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Site Condition report for Greencore Foods Limited, Boston

Permit Number: EPR/XXXX

EHS reference:	202122086_SCR
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Reviewed by:	Steve Power
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Introduction	EHS Projects Limited (EHS) was commissioned by Greencore Foods Limited (the 'Client') to undertake a Site Condition Report for the Greencore Boston Site located off Marsh Lane, Boston, PE21 7PJ (hereafter referred to as the ('Site'). The purpose of this investigation work is to determine the Site condition upon application of an environmental permit for the Site.
Subject Site	The Site comprises an approximate 1.6ha plot in Boston, Lincolnshire. It is centred on National Grid Reference TF 33156 42492.
Surrounding Area	The surrounding land uses include: **North** - Across Marsh Lane, the site is neighboured by an industrial unit housing a frozen vegetable processing facility. **East** - The Site is bound to the East (moving from north to south) by a wood pellet processing industrial unit, followed by a small grass gully that borders a commercial yard area. **South** - The Site is bound to the South by the rear car park, beyond which lies a small field, some residential houses, and a commercial foodservice supplier. **West** - The Site is bound to the West (moving from north to south) by a commercial auto parts store and a field, beyond both lies residential properties.
Summary of sensitive land uses	Overall, the Site is set in an area of low – moderate environmental sensitivity, based on the following key factors: • The Site is in an area of mixed commercial / light industrial and residential use, with the only significant sensitive human receptors located no closer than 80m to the west of site. • The published geology indicates that the Site immediately overlies tidal flet deposit, underlain by clays. • The aquifers below site are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. • Some surface water from site flows into a Nitrate Vulnerable brook. • The site is located in a high-risk zone for flooding due to its location within 500m of the tidal River Haven. However, the site has no history of significant flooding and is provided protection through the Boston flood defences.
Summary of the History of the Site and Surrounding Area	Based on the information obtained by EHS Projects, the history of the Site and surrounding area can be summarised as follows: • Earliest available mapping (1888) shows that the Site comprised of and surrounded by undeveloped agricultural land, however to the north the existing Port infrastructure can be seen. • During the 1960s and 1970s, the farmland becomes the Riverside Industrial Estate. • The current Site building are constructed in the early 1990s. • There is continuous expansion of commercial and residential development in the surrounding areas until the 2020s.

Summary of Site Walkover Observations	Following the Site walkover, the Site function and areas with environmental pollution potential are summarised below: • The Site currently comprises an active food manufacturing business with corresponding effluent plant, loading and waste storage. • Bulk storage tanks were used for holding process water, fire suppression water, holding raw effluent, balancing effluent and for use in the ammonia plant. Containment infrastructure and spill responses were at an appropriate standard to effectively protect ground and groundwater. • The highest pollution potential materials were hygiene's acid and caustic cleaning chemicals. IBCs are stored externally on rooved bunds, while in use, the IBCs are housed in the internal chemical store on bunds. All other hygiene chemicals are stored within the internal chemical store. • The concrete hardstanding was in good condition, no evidence of staining or corrosion observed at the Site. However, there is unmade ground in the effluent tank area at the northwest of Site. • Drains have been recently assessed, there is complete segregation of effluent and foul drains from surface water. • Effluent is split into two streams, the effluent is screened for solids, combined for balancing and aeration, and then combines with foul water. The combined drain discharges north of site. • There is a transformer located in between the north wall of the production facility and office block, this transformer is managed and maintained by an external utility's provider.

1 Introduction

1.1 Purpose

EHS Projects Limited (EHS) was commissioned by Greencore Foods Limited (the 'Client') to undertake a Site Condition Report for the Greencore Boston Site located off Marsh Lane, Boston, PE21 7PJ (hereafter referred to as the ('Site').

A Site Location Plan is provided within Appendix A of the main application document.

The purpose of this investigation work is to determine the Site condition upon application of an environmental permit for the Site.

1.2 Scope of Services

This report presents the findings of a baseline Site Condition Report, based on the following Information:

- Historical uses of the Site and surroundings.
- Current use and condition of the Site.
- Environmental setting in terms of geology, hydrogeography, hydrology, and surrounding land uses.
- Relevant publicly available environmental records.

1.3 Previous Reports

No previous reports were made available to EHS at the time or reporting.

1.4 Significant Assumptions

This report presents EHS' observations, findings, and conclusions as they existed on the date that this report was issued. This report is subject to modification if EHS becomes aware of additional information after the date of this report that is material to its findings and conclusions.

