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Bakkavor Meals Boston
Laburnum Farm
Chapel Road
Old Leake
Boston
PE22 9PG

Geo-Environmental Investigation

On behalf of Arctica Ltd



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Site: Bakkavor Meals Boston, Laburnum Farm, Chapel Road, Old Leake, Boston, PE22 9PG

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Ground and Environmental Investigation Ltd is a specialist geo-environmental consultancy and ground investigation company operating nationally.

Our approach to all of projects is to provide our clients with cost-effective solution to potential geo-environmental hazards, essential considerations before site acquisition, or prior to final development scheme design.

We offer a full range of geo-environmental services from initial due diligence site assessments through to engineering and ground remediation design.

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1 INTRODUCTION

Ground and Environmental Investigation Ltd (GEI) was commissioned by Arctica Ltd to undertake a Geo-Environmental Investigation at a proposed development site at Bakkavor Foods Boston, Laburnum Farm, Chapel Road, Old Leake, Boston, PE22 9PG.

It was understood that the proposed development comprises the construction of a new engineering block and removal of old engineering offices and the repurposing of the area for dispatch.

The objectives of the Geo-Environmental Investigation were to provide outline recommendations for foundation design. Identification of environmental liabilities associated with the site and delineation of any potential areas of contamination resulting from the sites previous and current usage was also undertaken.

1.1 LIMITATIONS

The assessment is limited to the issues agreed within the proposal for the works. Notes on limitations associated with this assessment are provided in Appendix 1.

2 SITE LOCATION AND LAYOUT

The wider Bakkavor site is situated to the south of Chapel Road and west of Church Road in a predominantly agricultural setting and at approximate Grid Reference TF 399 515. The area subject to this ground investigation is situated to the southeast of the main factory building of the existing Bakkavor site.

A site walkover was undertaken on the 8th July 2025. Access was gained from internal access roads around the Bakkavor site. At the time of the walkover, the site comprised an area of land within the existing yard area, car park and an area used for staff breaks.

The site surface in the yard was laid to concrete, the remaining site surfacing comprised gravel and a tarmac road.












Various plant was present in the yard area relating the wider site activities, however no visual or olfactory evidence of contamination were noted during the site walkover.

3 SITE HISTORY

A map search was carried out for the entire Bakkavor site and extracts of the following Ordnance Survey maps were obtained covering the period between 1887 and 2025.

These are presented in Appendix 2, and the relevant historic details are summarised as follows:

Mapping Date Range	On Site	Surrounding Area
1887 - 1888	The site comprises a number of fields, likely in agricultural production. Small buildings are mapped in the northeast of the area.	The surrounding area comprises agricultural fields to more than 500m in all directions with scattered residential properties. No significant potential sources of contamination are noted in the surrounding area.
1904 - 1906	No significant development is noted on site.	No significant development is noted in surrounding area.
1946 1948		
1970 - 1974	A Smithy is mapped in the north of the site. Some minor development has occurred of the buildings in the northeastern area.	Small scale residential development has occurred in the vicinity. A plant nursery is mapped approximately 500m to the east.
1979	No significant development is noted on site.	No significant development is noted in surrounding area.
1995	The 1995 mapping is not clear however it appears to show the development of a large building in the central area of the site.	
2001	No significant development is noted on site.	
2010	The site appears to have been developed to its approximate current layout.	
2025	Minor alterations to the site layout are noted.	

No further significant development is noted on site or in the surrounding area from the aerial mapping from 1999 to 2021 with the exception of the construction of an effluent treatment plant in the south of the site between 2015 and 2018.

4 ENVIRONMENTAL SETTING

4.1 GEOLOGY

Reference to the British Geological Survey online geological map of the area indicates that the geology underlying the site comprises superficial Tidal Flat Deposits overlying solid geology of the Kimmeridge Clay Formation.

The geological memoir for the area described these strata as follows:

Tidal Flat Deposits

Tidal flat deposits, including mud flat and sand flat deposits, form extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit.

Kimmeridge Clay Formation

Mudstones (calcareous or kerogen-rich or silty or sandy); thin siltstone and cementstone beds; locally sands and silts. Offshore: In the Southern North Sea, the Kimmeridge Clay Formation comprises dark brown-grey to black, organic rich, fissile mudstone with occasional hard, thin carbonate-cemented horizons. The mudstone comprises fissile grey to brown-grey, shelly mudstone; bituminous mudstone; oil-shale and thin, paler, calcareous mudstone.

4.2 GROUNDWATER

Reference to the British Geological Survey 1:50,000 scale Aquifer Designation Dataset, shows the site to be set upon Unproductive strata with respect to both the superficial deposits and the solid geology.

Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The site is not situated within an Environment Agency-designated Groundwater Source Protection Zone.

4.3 RADON

Reference to the National Radiological Protection Board's "Radon Atlas of England and Wales" indicated that the property is in a low probability radon area (less than 1% of

properties are estimated to be at or above the Action Level of 200 Bq/m³). No protection measures need be incorporated into new buildings.

4.4 OTHER ENVIRONMENTAL INFORMATION

Reference was made to the environmental database landmark, extracts from which are provided in Appendix 3. Relevant information relating to the sites environmental sensitivity is summarised as follows:

Dataset		On site	Nearest significant off-site feature
Past Land Use	Historical industrial land uses	Smithy	47m southeast. Chimney.
Waste and Landfill	Historical waste sites	Effluent Treatment Building	None within 500m.
	Waste exemptions	Preparatory treatments, recovery of scrap metal	20m north. Deposit of agricultural waste consisting of plant tissue.
Industrial Land Use	Recent industrial land uses	Factory, Electricity Substation	6m north Electricity Sub Station.
	Licensed industrial activities (Part A(1))	None	63m southeast. Poultry Farming.
	Licensed pollutant release (Part A(2)/B)	Combustion and Incineration	
	Licensed Discharges to controlled waters	Sewage & Trade Combined - Unspecified	177m east. Sewage discharges – final/treated effluent – not water company.
	Pollution Incidents (EA/NRW)	Contaminated Water, Category 2 (Significant) Impact to Water.	
Geological	Potential for Collapsible Ground Stability Hazards	Negligible	
	Potential for Compressible Ground Stability Hazards	Moderate	
	Potential for Ground Dissolution Stability Hazards	Negligible	
	Potential for Landslide Ground Stability Hazards	Very low	

Dataset		On site	Nearest significant off-site feature
	Potential for Running Sand Ground Stability Hazards	Moderate	
	Potential for Shrinking or Swelling Clay Ground Stability Hazards	Low	
	Artificial and Made Ground	None	None within 500m.
Hydrology and Hydrogeology	Surface Water Abstractions	None	406m east. Spray Irrigation – Direct.
	Groundwater Abstractions	None	None within 2000m.
	Potable Abstractions	None	None within 2000m.
	Source Protection Zones	None	None within 500m.
	Water Network	Inland river not influenced by normal tidal action.	1m southeast. Inland river not influenced by normal tidal action.

5 PRELIMINARY CONCEPTUAL SITE MODEL

The site was noted to comprise predominantly agricultural land since the earliest mapping available (1887). The site remained predominantly undeveloped throughout the mapping period until the 1990s when the site was developed to its current layout in stages through the 1990, 2000s and 2010s. A smithy was mapped in the northern area of the site however this was remote to the proposed development area.

On site potential sources of contamination include:

- Potential Made Ground.

No off-site potential sources of contamination were identified.

The Site overlies Unproductive strata with respect to the Superficial Deposits and the Solid geology and is not located within a SPZ.

6 INTRUSIVE INVESTIGATION

6.1 FIELDWORK

The site works were carried out between the 8th July and 6th August 2025 and comprised the following:

- Sonic Borehole Drilling;
- Hand Dug Trial Pits; and
- Groundwater and Soil Gas Monitoring.

The positions of the above works on the site are indicated on Figure 1, Exploratory Hole Location Plan.

All intrusive fieldwork was generally executed in accordance with the recommendations given in British Standard BS 5930:2015+A1:2020, "Code of Practice for Site Investigations".

Contamination sampling was undertaken in accordance with BS 10175:2011+A2:2017, "Code of Practice for the Investigation of Potentially Contaminated Sites".

Sonic Borehole Drilling

Four sonic boreholes (BH1 to BH4) were excavated using sonic boring methods to depths of between 12m and 20m below existing ground level.

During boring, temporary steel casing was used to support the sides of the boreholes. Disturbed (D) soil samples were recovered at regular intervals for description and subsequent laboratory testing purposes. In addition, in-situ Standard Penetration Tests were carried out at regular intervals using the split spoon attachment. The results of the in-situ testing are presented in Figure 2.

Upon completion boreholes BH2 and BH4 were installed with 10m deep monitoring standpipes comprising 9m slotted section and 1m plain pipe. The borehole annulus was backfilled with 10mm gravel to a depth of 0.9m where a bentonite seal was installed to ground level. The standpipes were completed with flush to ground covers. Boreholes BH1 and BH3 were backfilled with arisings and the surface coverings made safe.

The borehole logs are presented in Appendix 4.

Hand Dug Trial Pits

Three Hand Dug Trial Pits were excavated in order to determine the protrusion of the existing building foundations.

Trial pit logs are presented in Appendix 5.

Groundwater Level and Soil Gas Monitoring

A soil vapour survey was undertaken at the site and comprised the monitoring of the atmosphere within the installed borehole. Portable gas monitoring equipment (GFM 436) was used to monitor the standpipe for concentrations of carbon dioxide (CO_2), methane (CH_4), Hydrogen Sulphide (H_2S) and Carbon Monoxide (CO) and oxygen (O_2).

A photoionization device (PID) was also used to monitor any vapours present.

The monitoring results are presented in Appendix 6.

6.2 GROUNDWATER

Groundwater was encountered at all borehole locations during the intrusive investigation as detailed in the table below.

Location	Observations
BH1	Groundwater strike at 1.3m. Groundwater rose to 0.5m after 20 minutes.
BH2	Groundwater strike at 1.5m. Groundwater rose to 0.5m after 20 minutes.
BH3	Groundwater strike at 1.4m. Groundwater rose to 0.5m after 20 minutes.
BH4	Groundwater strike at 1.1m. Groundwater rose to 0.3m after 20 minutes.

Post fieldwork monitoring indicated groundwater resting at depths of between 2.09m and 2.25m.

It should be noted that groundwater levels may vary due to seasonal fluctuations in rainfall, but in the shorter term, can be affected by antecedent weather conditions or other causes.

7 LABORATORY TESTING

7.1 GENERAL

During the intrusive investigation, excavated soils were subjected to PID screening techniques in order to determine the presence of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) which is considered an appropriate screen for organic contamination.

Confirmatory soil samples were taken from all window sample holes. Headspace analysis to determine VOC concentrations was carried out using a PID on all soil samples retrieved as part of this investigation. The results of the screening indicated that VOC concentrations were below the detection limit of 5 ppm in all samples.

Therefore, no significantly elevated VOCs or SVOCs were encountered and therefore the on-site soil elsewhere on site was deemed to not have been impacted by any potential VOC and SVOC contaminants. These soils would not be deemed to pose any significant risk of significant harm to human health as a result of the presence of volatile hydrocarbons. This is discussed in greater detail later in the report.

7.2 GEOTECHNICAL TESTING

The following range of laboratory tests were scheduled, and the results are presented in Appendix 7.

i. Determination of Particle Size Distribution (4 No.).
ii. Determination of Atterberg Limits (3 No.).
iii. Determination of Moisture Content (3 No.).
iv. Determination of pH (7 No.). See also Appendix 8.
v. Determination of water-soluble sulphate (7 No.). See also Appendix 8.

7.3 ANALYTICAL TESTING

Four soil samples were selected and scheduled for chemical analysis which was undertaken by The Environmental Laboratory Ltd. All samples were analysed for a general screening suite of contaminants considered appropriate to the current usage and past history of the site and surrounding area.

Toxic Metals	Phytotoxic Metals	Inorganic Compounds	Organic Compounds
Arsenic Cadmium Chromium Lead Mercury Nickel Selenium	Water Soluble Boron Copper Nickel Zinc	Water Soluble Sulphate pH Asbestos	Total Polyaromatic Hydrocarbons (PAH) Mineral oils Total Petroleum Hydrocarbons (TPH) BTEX

In addition, one sample was selected for Waste Acceptance Criteria (WAC) testing.

Environmental samples were stored in appropriate containers as specified by the testing laboratory. Where organic compounds were to be determined, inert containers, which prevent loss by absorption, or volatilization, i.e. wide-mouthed amber glass containers, were used.

Samples were stored in appropriately cooled cool boxes and were transported to the laboratory as quickly as possible in order to minimize any potential for chemical and biological changes to take place.

The results of the analytical testing are presented in Appendix 8.

8 EVALUATION OF GROUND CONDITIONS

The soils encountered during this investigation are described in the Borehole logs presented in Appendix 4. The ground profile encountered at the site comprised a minor horizon of Made Ground over Tidal Flat Deposit soils. The Kimmeridge Clay Formation was encountered at depth.

Made Ground

Made Ground was found at all locations to depths of between 0.2m and 0.3m and comprised concrete, 20mm gravel and Type 1 over geotextile.

No visual or olfactory evidence of contamination was noted.

Tidal Flat Deposits

Soils typical of the Tidal Flat Deposits were encountered beneath the Made Ground at all locations comprising orange brown, orangeish brown and grey, brown, dark brown, greenish brown, and grey silty sand, slightly gravelly silty sand, and sand.

The formation was determined to depths of between 7.2m and 7.6m below ground level.

Kimmeridge Clay Formation

Soils typical of the Kimmeridge Clay Formation were encountered beneath the Tidal Flat Deposits at all locations and comprised brown occasionally grey clay with occasional gravel and clay with frequent gravel.

8.1 ENGINEERING PROPERTIES

The engineering properties of the principal strata, as discussed above, can be assessed based upon a combination of the in situ and laboratory test results. A summary of the engineering properties is given below:

Tidal Flat Deposits

In situ SPT's recorded N values in the range 1 to 10, indicating this material to be very loose to loose.

Particle size distribution testing indicated this material to be fine silty sand and sandy silt. Silt/clay fractions were between 24% and 32%.

For preliminary foundation design purposes, the following parameters may be used for consideration of shallow foundations within the Tidal Flat Deposits:

SPT N	=	2 (conservative – loose)
Angle of shearing resistance	=	27° (estimated)

Kimmeridge Clay Formation

In situ SPT's recorded N values in the range 18 to 68, indicating this material to be stiff to hard.

Classification testing indicated the soils to comprise low to high plasticity clay with modified plasticity indices of between 17% and 29%.

9 ENGINEERING DESIGN

9.1 FOUNDATION DESIGN OPTIONS

It is understood that the ground pressure imposed by the proposed new structure is expected to be approximately 40kN/m^2 for ground floor slabs with column loads of around 450kN for the steel frames.

