking ground, although construction health and safety planning and the use of appropriate personal protective equipment (PPE) would be used to mitigate potential risks.

There is potential for vapours and ground gases to migrate via soils and permeation into neighbouring building foundations; however, the soils beneath the Site generally comprised cohesive (low permeability) material and the Made Ground present was of limited thickness (typically <1m) and did not show any evidence of significant organic or putrescible material which limits the risks associated with ground gases.

### 5.3.3 Aqueous Migration Pathways

Leaching of potential contaminants in shallow soils is likely to be negligible beneath areas of hard standing (i.e. the majority of the Site) where infiltration of rainfall is minimal. In unsurfaced areas, infiltration of rainfall will occur and, as such, this pathway is considered to be potentially active.

Vertical and lateral migration of impacted groundwater through the underlying Head Deposits and Edwalton Member is likely to be limited due to the predominantly cohesive nature of the material encountered; however, relatively shallow groundwater was recorded and therefore this is still considered a potentially active pathway.

### 5.3.4 Drainage Pathways

Surface water drains are located at the side of the roadways and areas of hardstanding throughout the Site. Most of the surface water drains appear to connect to a large (2050mm) combined sewer owned by Severn Trent. Effluent from the Site also appears to connect to the combined sewer in the north-western corner of the main factory where an effluent sampling point is located.

The drainage system(s) at the Site present an active pathway, although there are controls in place to limit the potential for pollutant linkages to be made. These include the site interceptor and regular monitoring of the drainage effluent being discharged from the Site.

## 5.4 Receptors

With reference to Part 2a of the Environmental Protection Act (1990), the potential receptors to be considered in any contaminated land scenario can be summarised as set out below.

### 5.4.1 Human Health

For the purpose of this assessment, it has been assumed that onsite workers and residential site neighbours will be the primary receptors of concern for any contamination risk during the operational phase of the environmental permit.

Construction workers / contractors could also be exposed to contaminants during works involving breaking ground.

### 5.4.2 Eco-systems

The Site is not located within a statutory protected site and the closest ecological receptor is Elm Wood Nature Reserve located approximately 1.1km southeast of the Site.

### 5.4.3 Controlled Waters

Groundwater is a controlled water. Therefore, the groundwater beneath the Site requires consideration and protection. Although the Site is underlain by both a secondary (undifferentiated) aquifer and secondary B aquifer that are considered to be potential receptors, the low permeability of these formations means that the shallow groundwater is unlikely to be abstracted in the immediate vicinity of the Site. This is reflected by the fact that there are no licensed groundwater abstractions or source protection zones recorded within 1km of the Site, and therefore the potential risks to groundwater receptors are considered to be low.

Surface watercourses are also controlled waters. There are no natural surface water features located on-site and the nearest natural watercourse is a Cuttle Brook located approximately 1.3km to the southwest. A culverted stream is present approximately 90m to the north of the Site, but a significant amount of dilution and dispersion is likely to occur before it discharges into the nearest surface water receptor. Therefore, the potential risks to surface water receptors are considered to be low.

## 5.5 Risk Assessment

A diagrammatic illustration of the conceptual site model, based on the above, is presented in Drawing 04.

Based on the conceptual site model, Table 5-1 presents the plausible pollutant linkages that apply to this site.

**Table 5-1: Risk Assessment**

Sources / Contaminants of Concern	Potential Pathways	Receptors	Risk / Justification
Railway engine sheds (1880's-1940's)  Malleable casting engineering works. (1949-1980's)	Airborne exposure	Human health	<b>Low:</b> Hard standing and soft landscaping prevents soil dust / particulates across the majority of the Site, with suitable control measures (i.e. PPE and dust suppression) mitigating potential risks during any future construction works.  <u>No further assessment required.</u>