The reliability of information provided by others to EHS cannot be guaranteed to be accurate or complete. Performance of this Assessment is intended to reduce, but not eliminate, uncertainty of environmental conditions associated with the subject Site; therefore, the findings and conclusions made in this report should not be construed to warrant or guarantee the subject Site, or express or imply, including without limitation, warranties as to its marketability for a particular use. EHS found no reason to question the validity of information received unless explicitly noted elsewhere in this report.

1.5 User Reliance

This report was prepared for Greencore Foods Limited. Reliance on the Report by any other third party is subject to requesting and fully executing a reliance letter between EHS and the third party that acknowledges the EHS Standard Terms and Conditions with the Client, to the same extent as if they were the Client thereunder.

EHS has been provided with information from third parties for information purposes only and without representation or warranty, express or implied as to its accuracy or completeness and without any liability on such third parties part to revise or update the information. Where reliance has been provided by third parties to potential purchasers this is noted in our report.

2 Site description

2.1 Site Location

The Site comprises an approximate 1.6ha plot in Boston, Lincolnshire, residing within The Found Riverside Industrial Estate, directly off Marsh Lane PE21 7PJ. The Site is centred on National Grid Reference TF 33156 42492 and is located approximately 1.7km south of Boston town centre and 250m south of The Haven River.

2.2 Subject site and Surrounding Area

The Site comprises of a salad manufacturing facility which is housed within the north-south orientated, 7.5ha, building centred on the site centre. Directly adjacent to the north face of the manufacturing building; (moving west to east) there are two water tanks, an effluent balancing tank, and a packaging storage room; north of these lies an office block, then the front car park, and the boundary with Marsh Lane. Along the eastern edge of the manufacturing facility; the northern half is used as a vehicle loading and product despatch area; in the southern half are four small refrigeration units; beyond these lies the north-south orientated road. The road is used for bringing goods and services to and from the Site, a security cabin is located at the north end of the road. The southern area of the site comprises of an ammonia refrigeration plant and the rear yard. The rear yard is used for goods-in HGVs, as well as being the main waste storage area. The thin strip parallel to the western wall of the manufacturing unit is used as a walkway and is where the two boiler houses are located.

Topographically, the site is low lying, level and flat. As are the surrounding areas. The road and rear yard hardstanding dip shallowly to the southeast, surface water therefore flows to the small gully and rear car park in the south-eastern areas along the Site boundary.

Further details regarding the Site overview can be found in Section 4.0. The Site layout is presented in Appendix A.

The site is situated within The Riverside Industrial Estate, Boston. The site is bound to the north, east and south by industrial units. On the west side, the Site is bound by an industrial unit and a small field, beyond which is a residential area. Land uses in the immediate vicinity include the following principal features.

2.2.1 Table 2.2.1 Summary of Surrounding Land Use

Direction	Land Use
North	Across Marsh Lane, the site is neighboured by an industrial unit housing a frozen vegetable processing facility.
East	The Site is bound to the East (moving from north to south) by a wood pellet processing industrial unit, followed by a small grass gully that borders a commercial yard area.
South	The Site is bound to the South by the rear car park, beyond which lies a small field, some residential houses, and a commercial foodservice supplier.
West	The Site is bound to the West (moving from north to south) by a commercial auto parts store and a field, beyond both lies residential properties.

2.3 Previous Environmental Assessments, Investigations or Remediation

No known previous environmental assessments have been made available for review.

3 Review of Publicly Accessible Information

3.1 Environmental Setting

The environmental setting of the Site can influence the susceptibility to, and relative magnitude of, environmental impacts and liabilities associated with on and off-Site sources of contamination. The following sections present a summary of environmental reviews conducted on Envirocheck publicly available records.

3.1.1 Geology and Hydrogeology

British Geological Survey (BGS) geological mapping and Environment Agency (EA) hydrogeological mapping indicate the following geological progression beneath, and in the immediate vicinity of, the Site:

3.1.1.1 Table 3.1.1.1: Summary of Geology and Hydrogeology

Geology	Geology Description	Aquifer Status	Aquifer Description
Superficial: Tidal Flat Deposits	Holocene deposited Clay and Silt	Unproductive	These rocks have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. They consist of bedrock or superficial deposits with low permeability that naturally offer protection to any aquifers that may be present beneath.
Bedrock: Ampthill Clay Formation	Late Jurassic (Oxfordian) Mudstone	Unproductive	These rocks have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. They consist of bedrock or superficial deposits with low permeability that naturally offer protection to any aquifers that may be present beneath.