In deliberation of suitable foundation options consideration was given to the geotechnical hazards and risks as presented below:

Geotechnical Hazard	Qualitative Risk & Consequences	Possible Risk Reduction Measures
Existing underground structures such as service runs and old footings.	**Low** Implication for foundation depth and economic feasibility of shallow foundations.	New foundations to be constructed in undisturbed ground or alternatively disturbed ground to be removed and replaced with suitable engineering fill.
Variations in stiffness of ground below foundation depth that could give rise to unacceptable total and differential settlement.	**Low** Buildings particularly sensitive to differential settlement. Would result in cracking of superstructure if conventional brickwork or brick cladding.	Calculate likely magnitude of settlement and determine if within acceptable tolerances. Make foundations act as reinforced beams. Include movement joints if and where necessary.

Shallow Foundations

Foundation Depths

The Tidal Flat Deposits will provide a suitable foundation solution for the proposed ground bearing floor slabs.

Shallow foundations will not be suitable for the column loads required to support the steel frames.

Allowable Bearing Pressure and Foundation Sizing

Based on field observations, in situ testing and laboratory test results, a maximum allowable bearing of 40kN/m^2 is recommended for foundations placed at a depth of 1.0m.

Preliminary settlement calculations indicate total settlements of 26mm based on the results of the investigation.

Piled Foundations

The use of piles founded within the Tidal Flat Deposit soils and underlying Kimmeridge Clay Formation are recommended for the development in order to support the proposed column loads.

It is considered that driven steel tube piles would be suitable for use at the site, although this should be checked with a piling contractor to ensure that all factors have been taken into consideration. The piling contractor should be made aware of the presence of near surface underground obstructions such as existing services and remnants of old footings, which if left in situ, may restrict piling progress.

It is understood that piling contractors are being approached for advice regarding pile design, we advise that calculations should be undertaken by a specialist piling contractor due to the complexity required on this site.

9.2 TEMPORARY WORKS

Excavations in excess of 1.2 m depth may be required in connection with the proposed development on this site. If there is a requirement for personnel to enter into excavations, then the need for trench side support should be considered for any depth of excavation and, therefore, appropriate equipment should be available on site prior to excavation proceeding. A site-specific risk assessment should be carried out where man entry into excavations is required.

The base of foundation excavations should be inspected and any soft loose, organic or otherwise deleterious material at foundation level removed and replaced with lean mix concrete. The soils encountered will be liable to softening/loosening when exposed to surface water infiltration. In order to avoid deterioration of the prepared formation the base of foundations should be blinded with concrete as soon as practical after excavation and particularly if there is delay before placing foundation concrete.

9.3 CHEMICAL ATTACK ON BURIED CONCRETE

The results of the chemical testing indicated a concentration of water-soluble sulphate in the range 29.4mg/l to 440mg/l as SO_4. pH values were neutral to alkaline with results in the range 7.6 to 9.2 pH units recorded.

In accordance with BRE Special Digest 1 entitled ‘Concrete in Aggressive Ground’ a design sulphate class for the site of DS-1 is recommended. Using SD1 an ACEC (Aggressive Chemical Environment for Concrete) class of AC-1 is recommended.

10 GROUND CONTAMINATION ASSESSMENT

The current guidelines used for this contamination assessment are presented within Appendix 9.

The contaminant concentrations encountered as part of this investigation have been compared against either Land Quality Management Generic Assessment Criteria (LQM GAC) for a commercial development, the Chartered Institute of Environmental Health's (CIEH) Suitable for Use Levels (S4USL), or where available against newly published Category 4 Screening Levels (C4SLs) for a commercial end use. Where neither guidelines have limit values, Contaminated Land Exposure Assessment (CLEA) framework guideline limit values have been assessed.

Category 4 Screening Levels (C4SLs) have currently been published for six substances as per the table below.

Substance	Residential (with home-grown produce)	Residential (without home-grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37	40	49	640	79	170
Benzene	0.87	3.3	0.18	98	140	230
Benzo(a)Pyrene	5.0	5.3	5.7	77	10	21
Cadmium	22	150	3.9	410	220	880
Chromium VI	21	21	170	49	21	250
Lead	200	310	80	2300	630	1300

All concentrations expressed in mg/kg.

This table should be read in conjunction with the Final C4SL R&D Report

10.1 SOIL QUALITY

In terms of any proposed redevelopment of the site, the results of the analysis of the selected soil samples recovered during the site investigation indicated that the concentrations of *metals and metalloids* considered to be potentially toxic to humans were below the respective guideline values in all samples tested.

Organic contamination across the site was low and concentrations which may be considered to pose an unacceptable risk to human health should any viable pathway exist were not encountered.

Asbestos Containing Materials (ACM) were not encountered.

A comprehensive description of the soil quality as measured as part of the intrusive site investigation is given below.

10.1.1 Toxic Metals

Concentrations of toxic metals arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc were all below their respective soil guidance values for either a commercial land use under the CLEA/LQM GAC guidelines and the C4SL/S4USL guideline values for commercial use in all samples tested.

10.1.2 Organic Compounds

Polycyclic Aromatic Hydrocarbons (PAH)

Concentrations of PAH were found to be below the inert waste acceptance criteria of 100mg/kg as detailed in the Landfill (England and Wales) (Amended) Regulations 2004 in all samples tested.

Speciated PAH

No exceedances of the relevant guideline values for specific PAH compounds were noted across the site.

Total Petroleum Hydrocarbons

Concentrations of TPH were below the inert waste acceptance criteria of 500 mg/kg as detailed within the Landfill (England and Wales) Regulations 2004 and also within the UK Water Industry Research (UKWIR) in all soil samples tested.

Generic Assessment Criteria (GAC) for total petroleum hydrocarbons according to both their molecular weight and chemical structure and also for a range of soil organic matter (SOM) content values have been derived using CLEA software. The LQM CIEH GACs are presented according to their soil organic matter content and proposed end use of the land.

The maximum TPH concentration recorded on site during the site investigation was less than 10mg/kg. As the most conservative GAC for a commercial site is 1300mg/kg, it is not considered that the soils present on site pose a significant risk of significant harm to human health.

10.1.3 Asbestos

Asbestos screening of the soil samples did not identify any Asbestos Containing Material (ACM).

10.2 SOIL GAS

Three gas monitoring visits were undertaken between the 15th July and 6th August 2025 where a soil vapour survey was undertaken across the site and comprised the monitoring

of the atmosphere within the purposely installed monitoring standpipe. Portable gas monitoring equipment (GFM 436) was used to monitor the standpipes for concentrations of carbon dioxide (CO_2), methane (CH_4), Hydrogen Sulphide (H2S), Carbon Monoxide (CO) and oxygen (O_2). A Photoionization detector (PID) was used in order to undertake a soil vapour survey with respect to volatile organic compounds.

For determining the gas protection measures which may be required in low rise buildings with a beam and block floor there is published guidance from the NHBC for use on residential developments which utilises a traffic light system of classification. For larger buildings the guidance in CIRIA 665 and BS8485 is used.

Reference has also been made to the British Standard Code of Practice BS8485:2015, *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings* and regard has been given to the recommendations presented therein. The processes set out in BS8485 represent good practice and is based on the CIRIA C665 document.

In addition, CIRIA document C735, *Good practice on the testing and verification of protection systems for buildings against hazardous ground gases* has also been referenced.

The results obtained from the short-term soil gas monitoring undertaken indicated that elevated concentrations of soil gas are not present in the soils underlying the site. The soil gas results are attached at Appendix 6.

The results obtained from the soil gas survey undertaken indicated that elevated carbon dioxide concentrations were not recorded at the site above the action level of 5%. No elevated methane concentrations above the action level of 1% were recorded.

Measurement of both borehole pressure and gas emission rates indicates that no significant gas flows are present. The maximum gas flow rate measured on site was <0.1 l/hr.

Concentrations of photoionisable compounds were measured below 5ppm in all monitoring wells.

10.3 WATCHING BRIEF AND DISCOVERY STRATEGY

Whilst no significantly elevated contaminant concentrations were encountered as part of this site investigation should discreet hotspots be encountered, which were not previously detected during the site clearance or groundworks, these should be dealt with accordingly, by informing all parties involved with the site and drafting new contamination proposals if necessary. A number of options are available for handling any such material, which include:

- The removal from site and disposal to a suitably licensed landfill of all material suspected of being contaminated.

- Short-term storage of the suspected material while undertaking verification testing for suspected contamination. The storage area should be a contained area to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area.
- Treatment of the identified contamination as discussed above.
- Having a suitably experienced Environmental Engineer either on-call or with a watching brief for the visual and olfactory assessment of the material, and sampling for verification purposes.

Should a new source of contamination be suspected or identified then the relevant local authorities would be informed. A report indicating the nature of contamination and how this is to be dealt with would be submitted to their department and for their agreement. Any necessary remediation would then be detailed and verified in a supplementary remediation statement.

GEI can confirm that such a watching brief should exist on this site during any demolition/construction works and should any contamination or potentially contaminative sources be discovered during the proposed demolition/enabling works all site works would cease and suitably competent consultants/engineers will attend site.

11 CONTAMINATION RISK ASSESSMENT

This risk assessment has been undertaken with due regard to the advice relating to groundwater as provided in the Environment Agency's "Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources", the advice provided in the Contaminated Land (England) Regulations 2000, and the associated statutory guidance. The guidance defines contaminated land as any land that is in such a condition that by reason of substances in, on or under the land:

- significant harm is being caused or there is a significant possibility of such harm being caused; or

- pollution of controlled water is being, or is likely to be, caused.

This definition is based on the principles of risk assessment defined as a combination of the probability (or frequency) of occurrence of a defined hazard and the magnitude (including the seriousness) of the consequences. Central to the risk assessment process is the concept of pollutant linkage, that is a linkage between a contaminant and a receptor by means of a pathway.

Statutory definitions relating to pollution linkage.	
Contaminant	"a substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters."
Receptor	"a living organism, a group of living organisms, and ecological system or a piece of property" which meets given criteria. "controlled waters which are, or could be, polluted by a contaminant".
Pathway	"one or more routes or means by, or through, which a receptor: • is being exposed to, or affected by, a contaminant, or • could be so exposed or affected".

The relationship between these components is discussed below in order to identify the existence of any source-pathway-receptor linkage on the site, and hence the potential risks associated with any contamination.

This risk assessment is based on the proposed redevelopment of the site to a commercial end use.

The significance of the risks to the receptors/targets identified is based on an evaluation of the potential pathways between the contaminant source and receptors based on the most sensitive end use, i.e. a commercial end use.

Potential receptors/targets at the site and in the area in which the site is located include:

- future occupants and the general public;
- construction/maintenance workers;
- groundwater resources; and
- underground services in and around the site.

11.1 CONTAMINANT SOURCES

The following general potential contaminant sources have been identified at the site and in the surrounding area:

Potential Source	Source Description	Principal Contaminants of Concern
Current and Historic Site Use	Near surface in-fill/ reworked material of unknown origin.	PAH, TPH, Metals, ACM

The analytical testing of soils retrieved as part of the intrusive investigation did not reveal significantly elevated contaminant concentrations.

11.2 RISK TO HUMAN HEALTH

Toxic Metals

Concentrations of toxic metals arsenic, cadmium, chromium, lead, mercury, nickel, selenium, and zinc were all below their respective soil guidance values for a commercial use in all samples tested in this site investigation, therefore the risks to human health from these contaminants is considered to be low.

Organic Compounds

Concentrations of organic compounds were generally low across the site, therefore the risks to human health from these contaminants is considered to be low.

Inorganic Compounds

Asbestos containing material (ACM) was not encountered at the site.

The site would not be considered to pose a potential risk of significant harm to human health in the context of Part 2A.

11.3 RISKS TO WATER RESOURCES

The site is underlain by Unproductive strata in the superficial deposits and the solid geology and is not located within a groundwater Source Protection Zone.

Significant levels of potentially soluble and therefore mobile organic contaminant sources were not measured on site and therefore the risk to groundwater resources is considered to be low.

11.4 RISKS TO BUILDINGS & SERVICES

The risks to buried services from organic contamination such as TPH, which can degrade/permeate plastics and other polymer materials used to supply potable water is considered to be low.

11.5 GAS RISK ASSESSMENT

The levels of soil gas underlying the site have been monitored as part of a short-term soil gas monitoring programme carried out across the site during July and August 2025. The results obtained from the soil gas survey indicate that elevated levels of soil gas, which may require gas protection measures to be incorporated into the development are not present on site. No elevated gas flow rates were recorded during the monitoring.

The highest carbon dioxide concentration encountered on site during this current investigation was measured in BH4 at 2.25% which is below the relevant guideline limit of 5%. No elevated methane concentrations were encountered across the site. A survey of volatile organic compounds undertaken across the site using a PID indicated the levels of photoionisable compounds measured in the monitoring wells were <5ppm.

Measurement of both borehole pressure and gas emission rates indicates that no significant gas flows are present. In order to allow for a worst-case scenario, GEI have used a gas flow rate across the site of 1.0l/h in the following calculations. It should be noted that the maximum gas flow rate detected on site during the short-term gas monitoring was less than 0.1l/h which was measured directly with an internal flow meter.

Based on BS 8485:2015 and C716, we have assessed the site based on the gas monitoring undertaken as part of the site investigation in order to calculate a Characteristic Gas Situation (CS).

Based on the worst-case gas characteristic situation, the worst-case implied CS derived by combining the maximum observed concentrations from different borehole standpipes during any monitoring event and a worst-case flow rate of 1.0 l/h are as follows.

Flow Rate (l/h)	CH4 (%)	CO2 (%)	GSV – CH4 (l/h)	GSV – CO2 (l/h)	Implied CH4 CS	Implied CO2 CS
1.0	0.0	2.25	0.000	0.0225	1	1

On the basis of the measurements in the table above, the GSV is taken to be 0.0225 l/h, which is the worst case for methane and carbon dioxide. A GSV of 0.0225 l/h lies within the GSV values for CS1 (<0.07 l/h) which has a very low hazard potential.

BS 8485:2015 enables the minimum level gas protection (score) for the site or zones to be determined based on the determined CS and the type of proposed building. Given the proposed end use of the site, a Type C building has been used for calculating the appropriate gas protection score.

The development, considered to consist of a Type C building in a Site with a CS1 ground gas regime characterisation would not require ground gas protection measures in any new buildings.

11.6 WASTE DISPOSAL

Should an excess volume of soil be required to be disposed of off-site then a waste classification may be required.

For a waste classification to be undertaken, materials may need to be subjected to chemical testing which would give an indication to the contaminants present and, therefore those most toxic to the environment in the waste. Following the assessment of the waste as hazardous or non-hazardous waste acceptance criteria leachate testing allows the appropriate disposal pathway to a suitably licensed disposal facility to be further determined.

Waste acceptance criteria (WAC) leachate testing was carried out on one soil sample from site. The results are attached at Appendix 8 and show that leachable content in excess of the inert limit values was not noted within the samples tested.

As preliminary waste assessment based on the results of materials tested to date, it is considered that the majority of any surplus soils requiring off-site disposal would be classified as EWC 17 05 04 stable non-reactive hazardous waste and acceptable at a waste facility licenced to accept inert material.

