

Chippindale Foods Ltd

**Phase 1 Geo-Environmental Desktop Study
Report**

For

Proposed Residential Development

At

Kingsley Farm
Kingsley Road
Harrogate
North Yorkshire
HG1 4RF

Beam Consulting
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EXECUTIVE SUMMARY

<p>Site Location and Description</p>	<p>The site is an existing Farm and Egg Production Facility Centre comprising areas of grassed fields, Farmhouse, main office building, a number of food processing buildings, various outbuildings of a variety of sizes, associated tracks, footpaths and grassed/garden areas adjacent to the Farmhouse.</p> <p>The existing Farmhouse, main office building and outbuildings are proposed to be retained in conjunction with the proposed site wide residential development.</p>
<p>Site History</p>	<p>Early maps from 1854 show the site as agricultural farmland with a number of farm buildings.</p> <p>The site was originally recorded as Harrogate Bogs, later changing to Bogs Farm in the period 1854 - 1893.</p> <p>From 1893 – 1956 the site continued to be recorded as Bogs Farm until the 1970 records indicate the site to be Kingsley Poultry Farm. By 1970 the extent of farm buildings on the site had increased.</p> <p>From 2006 the site is recorded as Kingsley Farm and additional buildings are evident.</p> <p>The 2012 records indicate further farm buildings added to the development extent.</p>
<p>Coal Mining / Mineral Extraction</p>	<p>The site is not noted to be within potentially contaminative industrial uses (extractive industries activity).</p> <p>The coal mining report for the site indicates that the site is not located in a zone of likely physical influence on the surface from past underground coal workings.</p> <p>The property is not noted to be in an area that is likely to be affected at the surface from any planned future workings. The Report does not identify the presence of coal reserves or any licence to extract. No notice of risk of the land being affected by subsidence has been given.</p>
<p>Geology</p>	<p>The Envirocheck Report records show that the site is not located over an area of made or infilled ground. The nearest artificial made ground is noted beyond the site boundary 0.5km to the East and South of the site.</p> <p>Natural superficial geological stratum is not noted on the site but is predominantly expected to be Till. There is a small area to the North of....</p>

<p>Geology (Cont.)</p>	<p>....the site where Glaciofluvial Deposits, Devensian, are expected in the form of Sands and Gravels. Underlying Solid Geology is anticipated as Millstone Grit in the form of Mudstone, Siltstone and Sandstone</p> <p>A fault line is indicated at the North of the site running South West to North East.</p> <p>The site is not noted to be within artificial ground or landslip area.</p>
<p>Hydrogeology and Hydrology</p>	<p>The site is underlain by a minor aquifer (variably permeable) with soil permeability noted as low. The aquifer is classed as a Secondary A Aquifer. No Principal Aquifers are noted on site.</p> <p>Based on Envirocheck maps and Environment Agency online maps the site does not lie with a Flood Zone from rivers or sea and therefore it is not at risk from fluvial flooding.</p> <p>There is a single Yorkshire Water discharge consent noted 0.8km to the North of the site.</p>
<p>Environmental Considerations</p>	<p>Two Registered Waste Treatment/Disposal sites and one Registered Waste Transfer Site are noted within 500m of the site.</p> <p>Several contemporary trade directory entries have been noted within 500m of the site.</p> <p>Local Authority pollution prevention and control entries are noted within 1km to the South of the site.</p> <p>A BGS recorded landfill site is noted 0.5km to the North East of the site and numerous historical landfill sites 0.2 to 1km around the site.</p> <p>Two Licensed Waste Management Facilities are located within 500m to the South East of the site. A further Licensed Waste Management Facility is recorded 600m to the West of the site.</p> <p>There are no Local Authority Recorded Landfill sites noted in the search information within 1km of the site.</p>
<p>Ground Conditions and Contamination</p>	<p>Foundations placed in the Till or Sands and Gravels are likely to be of sufficient capacity to support the proposed residential developments works, subject to the investigation works noted below and detailed loading assessment</p> <p>A Phase 2 Geo-environmental investigation is required to establish geotechnical and environmental conditions which may affect the works include contamination levels, foundations, below ground drainage, and soakaway potential.</p>

Ground Conditions and Contamination (Cont.)	Investigation works shall be carried out to determine existing ground conditions, likely foundation type, condition and suitability for the proposed residential development.
Radon	No radon protection required.
Asbestos	Asbestos survey is required to be carried out prior to any works on site.