Sources / Contaminants of Concern	Potential Pathways	Receptors	Risk / Justification
Industrial Park (Mid 80's-mid 90's)	Direct contact	Human health	<b>Low:</b> Hard standing and soft landscaping prevents direct contact; any future construction works undertaken with H&S planning and PPE. <u>No further assessment required.</u>
Food production factories and associated potential sources as per Section 5.2.1. (late 80's-present day)	Vapour Inhalation	Human health	<b>Low:</b> Concentrations of contaminants within soil did not exceed the relevant GAC and risks from impacted groundwater are limited by cohesive soils and the distance to offsite receptors. <u>No further assessment required.</u>
<b>Potential Contaminants of Concern:</b> Localised heavy metals in soils.  Hydrocarbons in soils.  Inorganic compounds in soils.  Phenols in soils.  High pH chemicals in soils.  Volatile Fatty Acids  Dissolved metals, TPH and VOCs in groundwater.	Aqueous migration	Groundwater	<b>Low:</b> The groundwater beneath the Site was found to be impacted with concentrations of contaminants above the water quality standards. However, the low permeability of the underlying strata will limit the mobility of any dissolved phase impact. The low permeability strata are also unlikely to be able to support significant rates of abstraction in the locality, and this is reflected by the fact that there are no licenced groundwater abstractions within 1km of the Site. <u>No further assessment required.</u>
		Surface water	<b>Low:</b> The groundwater beneath the Site was found to be impacted with concentrations of contaminants above environmental quality standards that could provide baseflow to the surrounding surface water receptors. However, the potential risks are likely to be mitigated by the cohesive nature of the underlying Head Deposits and the distance to the nearest surface water receptor (>1.3km). <u>No further assessment required.</u>

## 5.6 Overall Risk Summary

In general, the land quality risk potential for the Site is considered to be low, primarily as a result of a combination of the prevailing ground and groundwater conditions and the containment, protection and control measures in place at the Site.

No evidence of significant or widespread contamination was identified during the baseline investigations, and any potential dissolved phase risks to controlled water receptors are likely to be mitigated by the low permeability of the shallow strata and the distance to the nearest surface water receptor (>1.3km).

## 6.0 Site Condition Report Summary

The findings of the application site condition report (SCR) are summarised in Table 6-1 below:

Table 6-1: Summary

Site Detail	Applicant Name	Bernard Matthews Foods Derby Limited
	SCR Reference	406.07469.00010, dated April 2021
	Activity Address	35 Shaftesbury Street South, Derby DE23 8YH
	National Grid Reference (NGR)	435712, 333806
Environmental Setting	Surrounding Land Use	<p>The Site is located within an industrial estate with a long history a potentially contaminative land uses, both on site and in the immediate surrounding area.</p> <p>A place of worship (Gurdwara) is located immediately to the north and residential housing is located to the west of the Site.</p>
	Topography & gradient	The Site is generally flat lying with the local surrounding area having a gentle topographic fall to the north and northeast of around 1%.
	Elevation	Approximately 50m above Ordnance Datum.
	Geology	<p>Superficial: Head Deposits (clays, silts, sands and gravels)</p> <p>Bedrock: Edwalton Member (mudstone)</p>
	Hydrogeology	<p>Groundwater expected to flow to the northeast following the local topography.</p> <p>The superficial Head Deposits are classed as a secondary (undifferentiated) aquifer, and the Edwalton Member bedrock is classed as a secondary B aquifer.</p>
	Surface Waters	<p>The nearest natural water course is Cuttle Brook located approximately 1.3km to the southwest; however, the most prominent surface water course in the area is the River Derwent situated approximately 2km to the northeast.</p> <p>A culverted stream is also located approximately 90m north of the Site at its closest point, which was culverted around the 1880's prior to development of the area.</p>
Pollution History	Historical land use	<p>The Site was used as railway land until circa 1940, when the site was first redeveloped for a variety of industrial uses, including Pear Tree Industrial Park, an engineering works (Malleable Castings), and food manufacturing facilities. The main BM factory and associated buildings were constructed circa 2001, shortly after Pear Tree Industrial Park was demolished.</p> <p>The surrounding areas have also been used for industrial purposes since the 1800s, indicating that the environmental condition of the</p>