12 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a system diagram identifying contaminant sources, routes of exposure (pathways), and which receptors are affected by contaminants moving along those pathways.

The model is produced to identify the zones of the site with different potential contaminations characteristics (e.g. whether contaminants in the soil are likely to be on the surface or at depth, distributed over an entire area or in localised 'hot spots').

The conceptual site model presented in the table below is based on the findings of the site investigation undertaken.

Source	Pollutant		Pathway	Hazard		Receptor	Observations/ Recommendations	Assessed Risk
Contaminated ground	Metals, organic (hydrocarbons) could be present	➔	Direct contact, ingestion, inhalation.	Health risks including skin irritation.	➔	Humans: site workers and future occupants	Normal health and safety precautions. Elevated contaminant concentrations do not present in soils.	Low
			Surface run off.	Lateral movement to surface watercourses.	➔	Aquatic resources, ecology and subsequent users including humans.	No significantly elevated contaminant concentrations encountered.	Low
			Leaching/ Dispersion.	Downward migration to groundwater.	➔	Aquatic resources – Groundwater, abstraction wells) / surface waters.	No significantly elevated contaminant concentrations encountered.	Low
			Direct contact	Aggressive chemical attack	➔	Building structures and services	It is considered that protection of services is unlikely to be required on this site however advice should be sought from Statutory Providers especially as to whether potable water pipes should be protected.	Low

Source	Pollutant		Pathway	Hazard		Receptor	Observations/ Recommendations	Assessed Risk
Liquid contaminant sources	Diesel, Petrol and Oils.	➔	Direct contact; ingestion, inhalation.	Health risks including skin irritation. Lateral and vertical migration of contaminants.	➔	Humans: site workers. Groundwater and surface water.	Significantly elevated contaminant concentrations not encountered.	Low
Asbestos	Asbestos fibres within made ground and waste on site	➔	Inhalation.	Health risks including asbestosis, mesothelioma, and lung cancer.	➔	Humans: site workers and future occupants.	Appropriate PPE should be worn during site works. No ACM encountered within the samples.	Low
Redundant Waste, Demolition Waste		➔	Dermal Contact/ingestion. Potential for migration via surface water run-off	Health Risks	➔	Humans: Site workers	All waste on site is to be removed from site during site preparatory works and disposed of in accordance with current legislation.	Low

13 CONCLUSIONS AND RECOMMENDATIONS

Based on the desk study, site investigation, intrusive works and subsequent data assessment, the following conclusions and recommendations have been drawn in respect of the proposed development at Bakkavor Meals Boston, Laburnum Farm, Chapel Road, Old Leake, Boston, PE22 9PG.

Geotechnical

- The ground investigation found the anticipated geology with soils typical of Tidal Flat Deposits encountered beneath Made Ground. The Kimmeridge Clay Formation was encountered at depth.
- The Tidal Flat Deposits were identified as a suitable founding stratum for ground bearing floor slabs with a maximum allowable bearing pressure of 40kN/m^2. Preliminary settlement calculations indicate total settlements of approximately 26mm.
- Estimated column loads of c.450kN would require piled foundations within the Tidal Flat Deposits and into the underlying Kimmeridge Clay Formation.
- We recommend that pile design is undertaken by a specialist piling contractor due to the complexity involved.
- A design sulphate class of DS-1 and an ACEC class of AC-1 was recommended for buried concrete.

Environmental

- The site is located above Unproductive strata with respect to the superficial deposits and the solid geology.
- The site is not located within a Source Protection Zone.
- No visual evidence of significant ground contamination was identified during the historical map search, environmental data review or present on site.
- The risks to human health, water resources, and buildings and services are considered to be low in the absence of any identifiable sources of ground contamination.

Based on the principles and definitions outlined under section 57 of the Environment Act 1995, the site would not be considered “Contaminated Land” based on a commercial end use.

FIGURES

1. Location Plan
2. SPT vs Depth Profile



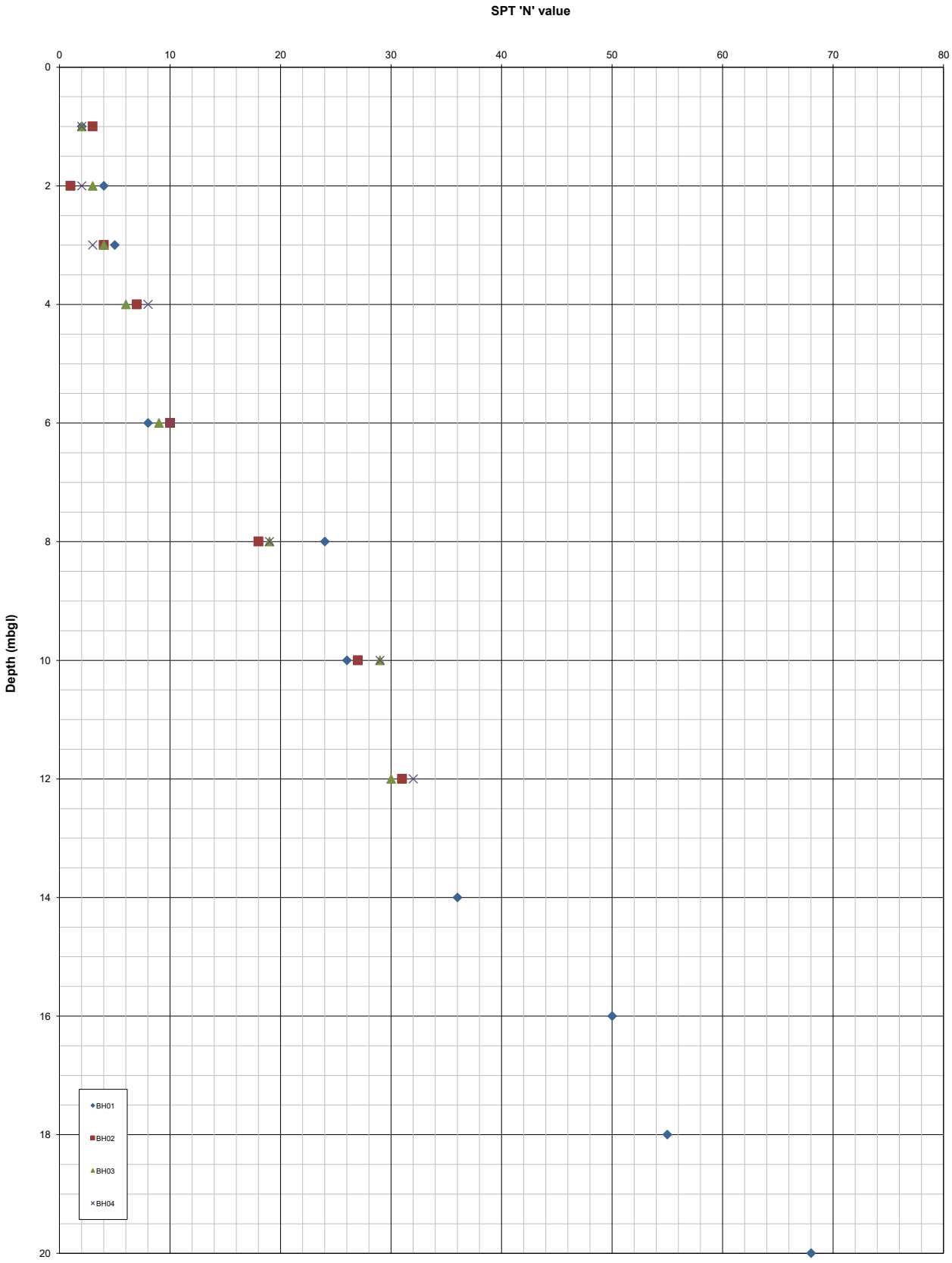
WS - Window Sample	DP - Dynamic Probe
BH - Borehole	GM - Gas Monitoring Standpipe
TP - Trial Pit	SP - Soakage Pit
HDTP - Hand Dug Trial Pit	PT - Percolation Test
DCP - Dynamic Cone Penetration Test	S - Sample Location
HA - Hand Auger	

Site: **Bakkavor Boston**	Client: **Arctica Ltd**	Drawn:	Rev.: **A**	
Title: **Exploratory Hole Location Plan**	Project: **25-747**	Date: **July 2025**	Scale: **N.T.S.**	gei.

Topo extract

Figure 2: Bakkavor Boston

SPT N-Depth Profile



APPENDIX 1

LIMITATIONS

The recommendations contained in this Report represent GEI's professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant.

GEI does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

GEI obtained, reviewed and evaluated information in preparing this Report from the Client and others. GEI's conclusions, opinions and recommendations has been determined using this information. GEI does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which GEI has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by GEI for the sole and exclusive use of the Client and for the specific purpose for which GEI was instructed.

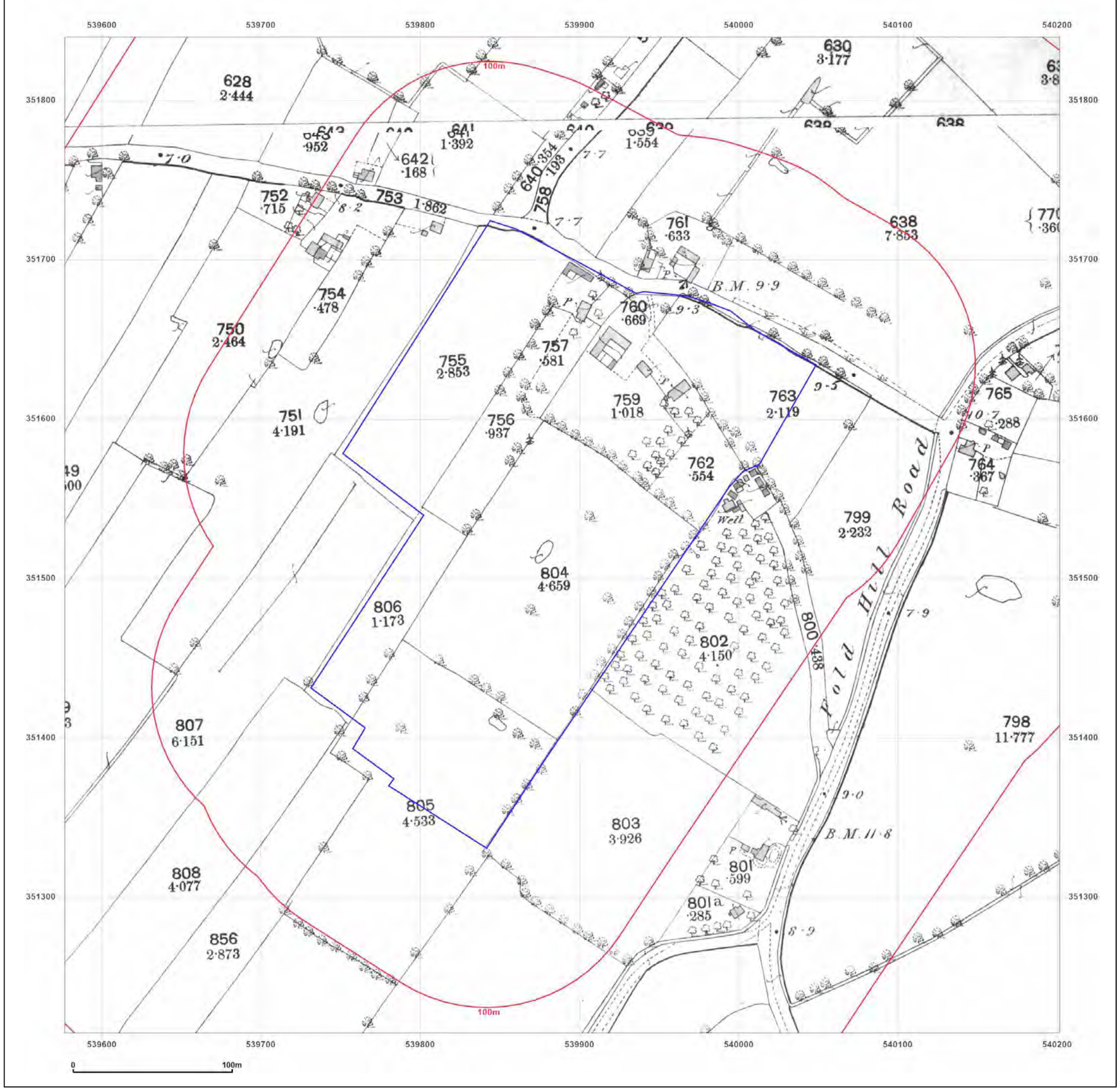
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APPENDIX 2