3.1.1.2 British Geological Society (BGS) Borehole Records

The BGS records show no published boreholes within the site boundary nor within 250m of site; except for two approximately 1m deep auger holes (BGS References TF34SW229 & TF34SW230) describing sandy – silty top and subsoil. The closest drilled borehole is BGS Reference: TF34SW352, located 320m southeast of the Site. The data are reviewed here:

- **0.00 to 0.70mbgl**, brown sandy Silt with minor gravel inclusion.
- **0.70 to 1.20mbgl**, brown sandy Silt.
- **1.20 to 5.60mbgl**, firm to stiff mottled light grey and brown Clay.
- **5.60 to 6.00mbgl**, dark brown slightly fibrous amorphous Peat.
- **6.00 to 6.35mbgl**, mottled yellow brown and grey silty fine and medium Sand with a little fine and medium flint Gravel.
- **6.35 to 6.70mbgl**, firm to stiff light grey and yellow grey slightly sandy Clay.
- **6.70 to 7.50mbgl**, brown very silty fine to coarse Sand with fine and medium flint Gravel.
- **7.50 to 11.70mbgl**, stiff mottled grey and green grey Clay with a little fine chalk Gravel.

3.1.1.3 Groundwater Abstraction Licences and Risk

There are no active groundwater abstraction license holders located within a 500m radius of the Site. The Site is not located within an Environment Agency (EA) designated groundwater Source Protection Zone (SPZ).

3.1.2 Coal Mining

The database indicates that the Site is not within an area affected by coal mining activity. Therefore, Coal Authority Documentation has no relevance to this report.

The BGS has stated there are No or Very Low Hazards associated with; Collapsible Ground Stability, Ground Dissolution Stability, Landslide Ground Stability, and Shrinking or Swelling Clay Ground Stability; but Moderate Hazard Potential associated with, Compressible Ground Stability, and Running Sand Ground Stability.

3.1.3 Radon

BGS records indicate that the Site is not located within a radon affected area, as <1 % of homes are estimated to be at or above the action level. On this basis, the BGS states that "no radon protective measures are necessary in the construction of new dwellings or extensions."

3.1.4 Hydrology

Environmental records indicate that there are no surface water features within the Site boundary. Surface water from the south and east of Site, runs into a small brook that is owned by Black Sluice and drains to the South Forty Foot Drain, the brook is located adjacent to the southeast site boundary. This brook is designated a Nitrate Vulnerable Zone. The River Haven comes within 270m of the northern Site boundary. The Haven is used by shipping vessels heading for the Port of Boston; located 450m north of site.

The Site, along with the majority of the Boston area, is situated within a Tidal Flood Plain, therefore the area is located within a Flood Zone 3 - Extreme Flooding from Rivers or Sea without Defences. The Site is afforded protection from flooding thorough the Boston Barrer Scheme. There is no history of significant flooding at the Site.

There is one surface water abstraction licence within 500m of site, this is G W Padley Vegetables Ltd licence to abstract from the River Haven, at a location 242m NW of Site.

3.1.5 Sensitive Land Uses

The Site is located within a predominantly commercial, light industrial and residential area. The nearest human receptors are the Primary School and residential housing area that are located 100 – 250 m to the west of the

site. The east and south of the site are bordered by industrial units to a distance of 500 m and are therefore low human sensitivity. To the north, industrial units border the river, beyond which is the port.

With the exception of the small Nitrate Vulnerable Brook adjacent to site, there are no other environmentally sensitive land uses (e.g. SSSI's, Ancient Woodlands, AONBs, Green Belts, Special Protection Areas) within 500 m of site. The other closest environmentally sensitive land use is the Havenside Nature Reserve, 850m east of site.

3.1.6 Summary of Sensitive Land Uses

Overall, the Site is set in an area of low – moderate environmental sensitivity, based on the following key factors:

- The Site is in an area of mixed commercial / light industrial and residential use, with the only significant sensitive human receptors located no closer than 80m to the west of site.
- The published geology indicates that the Site immediately overlies tidal flet deposit, underlain by clays.
- The aquifers below site are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands.
- Some surface water from site flows into a Nitrate Vulnerable brook.
- The site is located in a high-risk zone for flooding due to its location within 500m of the tidal River Haven. However, the site has no history of significant flooding and is provided protection through the Boston flood defences.