1.0 INTRODUCTION

- 1.1 Beam Consulting Engineers (BCE) were instructed to carry out a Phase 1 Geo-Environmental Desktop Study Report for the proposed residential development at Kingsley Farm, Kingsley Road, Harrogate, North Yorkshire, HG1 4RF.
- 1.2 The site is an existing Farm and Egg Production Facility Centre comprising areas of grassed fields, Farmhouse, main office building, a number of food processing buildings, various outbuildings of a variety of sizes, associated tracks, footpaths and grassed/garden areas adjacent to the Farmhouse. The existing Farmhouse, main office building and outbuildings are proposed to be retained in conjunction with the proposed site wide residential development.
- 1.3 The objective of this Report is to determine key geo-environmental factors which might affect the site, and discuss the impact the results may have on the future use of the site. Such key factors include:
 - Site history including available historic maps, coal mining and extraction records
 - Geology, hydrogeology and hydrology
 - Geotechnical assessment and recommendations for Phase 2 works if required
- 1.4 Findings and opinions stated in this Report are based on information obtained from various sources, as detailed, which BCE believes are reliable. Nevertheless, BCE cannot guarantee the reliability or accuracy of the information upon which they have formulated this report.
- 1.5 Any references to groundwater are based on observations made at the time of the desk study and historic site investigation reports. It should be noted, however, that levels may vary from those reported due to seasonal or other effects.
- 1.6 Beam Consulting Engineers make no representation whatsoever in relation to the legal significance of findings reported or any legal matters referred to in the body of this Report.
- 1.7 This Report is the copyright of Beam Consulting Engineers Ltd. It cannot be used or reproduced without the express written authority of Beam Consulting Engineers Ltd and payment thereof.

2.0 SITE DETAILS AND DESCRIPTION

- 2.1 The site is located to the west of a residential area on the North East side of Harrogate, North Yorkshire, off Kingsley Road.
- 2.2 The site is located at National Grid reference 432090, 456380. The site location plan is enclosed in Appendix A.
- 2.3 A site walkover was carried out on Friday 8 February 2013. Points of interest include the following:
- It was noted that the site slopes significantly West to East. Site levels range approximately from 93m AOD up to 108m AOD with the majority of the current buildings set on fairly level platform just above and below the 100m AOD level.
 - Two site drains were noted running West to East one running into a culvert heading towards the main office. Whilst it was not readily identified, it is likely that this drain ultimately discharges to Star Beck which commences immediately adjacent to the Traffic Lights on the bend on Kingsley Road at the eastern extremity of Kingsley Farm.
 - The most recently constructed buildings on the site forming the greater part of the food processing facility have been set into an area of excavated ground and are some 2m to 3m lower than the grassed land above.

3.0 SITE HISTORY

3.1 Historical Ordnance Survey maps have been obtained for the site dating back to 1854. Copies of the maps are included in Appendix B. The account presented in this report is restricted by specific time periods represented by these maps only. Changes both on site and in the surrounding area that may have a significant impact on this site are detailed in the table below:

Map edition	On-site changes	Off-site changes
Yorks 1854	Site is largely undeveloped. Site is possibly called Harrogate Bogs.	The majority of the land surrounding the site is shown to be agricultural farmland with a number of farm type buildings. There is a reference to Harrogate Bogs on the southern boundary of the site. The towns of Knaresborough and Harrogate are approximately 1.5km east and West of the site with mainly residential developments noted. The main railway lines to the north east and west of the area are also noted. Delineation of Starbeck reservoir is noted but is not named.
Yorks 1892 - 1893	Site unchanged but now referred to as Bogs Farm	Some residential and commercial and industrial development has taken place. Starbeck reservoir is recorded.
York 1910	No significant changes.	Residential and commercial development has continued to take place and industrial development is also noted in Harrogate and Knaresborough.
Yorkshire 1938	No significant changes.	Residential, commercial and industrial development has continued on a larger scale around both Harrogate and Knaresborough and residential areas have spread with 0.5km of the site. A football ground is noted on Knaresborough Road near the junction with Kingsley Road.
OS Plan 1956	No significant changes.	Residential development has continued and filled in many frontage gaps along and near to Knaresborough Road. Widespread residential, commercial and industrial development has taken place in both Knaresborough and Harrogate.
OS Plan 1970	Site has been renamed Kingsley Poultry Farm. Additional farm buildings are recorded.	General urban development has continued to spread in all adjacent areas including schools.