HISTORICAL MAPPING



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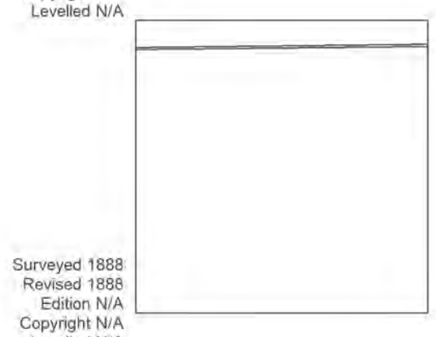
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Report Ref: GS-X49-SE2-KJQ-34B_LS_1_1
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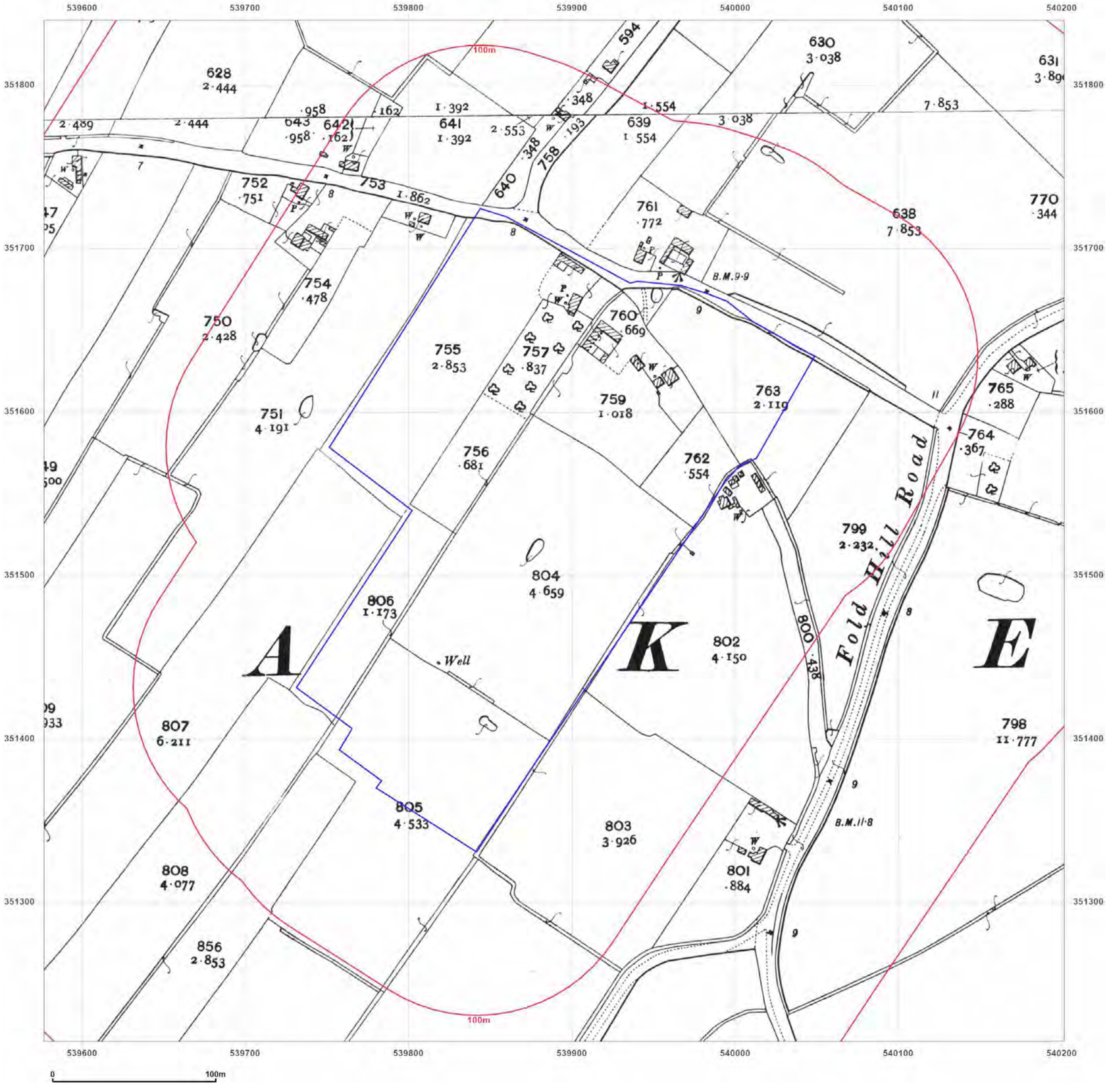
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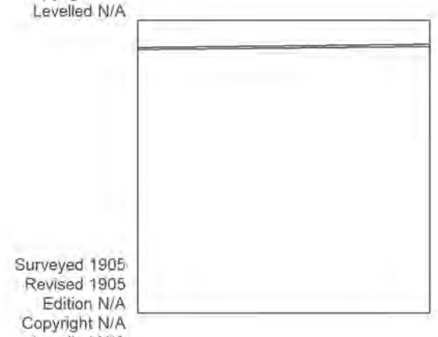
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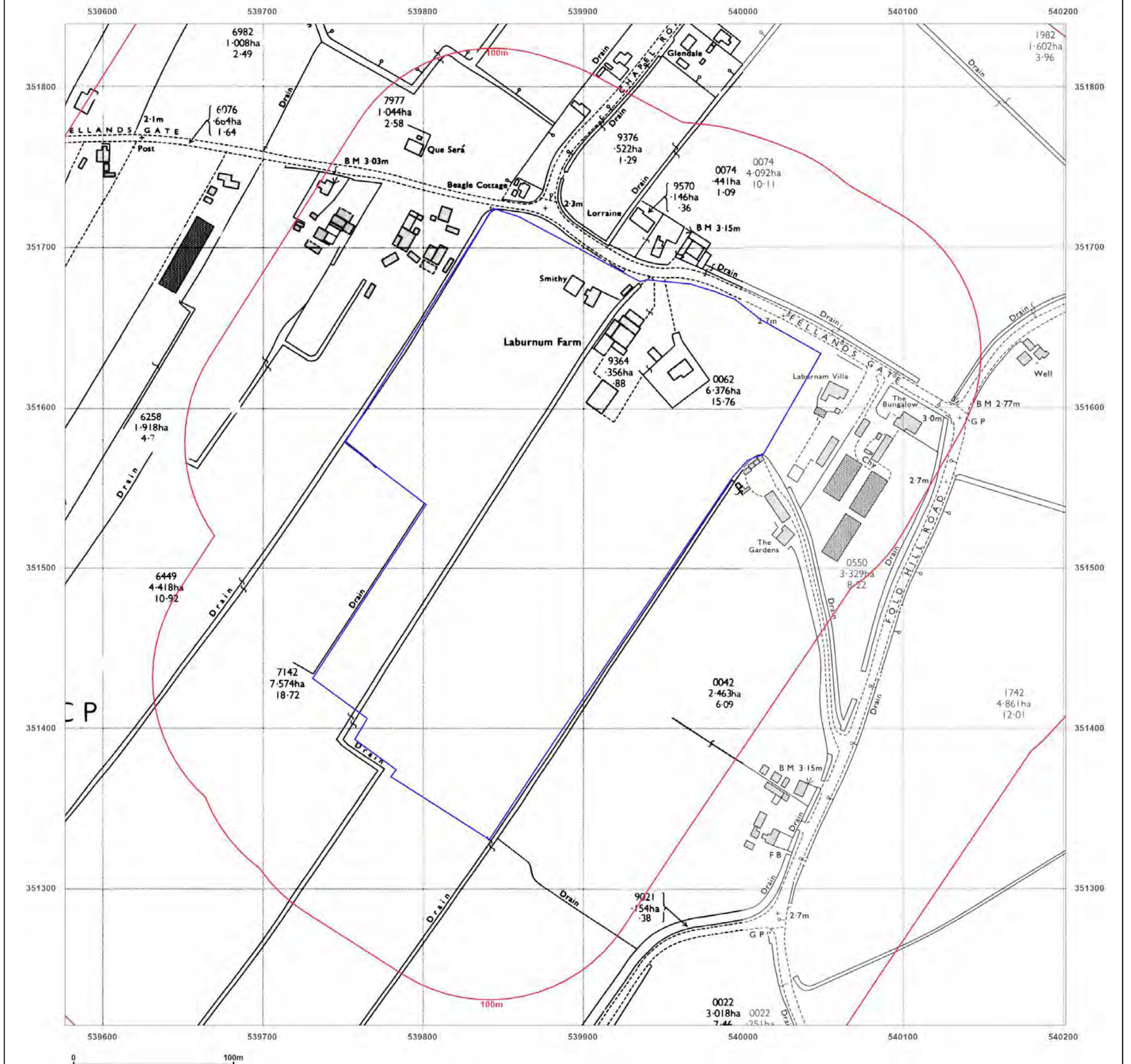
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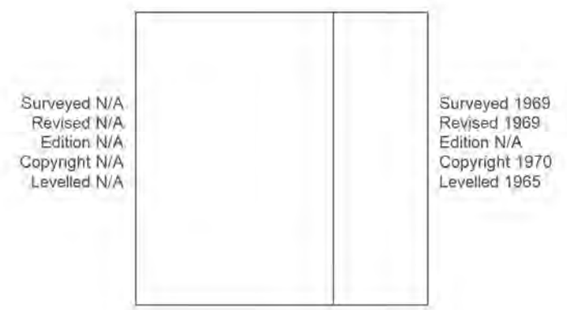
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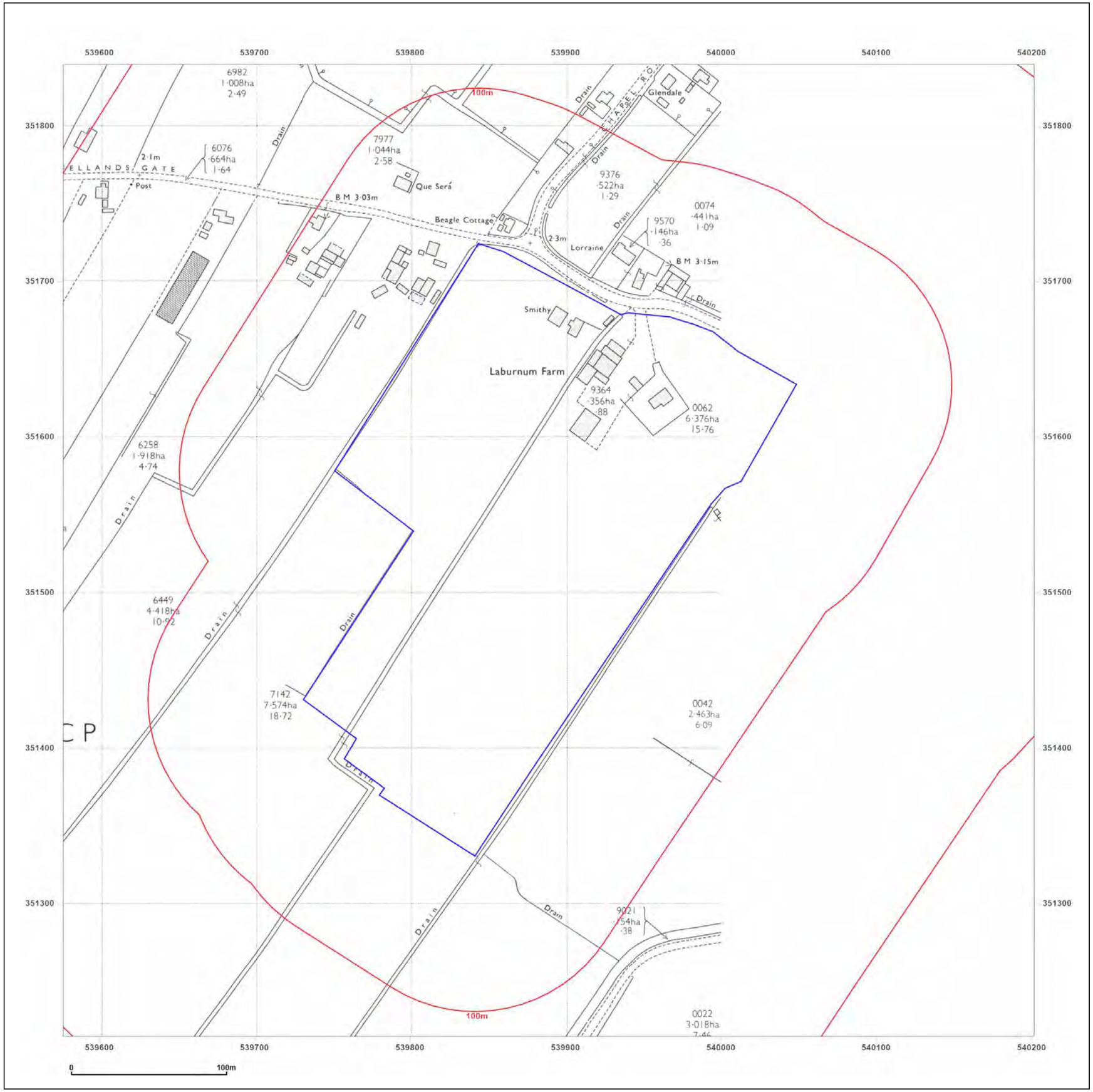
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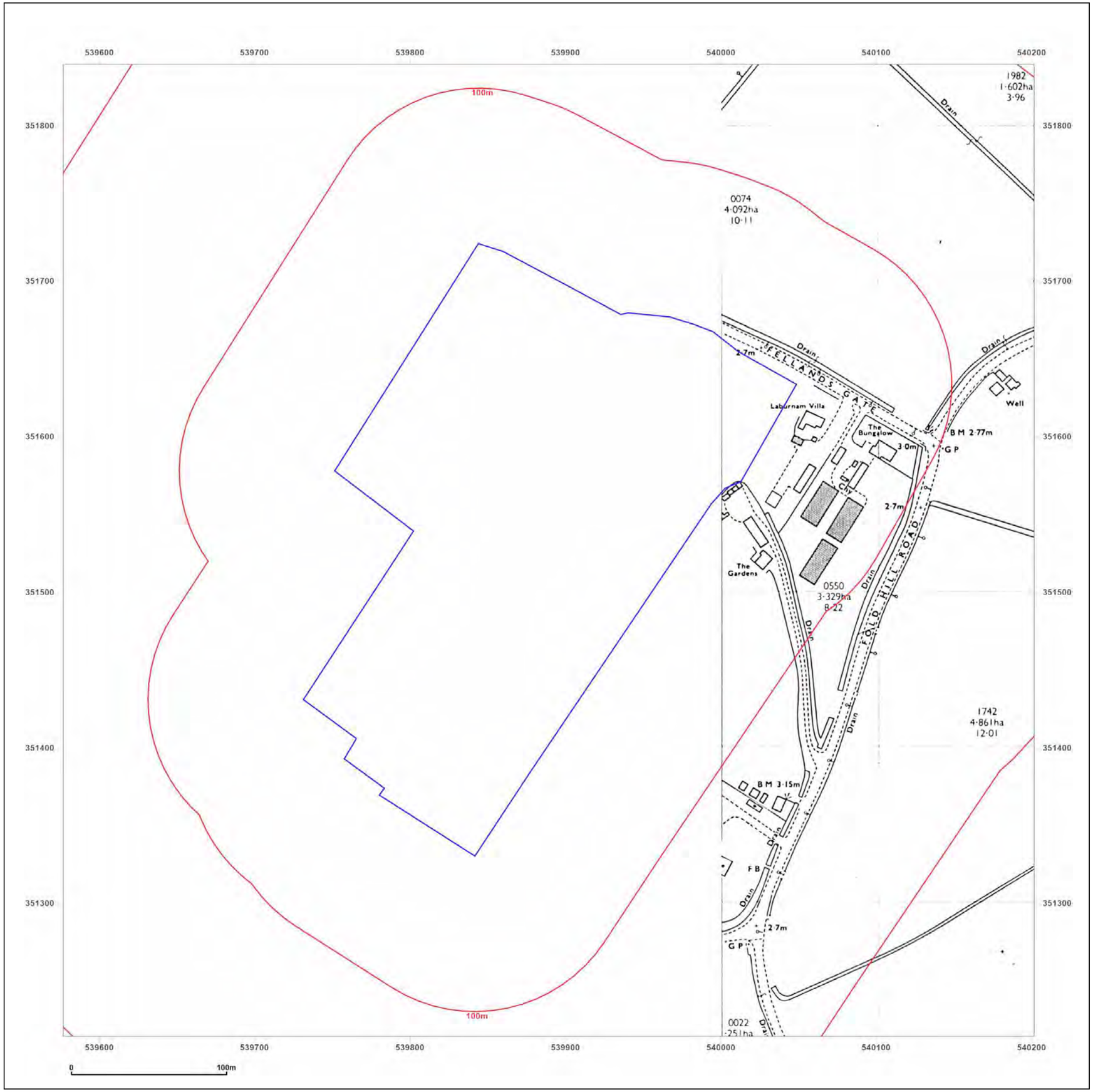
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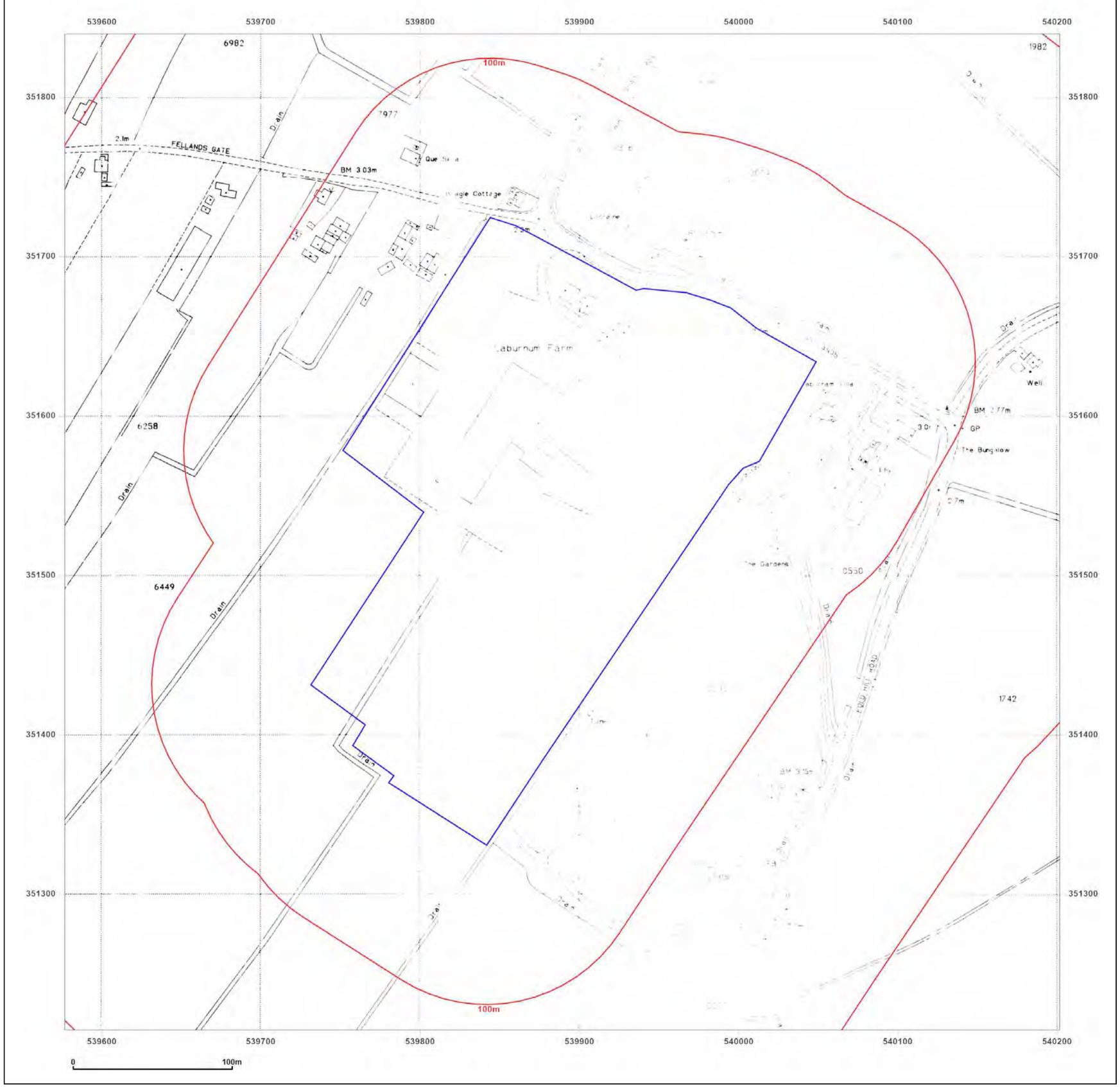
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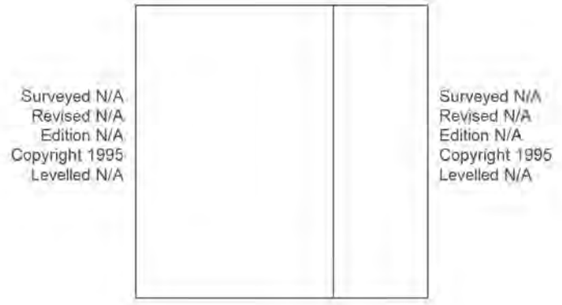
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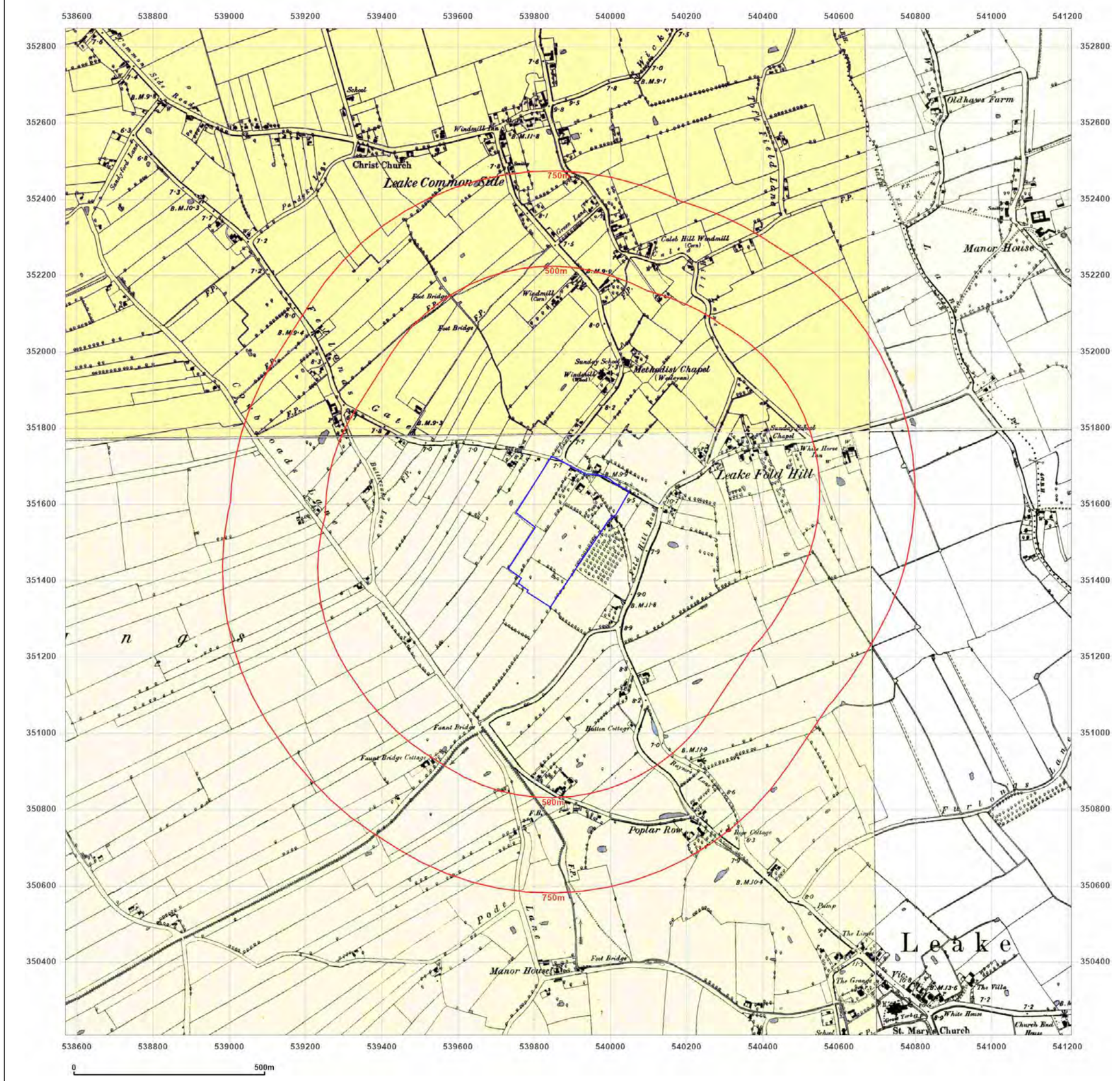