3.2 Environmental Regulatory Database Review

The following environmental data has been obtained from a Landmark Envirocheck Report, which includes a search of databases held by regulatory bodies including the EA, BGS, the Department for the Environment, Food and Rural Affairs (DEFRA), City, District and Borough Councils and County Councils. The table below summarises key features identified on-Site and within the 500m search radius.

Table 3: Summary of Environmental Regulatory Database Review

Database	On-Site	0-500m	Description
Contaminated land register entries	0	0	Not applicable (N/A)
Current registered landfills	0	0	N/A
Closed landfills	0	0	One historic landfill site held by A F Budge (Contractors) Limited is identified 576m north of site, at the Port of Boston
Current registered waste transfer/ treatment facilities	0	0	N/A
Closed waste transfer/ treatment facilities	0	1	Snowflake Woodshaving Co Ltd were licenced to dispose of wood shavings and sawdust in 1992, 234m northeast of site. This licence is no longer active.
Authorised industrial processes	1	140	One active authorised land use recorded on the Site, Greencore Food Manufacturers.

			Nearby active land uses within 200 metres include: car repairs, a frozen food processor, and a concrete plant. Inactive land uses within 200 metres include: a stainless-steel manufacturer, car garages and a sawmill.
Registered radioactive substances	0	0	N/A
Enforcements, prohibitions, or prosecutions	0	0	N/A
Active Discharge consents	1	1	Site has an active discharge consent with the Anglian Water (Reference: TECO-0156-2022). There is one active discharge consent for Anglian Water Services Limited to release storm tank water on the sewage network, 32m north of site. There are several revoked consents related to petrol filling stations.
Pollution incidents	0	13	Three Category 2 – Significant Incidents occurred within 500m of the site in the 1990s, all associated with the Food Industry. All other incidents were Category 3 – Minor Incidents. The latest incident occurred in 1999.
Pollution Controls	0	1	The Boston Energy Production Facility, located 305m east of site, is permitted through Integrated Pollution Prevention and Control.
Petrol station entries	0	0	N/A

3.3 History of the Site and the Surrounding Area

The history of development on the Site and immediate surrounding area was investigated with reference to historical Ordnance Survey (OS) mapping and aerial photographs. The findings are presented in subsequent sections below.

3.3.1 Historical Mapping

A summary of the development history of the Site and immediate surrounding area obtained from historic OS mapping and aerial photographs is detailed in the table below.

Table 4: Summary of Historical Mapping

Edition and Scale	On-Site Activities	Off-Site Activities (within ~ 250m)
1888 1:10,560	The Site area sits on unnamed farmland.	The Site is an area of predominantly agricultural use. Marsh Lane is visible on the map, following its current road layout. The area within 250m vicinity is occupied by a Dairy Farm, Battery Farm and Cuckoo Terrace farm. There is a road running north – south located 250m east of the site. The River Haven is visible on the map. where the current River Roch flows. Boston dock and some residential areas are within 500m of the site to the north and northeast.
1906 1:10,560	No significant change.	The road to the east of site is labelled Wyberton Low Road
1938 1:10,560	No significant change.	No significant change.

1951 1:10,560	No significant change.	Unnamed works and residential areas have expended to approximately 250 - 280m from site to the northeast and east.
1956 1:10,560	No significant change.	Unnamed works / farm buildings have been constructed on the east side of marsh lane, approximately 350m east of Site.
1966-1982 1:1,250	Farmland has been replaced by hardstanding. There is a warehouse within the footprint of the current Site. Drains have been built running parallel to the west and east walls of the current Site.	Farmland generally has been replaced with the footprint of the Riverside Industrial estate. Victoria House works, and tank have been constructed neighbouring site to the west. There is an engineering works and an abattoir within 250m to the north of Site. Residential and industrial development has increased significantly within 500m of the site to the west, north and east.
1993 1:1,250	The current facility has been constructed.	Industrial density has increased significantly on the Riverside Industrial estate. There are residences and works within 250m south of Site. The school located 100 – 250m from the site's west has been constructed.
2000 1:10,000	No significant change.	A new residential area has been constructed approximately 250m southwest of site.
2013 1:10,000	No significant change.	No significant change.
2016 1:10,000	No significant change.	No significant change.
2021 1:10,000	No significant change.	No significant change.
2022 Aerial Photo	No significant change.	No significant change.

3.3.2 Planning Department Records

There is one planning record relevant to site; this was an unfavourable decision to an application by the sites' previous owner for the construction of a cooling water tower. Details can be found here.