		Site and surrounding areas is likely to have been impacted prior to the commencement of the current site operations.
	Pollution Incidents	There are 12 historical pollution incidents recorded by the EA within 500m of the Site; the closest is located on site and pertains to the release of inorganic chemicals/products (alkalis) in March 2003 (incident ID: 144886) with minor impact to water.
	Evidence of Historic Contamination	SLR are not aware of any previous investigations having been undertaken at the Site. There was no evidence of existing contamination recorded during the site walkover survey.
Baseline Soil Data	<p>SLR conducted an intrusive investigation at the Site between 22<sup>nd</sup> and 24<sup>th</sup> February 2021. A total of nine boreholes were progressed using a dynamic percussive drilling rig to a target depth of 5m to extract soil samples for chemical testing.</p> <p>The ground conditions encountered at the Site generally comprised up to 1m of granular Made Ground over natural Head Deposits of sandy gravelly clays with occasional lenses of sand; proven to a maximum depth of 5.0m in BH01. Bedrock was not intersected in any of the boreholes progressed during these works.</p> <p>SLR retained 15 soil samples from the intrusive investigation works for chemical laboratory analysis, and the baseline soil data is presented in Section 3.5.3, Appendix 06 and Appendix 07.</p> <p>No evidence of significant or widespread soil contamination was identified during the 2021 intrusive investigations although localised hydrocarbon impact was recorded within the vicinity of the historical railway depot and malleable castings works in the north-eastern part of the Site. However, all of the screened results were below the Commercial / Industrial GAC and S4UL. In addition, there were no detections of asbestos or PCBs in any of the samples tested.</p>	
Baseline Groundwater Data	<p>SLR completed a return groundwater monitoring visit on 4<sup>th</sup> March 2021. Groundwater at the Site was found to be resting between 1.16m and 3.08m depth, with one well (BH09) measured as dry. Groundwater appears to flow towards the east-northeast with a hydraulic gradient of approximately 1%. There was no evidence of LNAPL recorded during this visit.</p> <p>Groundwater samples were collected from each viable well and a total of eight groundwater samples were submitted for chemical laboratory analysis, and the baseline groundwater data is presented in Section 3.6.2, Appendix 06 and Appendix 07.</p> <p>The groundwater samples recorded concentrations of dissolved metals, TPH and VOCs above the applicable water quality standards (DWS and EQS), although most of the exceedances were only marginal and the concentrations of dissolved metals recorded are broadly consistent with natural background concentrations for in this region. The most significant levels of impact were recorded within the monitoring wells located in the north-eastern part of the Site, downgradient (northeast) of the chemical storage area and in the general vicinity of the historical railway sidings. There were no exceedances of the commercial SoBRA GW<sub>VAP</sub> GACs.</p> <p>The most significant impact was the petroleum hydrocarbon impact recorded in BH1 (7.1mg/l TPH), close to the site entrance, although this predominantly comprised low mobility diesel range hydrocarbons (C12-C35).</p>	

	<p>However, any potential dissolved phase risks to controlled water receptors are likely to be mitigated by the low permeability of the shallow strata and the distance to the nearest surface water receptor (&gt;1.3km).</p>
<p>Baseline Ground Gas Data</p>	<p>Ground gas monitoring was undertaken during the return visit on 4<sup>th</sup> March 2021, although significantly elevated concentrations of ground gas were not recorded. The baseline ground gas data is presented in Section 3.7.</p> <p>These results correspond with the absence of significant quantities of Made ground including organic or putrescible material, and the potential for gas generation at the Site is considered to be low.</p>
<p>Permitted Activities</p>	<p>The Site will be permitted for the following activity:</p> <ul style="list-style-type: none"> <li>• Section 6.8 Part A (1)(d)(i) activity – treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed (where the weight of the finished product excludes packaging) – only animal raw materials (other than milk only) with a finished product production capacity greater than 75 tonnes per day.</li> </ul>
<p>Directly Associated Activities</p>	<p>The following directly associated activities will also be undertaken at the Site:</p> <ul style="list-style-type: none"> <li>• Using direct fired gas ovens for cooking and food preparation purposes.</li> <li>• Discharge of trade effluent to the public sewer, subject to the terms and conditions of a Discharge Consent issued by Severn Water Ltd in May 2016.</li> </ul>
<p>Contamination Issues &amp; Risk Assessment</p>	<p>Based on the results of this investigation evidence of significant and widespread contamination were not identified; and any potential dissolved phase risks to controlled water receptors are likely to be mitigated by the low permeability of the shallow strata and the distance to the nearest surface water receptor (&gt;1.3km). Therefore, potential risks to human health and controlled are unlikely to be present.</p> <p>In general, the land quality risk potential for the Site is considered to be low, primarily as a result of a combination of the prevailing ground and groundwater conditions and the containment, protection and control measures in place at the Site.</p>

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## DRAWINGS



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## APPENDIX 01

### Historical Map Extracts

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## APPENDIX 02

### GroundSure Report

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## APPENDIX 03

### Material Safety Datasheets

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## APPENDIX 04

### Site Walkover Photographs

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## APPENDIX 05

### Borehole Logs

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## APPENDIX 06

### Chemical Laboratory Analysis Certificates

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## APPENDIX 07

### SLR Generic Assessment Criteria

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