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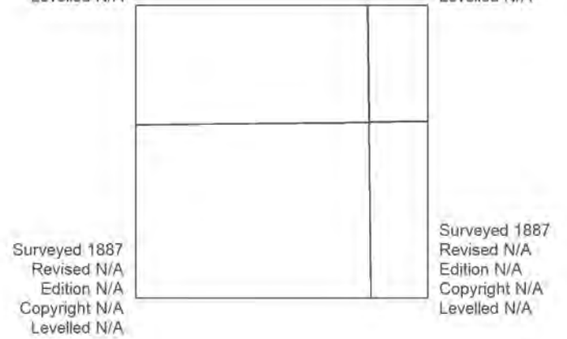
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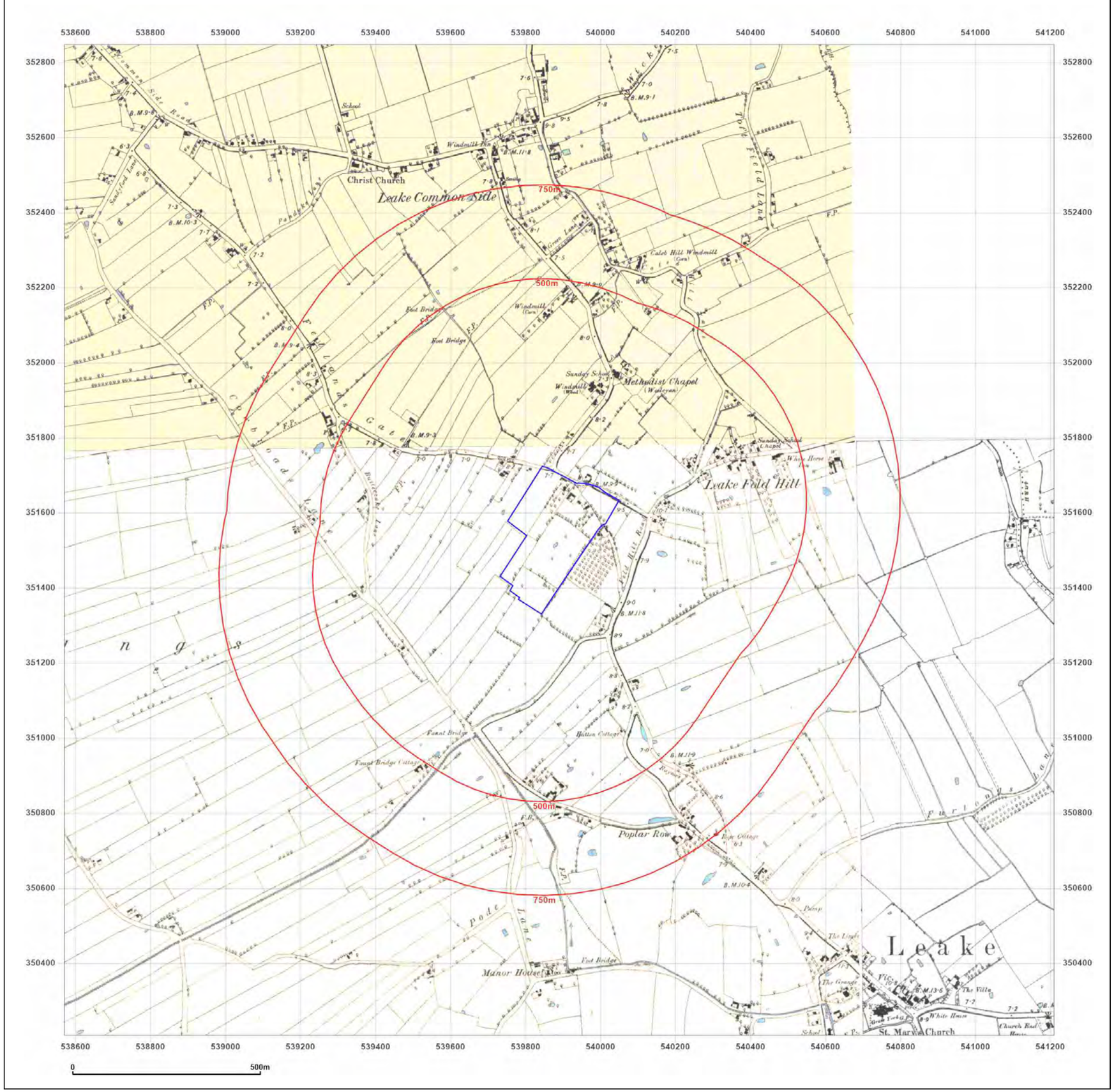
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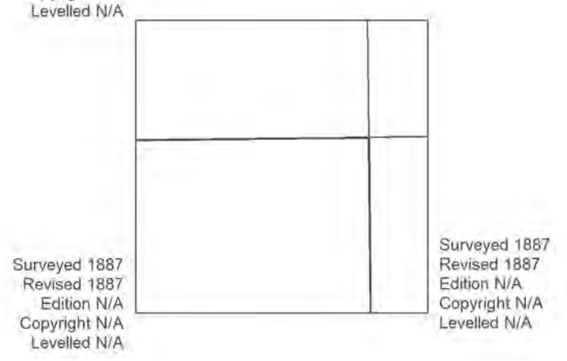
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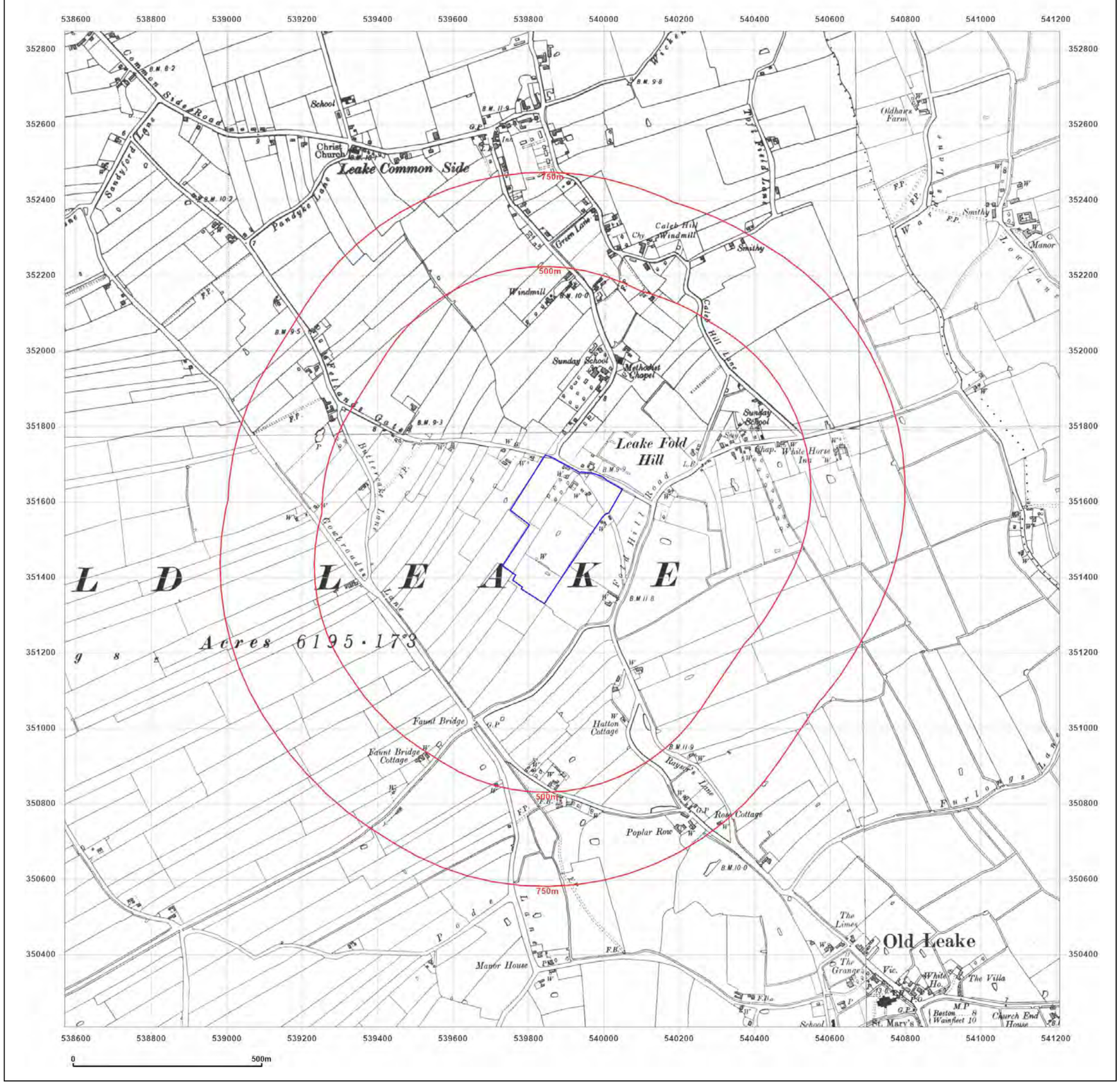
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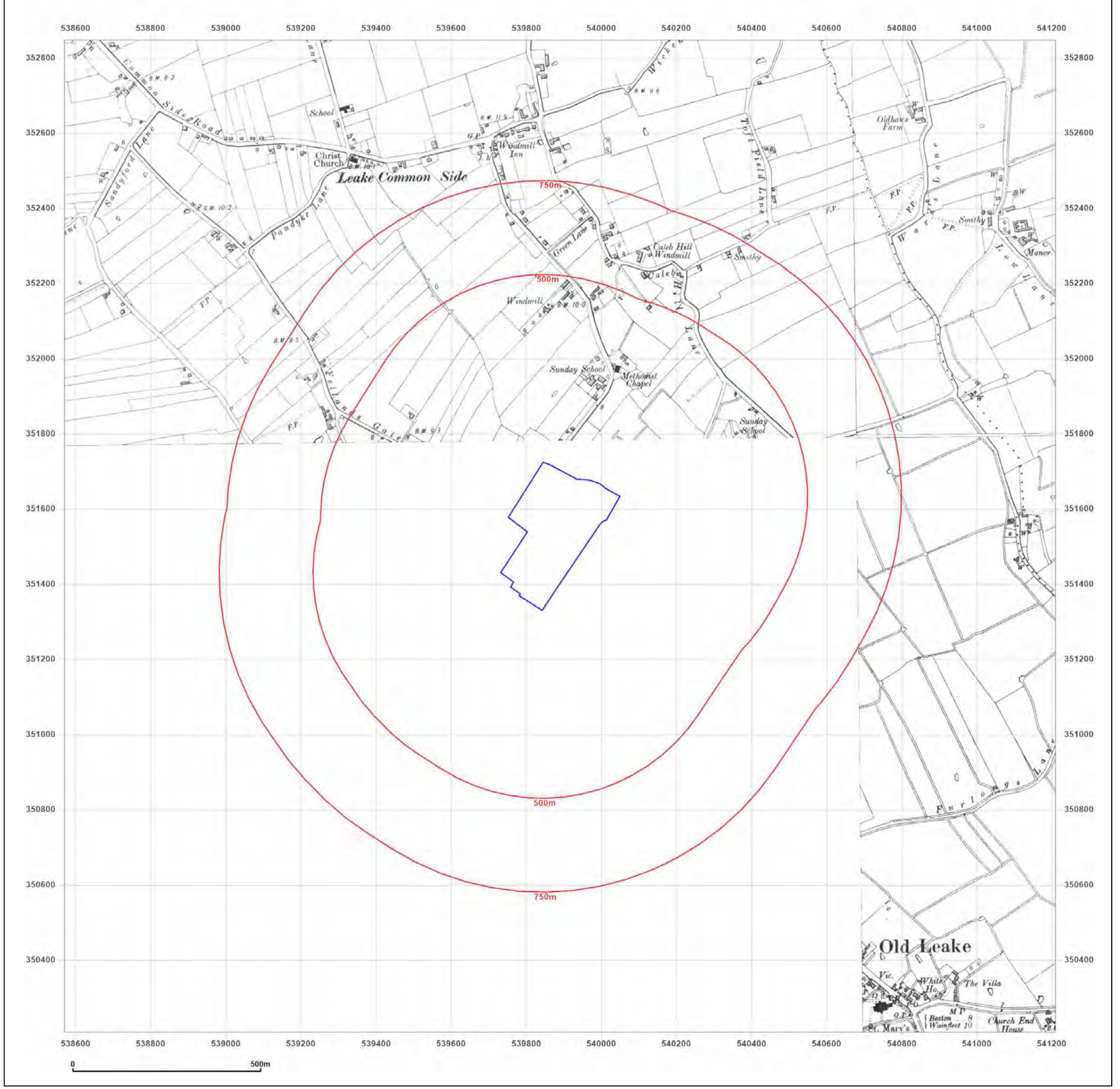
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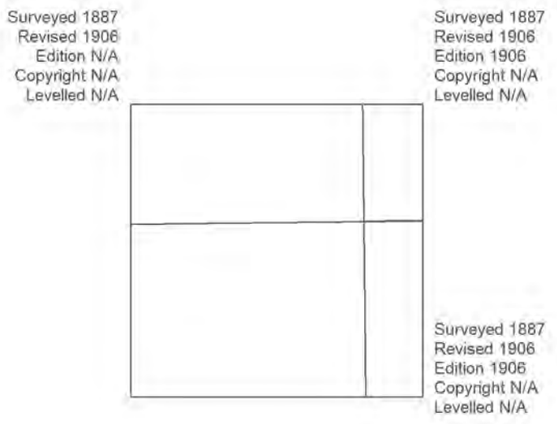
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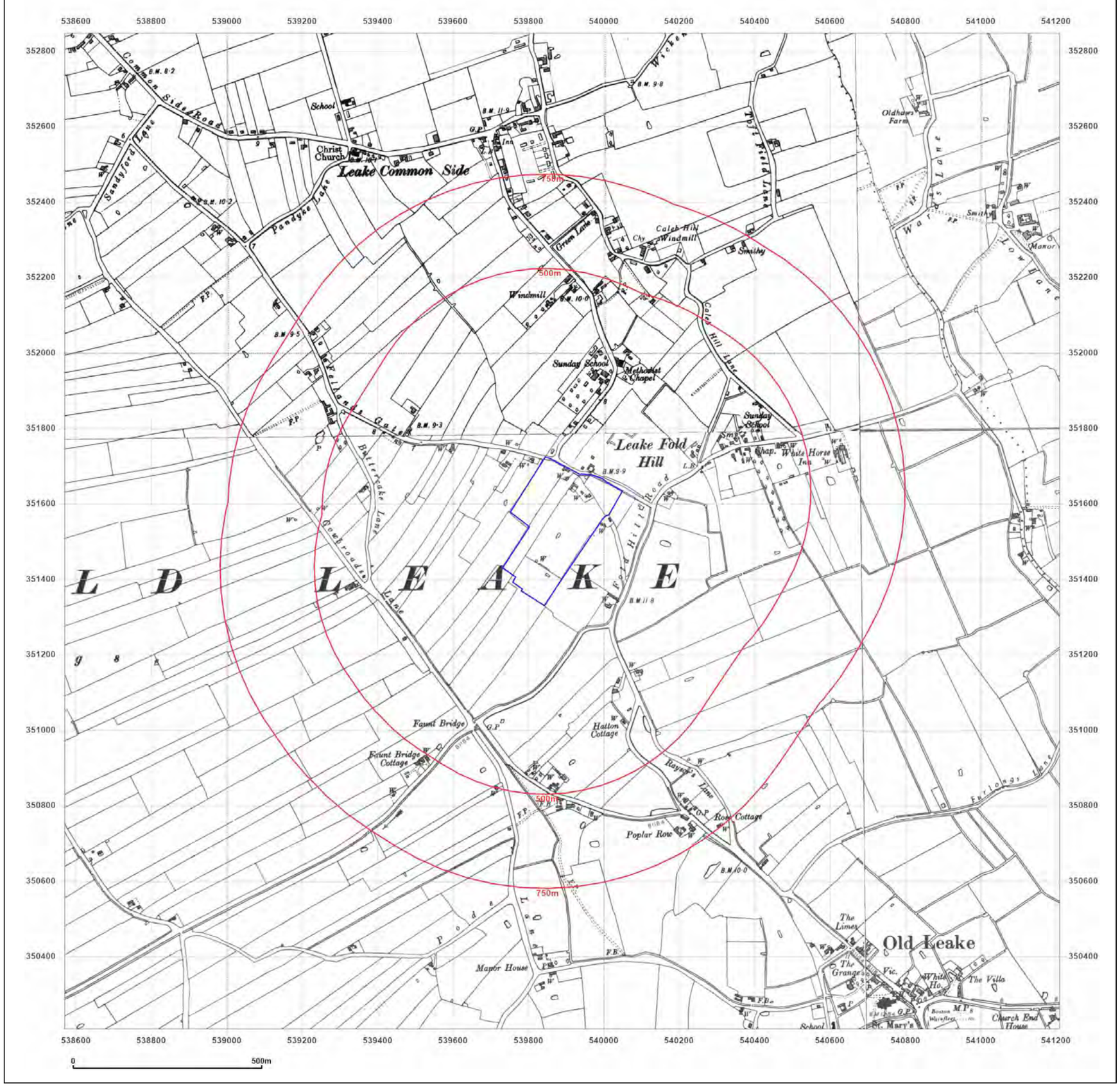
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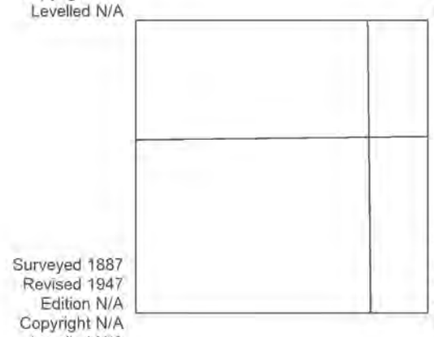
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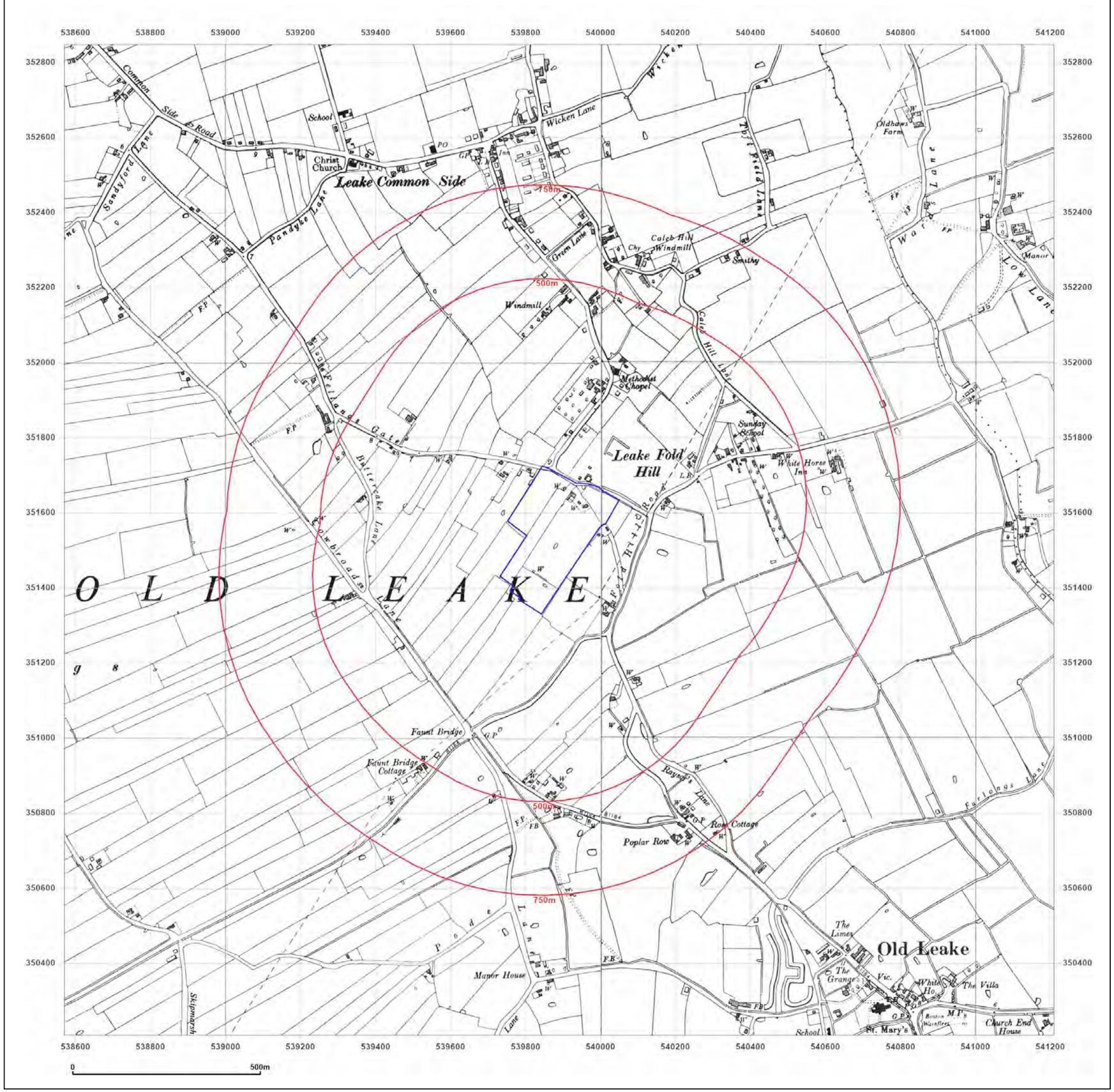
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Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: Provisional