3.3.3 Previous Report Findings

No previous reports were made available.

3.3.4 Summary of the History of the Site and Surrounding Area

Based on the information obtained by EHS Projects, the history of the Site and surrounding area can be summarised as follows:

- Earliest available mapping (1888) shows that the Site comprised of and surrounded by undeveloped agricultural land, however to the north the existing Port infrastructure can be seen.
- During the 1960s and 1970s, the farmland becomes the Riverside Industrial Estate.
- The current Site building are constructed in the early 1990s.
- There is continuous expansion of commercial and residential development in the surrounding areas until the 2020s.

4 Site Assessment

4.1 Methodology and Limiting conditions

Steve Power and Daniel Evans (EHS) visited the Site on the 9th of February 2022 to undertake the Site Walkover Assessment. During the Site walkover they were accompanied by Site representative Samm Truluck (Safety, Health, and Environment Business Partner at Greencore Boston).

Every effort was made to inspect all areas of the Site, auditors had full access to internal production, storage and dispatch facilities, chemical storage, external areas, and effluent treatment plant.

4.2 Site Overview

The Site was located to the south off Marsh Lane. The Site comprises the Greencore Boston food manufacturing facilities and associated loading and storages areas plus effluent treatment area.

Most of the Site area was covered by one unit, this unit was predominantly used for food manufacturing facilities. This unit housed goods intake and outbound areas, production lines (split into high care and low care), refrigeration zones, storage rooms, an engineering workshop, a chemical IBC storeroom, tray wash areas and plant rooms. There is a small walkway at the northern wall of the main building, followed by an office block.

Outside of the unit, to the north is the car park followed by Marsh Lane. On the west side of the building (moving north – south) are; the main water, effluent balancing and effluent sludge tanks and a small chemical storage area; one of the two effluent pits; the chillers; the steam raising boiler house; and the water heating boiler house. On the east side of the unit (moving north - south) are; the goods out dispatch area; contactor cabins; an effluent pit; and a plant room connected to the main unit through piping. The main site roadway runs north – south along the external area east of the site. The external area at the south end of site is the main waste storage area and goods inwards.

4.3 Bulk Storage Tanks

There were seven bulk liquid storage vessels on site. These are used for holding process water, fire suppression water, holding raw effluent, balancing effluent and for use in the ammonia plant. All tanks are visually inspected regularly to validate good working order. Containment through level checks and self bunding provide appropriate protection from overtops, spills and leaks from the tanks. In the event of a spill kit availabilities, spill procedures and hardstanding condition are all of an appropriate standard to effectively protect ground and groundwater. A full list of tanks can be found in Appendix E - Raw Materials and Tank Inventory. There were seven bulk liquid storage vessels on site.

4.4 Hazardous Substances

The operations across the Site may be associated with the use and storage of hazardous substances. By volume, the most used hygiene chemicals, Sodium hypochlorite, Holquat, TWH, and Nipac, were stored on covered bunds in the external IBC store adjacent to the effluent treatment tanks. One IBC of each was also stored on a bund within the internal chemical storage room at the north end of the main building while in use. A variety of other hygiene chemicals listed under the CLP regulations are stored in carriable plastic containers of various sizes. These are stored in COSHH cabinets within the internal chemical storeroom. A range of engineering chemicals, predominantly hydrocarbon-based lubricants, aerosols and adhesives, were stored within a locked storage units within the internal engineering workshops. All chemicals were appropriately labelled according to CLP regulations, more information on the chemicals housed on Site can be found in Appendix E - Raw Materials and Tank Inventory. Wheely bin style yellow spill kits were witnessed close to areas where potentially polluting liquids were stored.

4.5 Wastewater Treatment Plant

Wastewater treated on site originates from the following processes: i) Clean In Place and general sanitising of factory after the preparation and washing of salads and vegetables, ii) tray washing, iii) boiler blowdown, iv) softener backwash, vi) compressor condensate. After removal of some solids by filtration (e.g., drain catch pots), process effluent is received in either one of two 25m^3 concrete drainage sumps; the low care sump east of the facility or high care sump located on the west.

From the sumps, effluent was pumped through a solids separation screen (2mm) which removes process debris (salads), the debris discharges into dolav collection bins and enters an appropriate waste stream. The two

'screened' effluent streams are then mixed as they enter a 40m^3 double skinned polypropylene buffer tank, with cascade aeration. This balance tank provides a method of balancing and homogenising the effluent. Effluent is pumped to drain over a calibrated 'v' notch to measure flow volume. Prior to discharge, the effluent passes through a 4-bottle auto sampler to allow for effluent chemistry monitoring.