Map edition	On-site changes	Off-site changes
OS Map1985	No significant changes	General urban development has continued to fill gaps in development increasing density of overall development. Hospital in Harrogate is noted.
Raster Map 2006	Site is recorded as Kingsley Farm. Additional farm buildings are noted.	General urban development has continued at a lesser rate of spread.
Raster Map 2012	An additional building in the SW corner of the building plot has been added.	General urban development has continued on smaller scale

4.0 COAL MINING/MINERAL EXTRACTION

- 4.1 The site is not noted to be within potentially contaminative industrial uses (extractive industries activity). There is a tank recorded on the site immediately adjacent to the entrance to Reception on the current site. Extractive industries have been present 0.4km to the East of the site from 1854-1985 mainly adjacent to the railway line with historic and current industrial activity noted also.
- 4.2 The site records show very low potential for collapsible ground stability and compressible ground stability hazards. The average velocity gradient is noted across the site as Stable 1.5mm to -1.5mm per year but with Upward Movement noted of 1.5mm to 3.5mm per year to the north of the site.
- 4.3 A fault is recorded some 300m outside the site, to the North and East.
- 4.4 The site is noted to be of very low potential for landslide ground stability hazards and not noted to have any ground dissolution stability hazards.
- 4.5 Potential for shrinking or swelling clay ground stability hazards are noted to be very low within the site. Potential for running sand ground stability hazards are also noted as very low.
- 4.6 Potentially infilled land (water) is noted less than 0.1km to the South East of the site on Kingsley Road. Few BGS recorded mineral, sand/gravel pits or quarrying sites are noted, all of which have ceased working all of which are 388m or more away from the site.
- 4.7 The Coal Mining Report for the site indicates that the site is not located in a zone of likely physical influence on the surface from current or past underground coal workings. The property is not noted to be in an area that is likely to be affected at the surface from any planned future workings. The Report does not identify the presence of coal reserves or any licence to extract. No notice of risk of the land being affected by subsidence has been given.

5.0 GEOLOGY

- 5.1 The Envirocheck Report records show that the site is not located over an area of made or infilled ground. The nearest artificial made ground is noted beyond the site boundary 0.1km to the East and South of the site.
- 5.2 The superficial geological stratum predominantly expected on the site is Till. There is a small area to the North of the site where Glaciofluvial Deposits, Devensian, are expected in the form of Sands and Gravels. Underlying Solid Geology anticipated is Millstone Grit in the form of Mudstone, Siltstone and Sandstone.
- 5.3 As noted above a fault line is recorded some 300m outside the site, to the North and East of the site.
- 5.4 The site is not noted within artificial ground and landslip area. The closest area noted is an infilled pond some 100m East on Kingsley Road.

6.0 HYDROLOGY AND HYDROGEOLOGY

- 6.1 The site is underlain by a Secondary A Aquifer which comprises permeable layers capable of supporting water supplies at a local rather than strategic scale. These were previously generally classified as minor aquifers. No Principal Aquifers are noted on this site.
- 6.2 Based on Envirocheck maps and Environment Agency online maps the site does not lie with a Flood Zone from rivers or sea and therefore it is not at risk from fluvial flooding.
- 6.3 The site is not noted to lie within a source protection zone.
- 6.4 There is a single Yorkshire Water discharge consent noted 0.8km to the North of the site.
- 6.5 Five water abstractions have been noted 1km to 2km from the site with the nearest being to 1km to the South of the site.

7.0 ENVIRONMENTAL ASSESSMENT

- 7.1 Two Registered Waste Treatment/Disposal sites and one Registered Waste Transfer Site are noted within 500m of the site.
- 7.2 Several contemporary trade directory entries have been noted within 500m of the site.
- 7.3 Local Authority pollution prevention and control entries are noted within 1km to the South of the site.
- 7.4 A BGS recorded landfill site is noted 0.5km to the North East of the site and numerous historical landfill sites 0.2 to 1km around the site.
- 7.5 Two Licensed Waste Management Facilities are located within 500m to the South East of the site. A further Licensed Waste Management Facility is recorded 600m to the West of the site.
- 7.6 There are no Local Authority Recorded Landfill sites noted in the search information within 1km of the site.

8.0 RADON AND ASBESTOS

- 8.1 The property is in a lower probability radon affected area, with less than 1% of homes being predicted to be above the action level.
- 8.2 No asbestos related information is available. An asbestos survey is required to be carried out prior to any works on site.

9.0 GEOTECHNICAL ASSESSMENT

- 9.1 Foundations placed in the Till or Sands and Gravels are likely to be of sufficient capacity to support the proposed residential developments works, subject to the investigation works noted below and detailed loading assessment.
- 9.2 A Phase 2 Geo-environmental investigation is required to establish geotechnical and environmental conditions which may affect the works such as contamination levels, ground bearing capacity for foundations, below ground drainage, soakaway potential and any gas migration risk.
- 9.3 Investigation works shall be carried out to determine existing ground conditions foundation type, condition and suitability for the proposed residential development.