Map date: **1951**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1951
Edition N/A
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Revised 1951
Edition N/A
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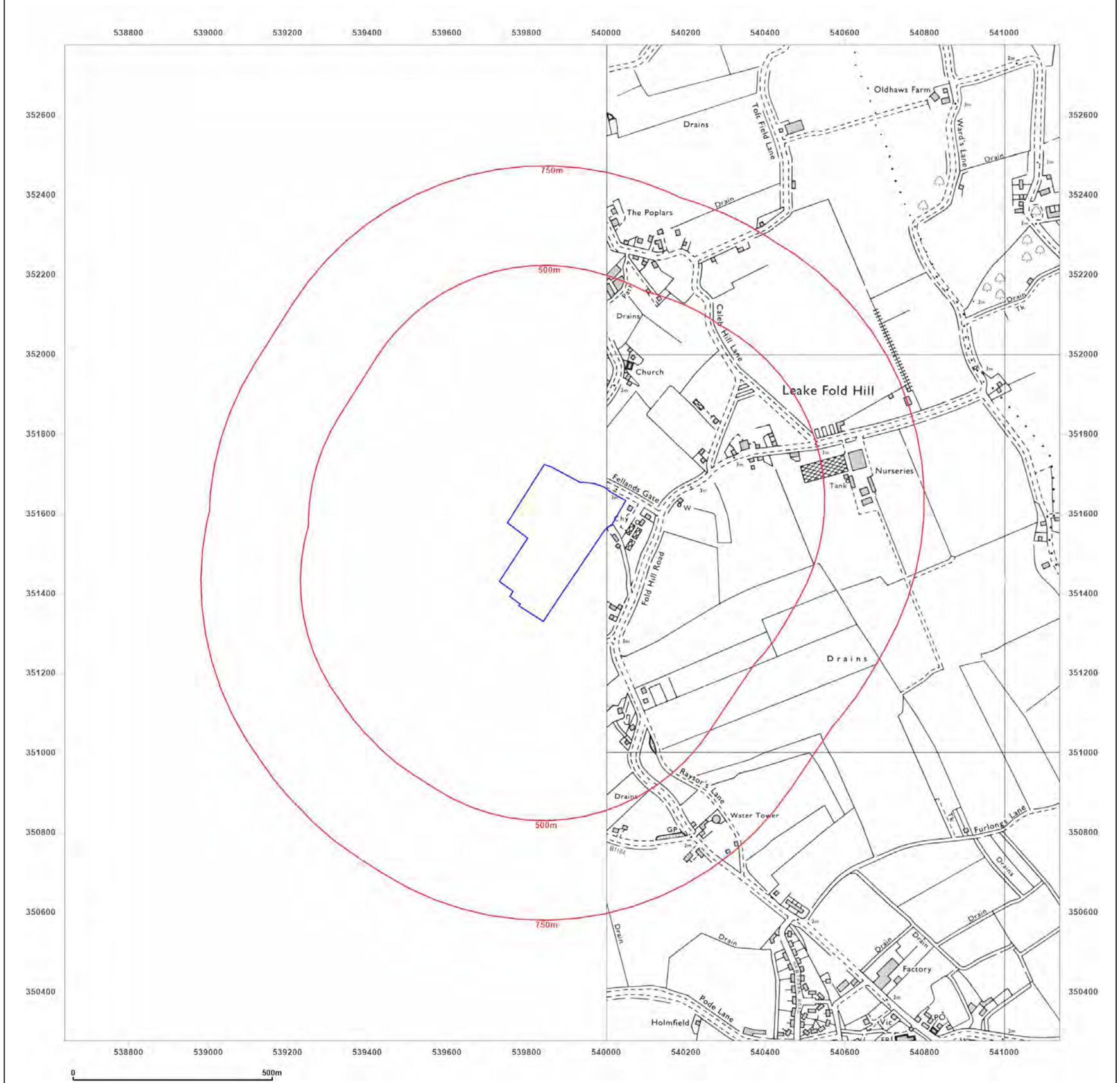
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Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: National Grid