4.6 Drainage

Three wastewater streams occur on the Site, surface water, effluent water, and foul water. All wastewater drains were identified and inspected through a comprehensive drainage CCTV survey in Summer 2021. There was effective segregation of effluent and foul drains from surface water. Potentially hazardous substances are stored with effective secondary containment measures, no evidence of spills or pollution to ground or groundwater were witnessed. Appropriately robust hardstanding provides effective tertiary protection to ground in all areas within the Site boundary, except for the unmade ground in the vicinity of the tanks in the northwest of the Site. Catch pots are installed on all internal drains to mitigate solids entering drains.

Once effluent wastewater has been processed through the wastewater treatment plant, it is combined with foul water, and leaves site from the north. Rainwater falling on the external eastern edge of the Site also enters the effluent / foul combined drain. This is passed to Anglian Water sewage treatment.

Clean surface water from the building roof, the north of site, and the eastern roadway area enters surface water drains that run under the road. The drains discharge from Site to the small brook that is owned by Black Sluice. The brook drains to the South Forty Foot Drain Nvz, the brook is located adjacent to the southeast site boundary. Surface water falling on the south yard runs off the site by gravity to the unmade ground south of the site boundary. The full site drainage plan, as of January 2022, is available for review in Appendix A.

4.7 Asbestos Containing Materials (ACM)

An asbestos survey was not conducted as part of this scope of works. Any asbestos present was within the unit; therefore, the unit boundary provides adequate pollution containment. Under the Control of Asbestos Regulations SI 2012/632 the Site asbestos management plan mitigated asbestos risk.

4.8 Evidence of Spills, Staining or Corrosion

All observed hardstanding and external drains appeared in good visual condition. Potentially hazardous substances are stored with effective secondary containment measures, no evidence of spills or pollution to ground or groundwater were witnessed. No significant staining or corrosion observed at the Site.

4.9 Non-Natural Mounds or Depressions, Excavations and Fill

No non-natural mounds or depressions were observed.

4.10 Electrical Substations

There is a transformer located in between the north wall of the production facility and office block, as shown on the site layout in Appendix A, this transformer is managed and maintained by an external utility's provider. The transformer is linked to the interval HV room, at the north end of the production facility, the operator manages this.

4.11 Invasive Species

This assessment did not include an invasive species survey. EHS did not observe any invasive plant species growing at the Site during the walkover.

4.12 Summary of Site Walkover Observations

Following the Site walkover, the Site function and areas with environmental pollution potential are summarised below:

- The Site currently comprises an active food manufacturing business with corresponding effluent plant, loading and waste storage.
- Bulk storage tanks were used for holding process water, fire suppression water, holding raw effluent, balancing effluent and for use in the ammonia plant. Containment infrastructure and spill responses were at an appropriate standard to effectively protect ground and groundwater.
- The highest pollution potential materials were hygiene's acid and caustic cleaning chemicals. IBCs are stored externally on rooved bunds, while in use, the IBCs are housed in the internal chemical store on bunds. All other hygiene chemicals are stored within the internal chemical store.
- The concrete hardstanding was in good condition, no evidence of staining or corrosion observed at the Site. However, there is unmade ground in the effluent tank area at the northwest of Site.
- Drains have been recently assessed, there is complete segregation of effluent and foul drains from surface water.
- Effluent is split into two streams, the effluent is screened for solids, combined for balancing and aeration, and then combines with foul water. The combined drain discharges north of site.
- There is a transformer located in between the north wall of the production facility and office block, this transformer is managed and maintained by an external utility's provider.

5 Soil and Groundwater Contamination Risk Assessment

5.1 Potential Current On-Site Sources of Contamination

On-Site sources of contamination identified during the Site assessment include the externally stored chemical IBCs, tanks associated with effluent treatment and waste storage areas. There is also the potential for minor oil leaks from HGVs at the goods in (south) and dispatch (east) areas.

5.2 Potential Current Off-Site Sources of Contamination

The Site is located on a commercial industrial estate, the nearest residences are approximately 100m away to the east and southeast. The units to the north and south have the potential to cause pollution through ground, water, air, or nuisance. The food producers pose risk directly north of site, and other commercial premises within the Riverside Industrial state.