10.0 CONCEPTUAL SITE MODEL

10.1 To evaluate possible environmental risks identified during the desk study, a preliminary source-pathway-target conceptual model has been developed for the site and summarised below:

SOURCE	PATHWAY	TARGET	RISK	RISK MANAGEMENT
Contaminated soil	Direct Ingestion	Construction workers / Future occupiers	LOW	The site is not noted to be within potentially contaminative industrial uses (extractive industries activity). The nearest extractive industries have been in use 0.4km to the East of the site from 1854-1985. Any short-term risk can be managed by implementation of appropriate PPE during groundwork operations
	Indirect Ingestion	Construction workers / Future occupiers	LOW	
	Inhalation of vapours	Construction workers / Future occupiers	LOW	
	Aggressive attack	Building materials	LOW	
Contaminated groundwater	Leachate flowing into the site	Building materials	LOW	The site is underlain by a minor aquifer (variably permeable) with soil permeability noted as low. There is therefore low potential for both the vertical and horizontal migration of surface contaminants (if present) onto the site. The nearest extractive industries have been in use 0.4km to the East of the site from 1854-1985 near the railway line and station. The risk to end user is expected to be LOW.
	Leachate discharged from the site	Watercourses	LOW	The site is not noted to be within potentially contaminative industrial uses therefore, the risk to the end user is expected to be LOW.

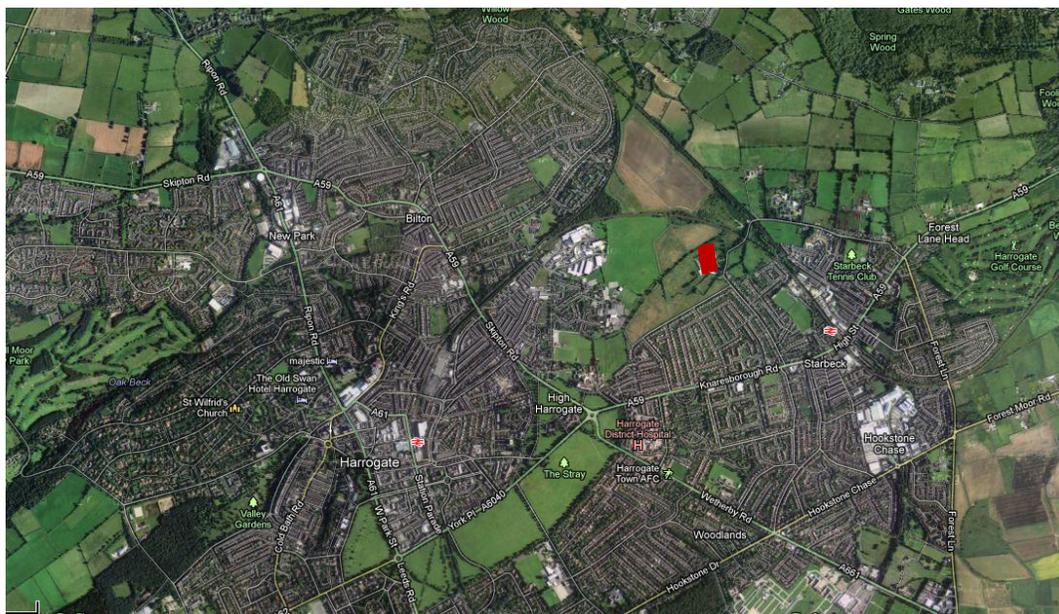
10.2 The pathways listed above are relevant due to the historical and current contaminative land uses identified on site and in the surrounding areas.

10.3 The proposed land use for the area is private residential properties, access roads and car parking. The ground below the site is expected to be of low permeability therefore reducing any environmental risks. The levels of contamination historically recorded in the ground are low and below relevant guidelines. This suggests that no remediation of the site is necessary; however this should be confirmed following further testing forming part of the Phase 2 investigation works.

11.0 CONCLUSIONS AND RECOMMENDATIONS

- 11.1 The desk study has highlighted potential sources of contamination arising from the historical and current activities carried out on the site and has assessed the sensitive environmental receptors.
- 11.2 The site is not noted to be within potentially contaminative industrial uses and the nearest historical potentially contaminative is in the vicinity of the railway line and station. There are waste related facilities but as the ground is of low permeability it is not expected that migration of potential gases and any contaminants is of significant probability.
- 11.3 It is recommended that a Phase 2 geo-environmental investigation, most likely based on trial pits, boreholes and testing is carried out on the site to determine the ground conditions for proposed residential development, to obtain samples for contamination laboratory testing, and identify the likelihood or not of any gas migration from adjacent landfill sites.
- 11.4 An asbestos survey is required to be carried out prior to any works being undertaken on site.

APPENDIX A
SITE LOCATION



APPENDIX B
HISTORICAL MAPS

APPENDIX C

GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

APPENDIX D
MINING AND GROUND STABILITY

APPENDIX E
ENVIROCHECK REPORT

APPENDIX F
COAL MINING REPORT

APPENDIX G
CD OF REPORT AND FULL ENVIROCHECK INFORMATION