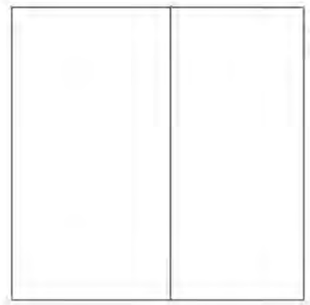
Map date: **1972**

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Printed at: 1:10,000

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Revised 1972
Edition N/A
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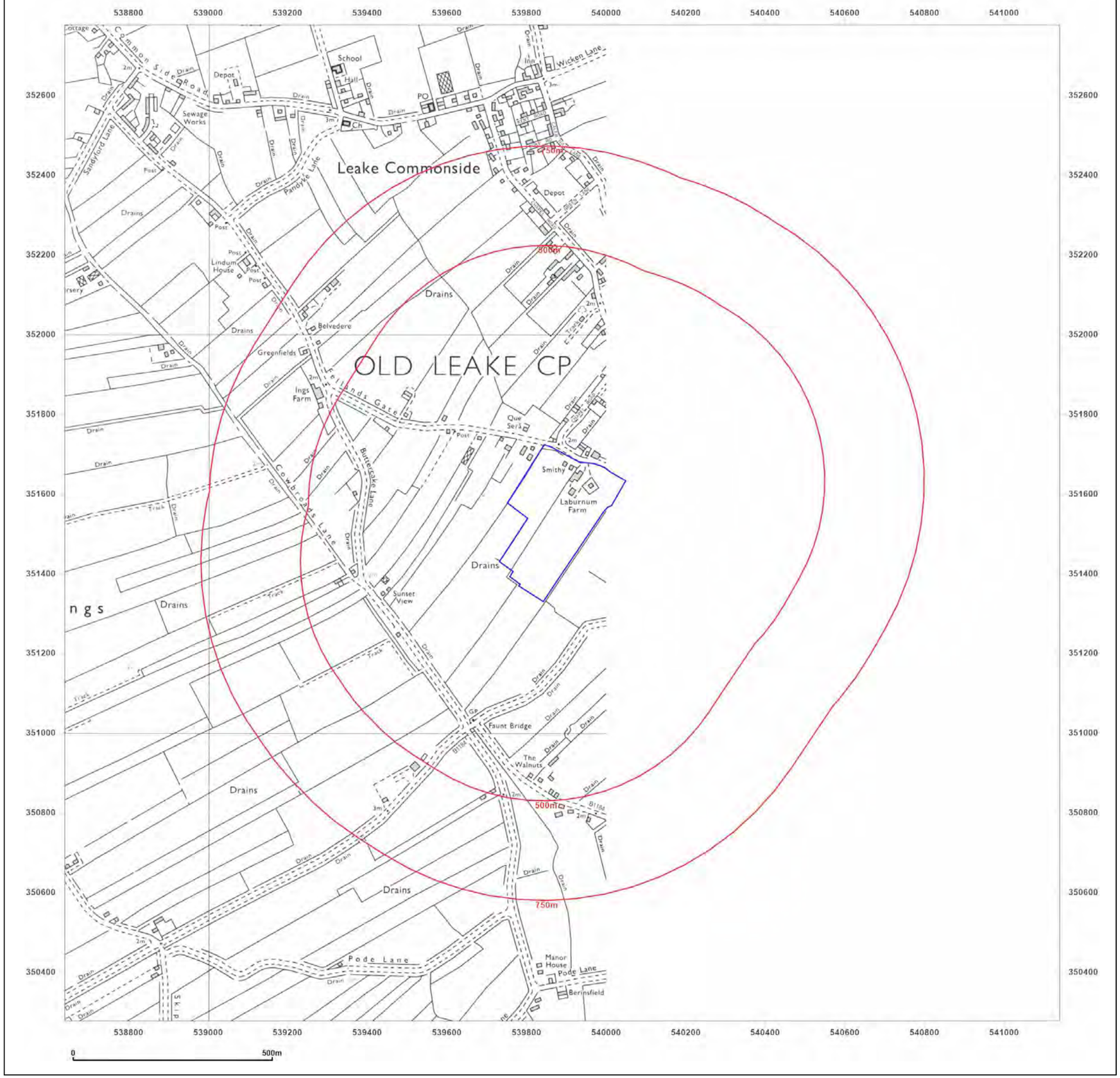
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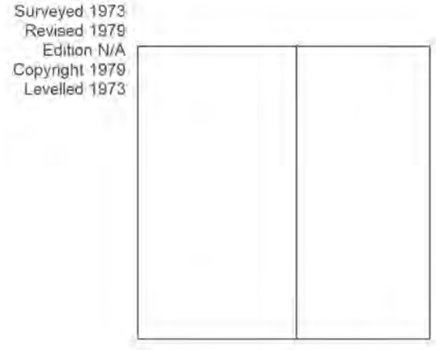
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Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: National Grid
Map date: **1979**
Scale: 1:10,000
Printed at: 1:10,000

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Surveyed 1973
Revised 1979
Edition N/A
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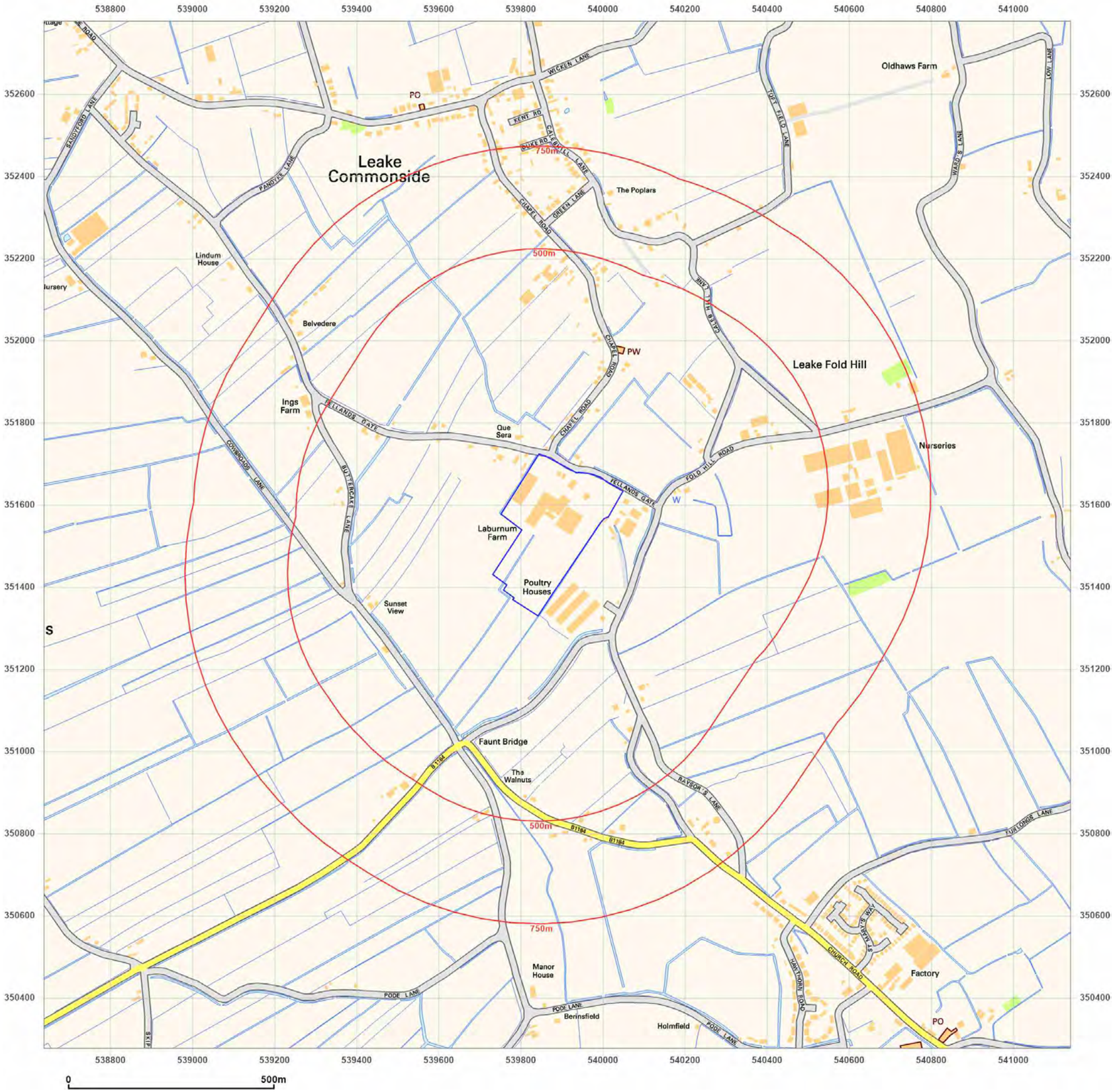
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Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
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Site Details:

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Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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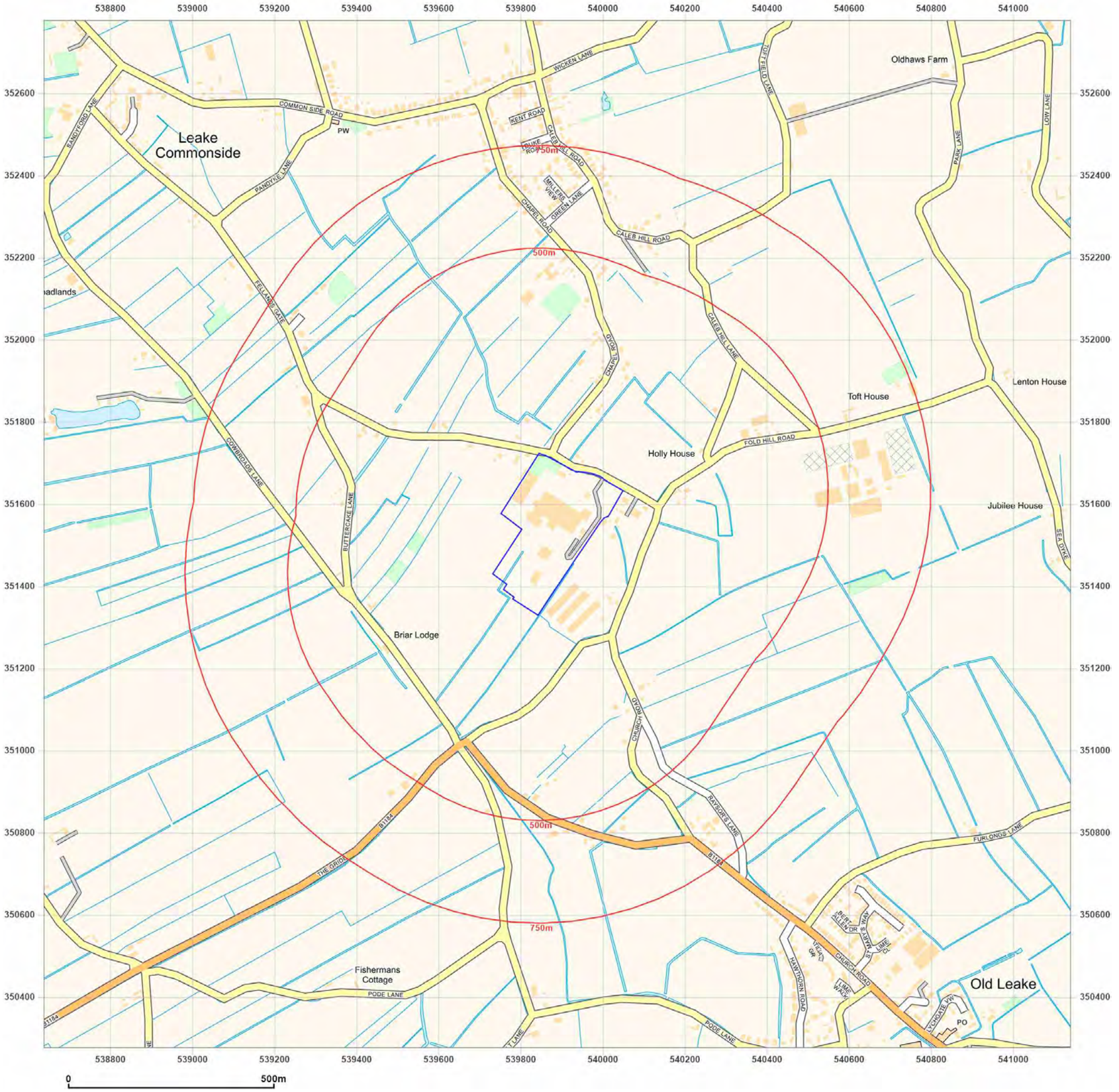
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Groundsure INSIGHTS