5.3 Potential Historical Sources of Contamination

There are very limited sources of potential contamination to ground below site prior to 1990, as the land and immediate vicinity remained undeveloped farmland until the construction of the Riverside Industrial Estate and current unit in the 1990s. Three Category 2 – Significant Incidents occurred between 250 - 500m of the site in the 1990s.

Another salad's producer historically owned the manufacturing facility. Freshtime operated the facility from 2000 – 2019 and used similar production methods. During this time the facility was also protected by concrete hardstanding. There are no recorded pollution incidents associated with the site's previous operator. Therefore, it is unlikely ground and groundwater below the site are contaminated.

Any unexpected historic contamination within underlying soils is highly unlikely to present a risk to Site users as the concrete hardstanding will provide engineered segregation.

5.4 Previous Reports and Consultations

EHS Projects has not identified any previous contaminated land assessments, investigations, or remediation at the Site.

5.5 Summary of Site Sensitivity

The Site is not expected to have a significant impact on ecological receptors as there are no direct emissions to surface water or ground from the Site. The food raw ingredients and most chemicals with the potential to pollute are stored internally within the unit; some hygiene IBCs re stored externally on roofed bunds. The Site is mostly covered in hardstanding, all external chemical storage and tanks are subject to containment, regularly inspected and well maintained. This provides a physical barrier to underlying soils and groundwater. Minor risk is posed by a lack of hardstanding surrounding effluent balance tank. The drainage system has recently been investigated and manages effluent and any runoff effectively. It is designed as such that there is no release to ground. The only emission to air is from the Site boilers.

As outlined by BGS reports and supported by nearby borehole data, the Site immediately overlies tidal flet deposit, underlain by clays. The aquifers below site are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. The site is in a high-risk zone for flooding due to its location within 500m of the tidal River Haven. However, the site has no history of significant flooding and is provided protection through the Boston flood defences.

6 Assessment of Soil and Groundwater Contamination Risk

It is unlikely that the ground beneath site is contaminated. There is a risk of fugitive emissions to water due to the large volume of liquid storage on Site within the internal chemical stores, externally stored hygiene IBCs and the effluent associated tanks.

However, the risk is controlled by the following mitigating measures:

- Internally stored and used hygiene and engineering chemicals are bunded by the walls of rooms as well as the outer walls of the unit. All internal drains drain directly to the effluent treatment plant.
- For chemicals stored externally, all are housed on roofed and appropriately sized drip trays adjacent to the effluent treatment plant. Tanks are regularly inspected and maintained according to the operators PPM schedule. Tertiary containment is achieved through hardstanding and curbing.
- Procedures are in place for loading and off-loading of tankers, and for dealing with spills from tankers. Spill kits are located around the Site.
- While there is the potential for impacts associated with historical operations, there is unlikely to have been significant sources of contamination on the Site itself, and there is no evidence of known contamination of soil or groundwater.
- Any historic contamination within underlying soils / fill is unlikely to present a risk to Site users as the concrete hardstanding will provide engineered segregation.

While there is the potential for some contamination of soil and/or groundwater by the operations noted above, the likelihood of significant impacts that would present a significant risk to the subject Site is considered to be low (see assessment of Site sensitivity above).

While there is the potential for impacts to soil and groundwater at and in the vicinity of the Site, the risks associated with any such impacts are considered to be reduced due to the following factors:

- Neither the Site nor any Site in the surrounding area has been classified as Contaminated Land under Part IIA of the Environmental Protection Act 1990, nor is the Site is currently being investigated with a view to the potential classification of the Site as Contaminated Land.
- No regulatory or third-party action against the Site has been identified in relation to soil or groundwater contamination.

In addition, with respect to off-Site sources of contamination, it is noted that any off-Site sources of contamination would be the responsibility of the original polluter and/or the current or former owners of the land on which the contamination originated in the first instance.

7 Preliminary Environmental Risk Assessment

7.1 Conceptual Site Model

The conceptual Site model has been prepared based upon the desk-based assessment and walkover. The methodology of this risk assessment uses the source-pathway-receptor pollutant linkage to provide a qualitative appraisal of environmental risks and potential liabilities associated with soil and groundwater contamination at the Site.

The Conceptual Site Model (CSM) is prepared based on the current and continued use of the Site for light industrial / commercial purposes.

Table 5: Preliminary Conceptual Site Model

Source	Pathway	Receptor	Risk
On-Site Sources			
Current Site operations including storage of liquids associated with food manufacturing and storage of chemicals used for industrial cleaning and food hygiene purposes. Defective underground effluent and foul water drains.	Dermal contact, ingestion, and inhalation pathways	Future Site users	**Low** The current Site use (assumed to remain in its current state) is covered in hard standing which provides a physical barrier against contact with potential contaminants.
		Neighboring residents	**Low** Underlying aquifers are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. The presence of hardstanding capping will mitigate potential pathways.
		Construction workers	**Low** Risk pathway to be mitigated via Personal Protective Equipment (PPE), good hygiene practices and construction Site management.
	Leaching of contaminants and vertical migration into groundwater and lateral migration into surface water.	Controlled waters	**Low to Moderate** Underlying aquifers are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. The brook adjacent to site is Nitrate Vulnerable. The presence of hardstanding capping will mitigate potential

			pathways from chemical storage and on-Site activities. Underground drainage malfunction has potential to pollute underlying geology. Properly implemented drainage PPM, supported by information from the 2021 CCTV drain survey, mitigates this risk.
	Contact with buried services	Buried services	**Low** Should any new services be installed at the Site i.e., water pipes, then the water supply provider should be consulted to determine whether protective barrier pipes are required.
Off-Site Sources			
Various industrial and commercial land uses. Potential contaminants include asbestos, heavy metals, and hydrocarbons.	Dermal contact, ingestion, and inhalation pathways	Future Site users	**Low** It is unlikely that surrounding land uses have impacted the Site due to the unproductive nature of the underlying stratums. The Site is underlain by hardstanding creating a physical barrier.
		Construction workers	**Low** Risk pathway to be managed through good construction practices and mitigation of risks when working in confined spaces.
	Migration via groundwater	Controlled waters	**Low** Underlying aquifers are unproductive and therefore have negligible significance for water supply or baseflow to rivers, lakes, and wetlands. The presence of hardstanding capping will mitigate potential pathways.

7.2 Risk of industrial emissions

Where a substance was classified under CLP as Hazardous to the Environment, or where information was unavailable, pollution potential was assessed as high. Where a substance was not classified as Hazardous to the

Environment, but other information in the SDS recommended environmental protection measures, the substance was assessed as having medium pollution potential. The full list of Raw Materials, including the hazardous substances, can be seen in Appendix E.

The majority of substances were taken forward as relevant hazardous substances, either as a result of their hazardous properties, the quantities present on site, or the lack of information on their properties, meaning a full assessment was not possible. This resulted in an up-to-date list of substances on site and their properties (Appendix E).

The list of substances was then taken forward with an assessment of the actual pollution risk presented, considering, the amounts stored and used on site, and the pollution prevention measures in place.

Where there are fixed bunds around bulk tanks in all cases:

- Delivery points are within the bund.
- Delivery procedures in place.
- Materials handling by COSHH trained personnel only.
- All storage and production areas of hardstanding of good integrity.
- Spill kits available, training on use provided.
- Emergency spill response to incidents as per Accident Management Plan.
- Regular inspections of storage areas, containment, surfacing, and drainage are conducted to ensure good condition of infrastructure.

Where stock is stored in bunded safety container and is only opened at point of use within controlled area e.g., production in all cases:

- All storage and production areas of hardstanding of good integrity.
- Delivery procedures in place.
- Materials handling by COSHH trained personnel only. Spill kits available, training on use provided.
- Emergency spill response to incidents as per Accident Management Plan.
- Regular inspections of storage areas, containment, surfacing, and drainage are conducted to ensure good condition of infrastructure.

Where very small quantities held on site and stored internally:

- Stock is stored in bunded safety container and is only opened at point of use within controlled area e.g., production.
- Delivery procedures in place.
- Materials handling by COSHH trained personnel only.
- All storage and production areas of hardstanding of good integrity.
- Spill kits available, training on use provided.
- Emergency spill response to incidents as per Accident Management Plan.
- Regular inspections of storage areas, containment, surfacing, and drainage are conducted to ensure good condition of infrastructure.

Based on this assessment, it is concluded that no individual substance presents a risk of pollution under normal circumstances, and that sufficient measures are in place to prevent and mitigate pollution in the event of an abnormal incident.

8 Conclusions

Considering the measures implemented above, it is likely that there will be no deterioration of ground or groundwater as result of permitting the activity and upon surrender the land will be in a satisfactory condition. The risk of the site being contaminated as a result of permitted activities is therefore considered to be negligible.

No intrusive sampling has been undertaken. This is justified on the basis of the standard of engineering for pollution prevention purposes operations and maintenance following the review of the available information.