Site Details:

BAKKAVOR MEALS BOSTON (CUCINA SANO LTD), LABURNUM FARM, CHAPEL ROAD, OLD LEAKE, BOSTON, LINCOLNSHIRE, PE22 9PN

Client Ref: 25-747
Report Ref: GS-X49-SE2-KJQ-34B
Grid Ref: 539889, 351527

Map Name: National Grid

Map date: **2025**

Scale: 1:10,000

Printed at: 1:10,000

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APPENDIX 3

GROUNDSURE REPORT

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

BAKKAVOR MEALS BOSTON (CUCINA SANO LTD), LABURNUM FARM, CHAPEL ROAD, OLD LEAKE, BOSTON, LINCOLNSHIRE, PE22 9PN

Order Details

Date: 06/08/2025

Your ref: 25-747

Our Ref: GS-VSS-WSP-N17-E91

Site Details

Location: 539873 351543

Area: 6.44 ha

Authority: Boston Borough Council ↗



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Summary of findings p. 2 >

OS MasterMap site plan p.14 >

Aerial image p. 9 >

Insight User Guide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	1	1	2	9	-
16	1.2	Historical tanks	0	0	0	0	-
16	1.3	Historical energy features	0	0	0	0	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	Historical industrial land uses >	1	1	2	9	-
19	2.2	Historical tanks	0	0	0	0	-
19	2.3	Historical energy features	0	0	0	0	-
20	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22 >	3.5 >	Historical waste sites >	1	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
23 >	3.7 >	Waste exemptions >	2	6	27	86	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
34 >	4.1 >	Recent industrial land uses >	2	1	1	-	-
35 >	4.2 >	National Geographic Database (NGD) - Current or recent tanks >	13	2	0	-	-
36	4.3	Current or recent petrol stations	0	0	0	0	-
36	4.4	Electricity cables	0	0	0	0	-
36	4.5	Gas pipelines	0	0	0	0	-

36	4.6	Sites determined as Contaminated Land	0	0	0	0	-
36	4.7	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
37	4.8	Regulated explosive sites	0	0	0	0	-
37	4.9	Hazardous substance storage/usage	0	0	0	0	-
37	4.10	Historical licensed industrial activities (IPC)	0	0	0	0	-
37 >	**4.11 >**	**Licensed industrial activities (Part A(1)) >**	0	0	5	0	-
38 >	**4.12 >**	**Licensed pollutant release (Part A(2)/B) >**	1	0	0	0	-
38	4.13	Radioactive Substance Authorisations	0	0	0	0	-
39 >	**4.14 >**	**Licensed Discharges to controlled waters >**	1	0	1	1	-
39	4.15	Pollutant release to surface waters (Red List)	0	0	0	0	-
39	4.16	Pollutant release to public sewer	0	0	0	0	-
40	4.17	List 1 Dangerous Substances	0	0	0	0	-
40	4.18	List 2 Dangerous Substances	0	0	0	0	-
40 >	**4.19 >**	**Pollution Incidents (EA/NRW) >**	1	0	0	0	-
40 >	**4.20 >**	**Pollution inventory substances >**	0	0	3	0	-
41 >	**4.21 >**	**Pollution inventory waste transfers >**	0	0	1	0	-
42	4.22	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
43 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
44 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
45 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
46	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
46	5.5	Groundwater vulnerability- local information	None (within 0m)				
47	5.6	Groundwater abstractions	0	0	0	0	0
48 >	**5.7 >**	**Surface water abstractions >**	0	0	0	1	18
52	5.8	Potable abstractions	0	0	0	0	0
52	5.9	Source Protection Zones	0	0	0	0	-
52	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m

53 >	6.1 >	Water Network (OS MasterMap) >	1	12	34	-	-
57 >	6.2 >	Surface water features >	1	7	19	-	-
57 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
58 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
58	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
59 >	7.1 >	Risk of flooding from rivers and the sea >	Low (within 50m)				
60	7.2	Historical Flood Events	0	0	0	-	-
60	7.3	Flood Defences	0	0	0	-	-
60	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
60	7.5	Flood Storage Areas	0	0	0	-	-
61	7.6	Flood Zone 2	None (within 50m)				
62 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
63 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
65 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
66	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
66	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
66	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
66	10.4	Special Protection Areas (SPA)	0	0	0	0	0
67	10.5	National Nature Reserves (NNR)	0	0	0	0	0
67	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
67	10.7	Designated Ancient Woodland	0	0	0	0	0
67	10.8	Biosphere Reserves	0	0	0	0	0
68	10.9	Forest Parks	0	0	0	0	0
68	10.10	Marine Conservation Zones	0	0	0	0	0
68	10.11	Green Belt	0	0	0	0	0

68	10.12	Proposed Ramsar sites	0	0	0	0	0
68	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
69	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
69	10.15	Nitrate Sensitive Areas	0	0	0	0	0
69 >	10.16 >	Nitrate Vulnerable Zones >	1	0	0	0	0
70 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
71	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
72	11.1	World Heritage Sites	0	0	0	-	-
72	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
72	11.3	National Parks	0	0	0	-	-
72	11.4	Listed Buildings	0	0	0	-	-
73	11.5	Conservation Areas	0	0	0	-	-
73	11.6	Scheduled Ancient Monuments	0	0	0	-	-
73	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
74 >	12.1 >	Agricultural Land Classification >	Grade 1 (within 250m)				
75	12.2	Open Access Land	0	0	0	-	-
75	12.3	Tree Felling Licences	0	0	0	-	-
75 >	12.4 >	Environmental Stewardship Schemes >	0	0	2	-	-
75	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
76 >	13.1 >	Priority Habitat Inventory >	0	0	2	-	-
77	13.2	Habitat Networks	0	0	0	-	-
77	13.3	Open Mosaic Habitat	0	0	0	-	-
77	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
78 >	14.1 >	10k Availability >	Identified (within 500m)				
79	14.2	Artificial and made ground (10k)	0	0	0	0	-

80	14.3	Superficial geology (10k)	0	0	0	0	-
80	14.4	Landslip (10k)	0	0	0	0	-
81	14.5	Bedrock geology (10k)	0	0	0	0	-
81	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	**Geology 1:50,000 scale >**	On site	0-50m	50-250m	250-500m	500-2000m
82 >	**15.1 >**	**50k Availability >**	Identified (within 500m)				
83	15.2	Artificial and made ground (50k)	0	0	0	0	-
83	15.3	Artificial ground permeability (50k)	0	0	-	-	-
84 >	**15.4 >**	**Superficial geology (50k) >**	1	0	0	1	-
85 >	**15.5 >**	**Superficial permeability (50k) >**	Identified (within 50m)				
85	15.6	Landslip (50k)	0	0	0	0	-
85	15.7	Landslip permeability (50k)	None (within 50m)				
86 >	**15.8 >**	**Bedrock geology (50k) >**	1	0	0	0	-
87 >	**15.9 >**	**Bedrock permeability (50k) >**	Identified (within 50m)				
87	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
88	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	**Natural ground subsidence >**					
89 >	**17.1 >**	**Shrink swell clays >**	Low (within 50m)				
90 >	**17.2 >**	**Running sands >**	Moderate (within 50m)				
91 >	**17.3 >**	**Compressible deposits >**	Moderate (within 50m)				
92 >	**17.4 >**	**Collapsible deposits >**	Negligible (within 50m)				
93 >	**17.5 >**	**Landslides >**	Very low (within 50m)				
94 >	**17.6 >**	**Ground dissolution of soluble rocks >**	Negligible (within 50m)				
Page	Section	Mining and ground workings	On site	0-50m	50-250m	250-500m	500-2000m
96	18.1	BritPits	0	0	0	0	-
96	18.2	Surface ground workings	0	0	0	-	-
96	18.3	Underground workings	0	0	0	0	0
96	18.4	Underground mining extents	0	0	0	0	-

97	18.5	Historical Mineral Planning Areas	0	0	0	0	-
97	18.6	Non-coal mining	0	0	0	0	0
97	18.7	JPB mining areas	None (within 0m)				
97	18.8	The Coal Authority non-coal mining	0	0	0	0	-
98	18.9	Researched mining	0	0	0	0	-
98	18.10	Mining record office plans	0	0	0	0	-
98	18.11	BGS mine plans	0	0	0	0	-
98	18.12	Coal mining	None (within 0m)				
98	18.13	Brine areas	None (within 0m)				
99	18.14	Gypsum areas	None (within 0m)				
99	18.15	Tin mining	None (within 0m)				
99	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
100	19.1	Natural cavities	0	0	0	0	-
100	19.2	Mining cavities	0	0	0	0	0
100	19.3	Reported recent incidents	0	0	0	0	-
100	19.4	Historical incidents	0	0	0	0	-
Page	Section	**Radon** >					
102 >	**20.1** >	**Radon** >	Less than 1% (within 0m)				
Page	Section	**Soil chemistry** >	On site	0-50m	50-250m	250-500m	500-2000m
104 >	**21.1** >	**BGS Estimated Background Soil Chemistry** >	3	1	-	-	-
104	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
105	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
106	22.1	Underground railways (London)	0	0	0	-	-
106	22.2	Underground railways (Non-London)	0	0	0	-	-
106	22.3	Railway tunnels	0	0	0	-	-
106	22.4	Historical railway and tunnel features	0	0	0	-	-
106	22.5	Royal Mail tunnels	0	0	0	-	-

107	22.6	Historical railways	0	0	0	-	-
107	22.7	Railways	0	0	0	-	-
107	22.8	Crossrail 2	0	0	0	0	-
107	22.9	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 05/05/2021

Site Area: 6.44ha

Recent site history - 2018 aerial photograph



Capture Date: 05/05/2018

Site Area: 6.44ha

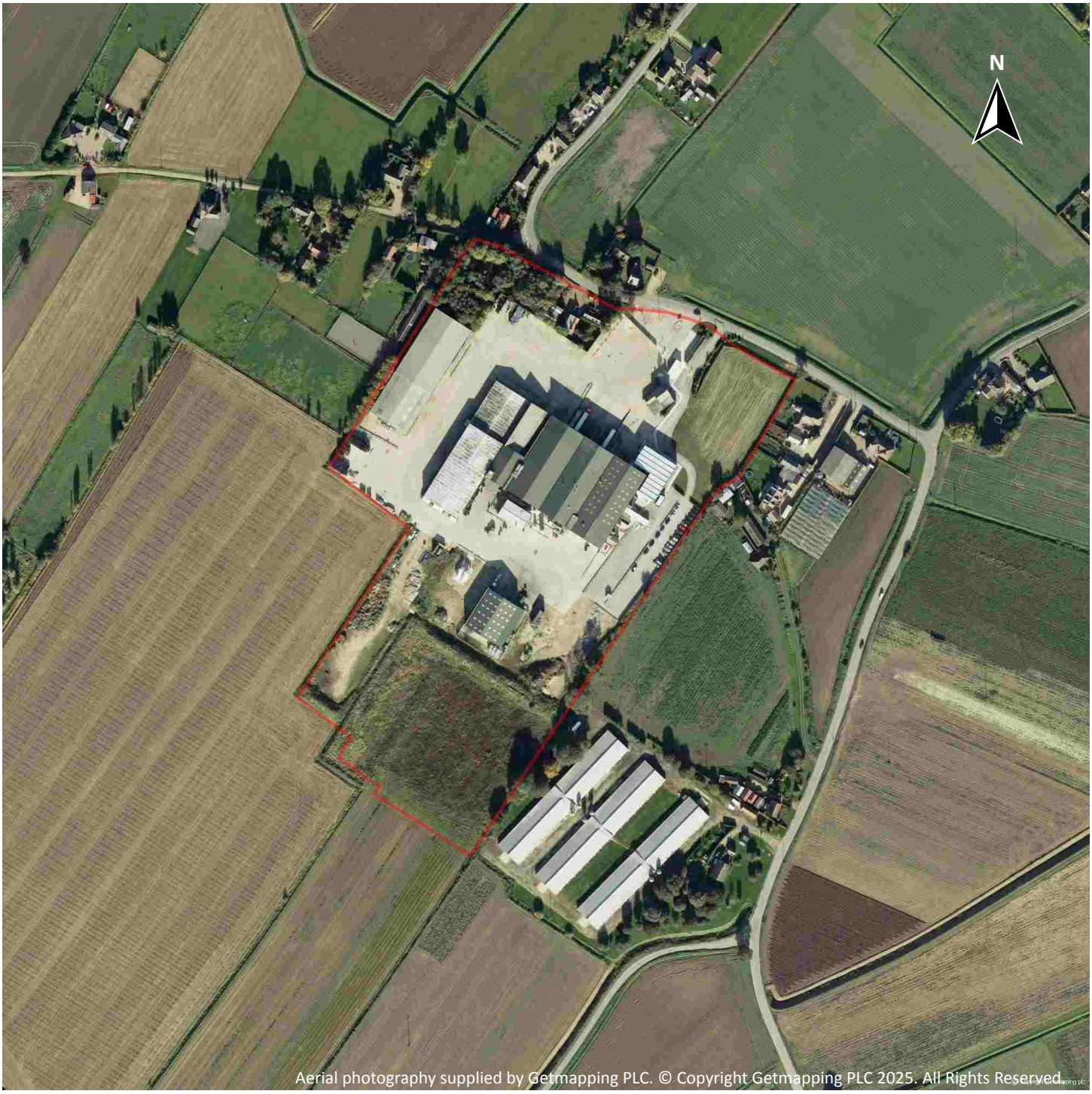
Recent site history - 2015 aerial photograph



Capture Date: 30/06/2015

Site Area: 6.44ha

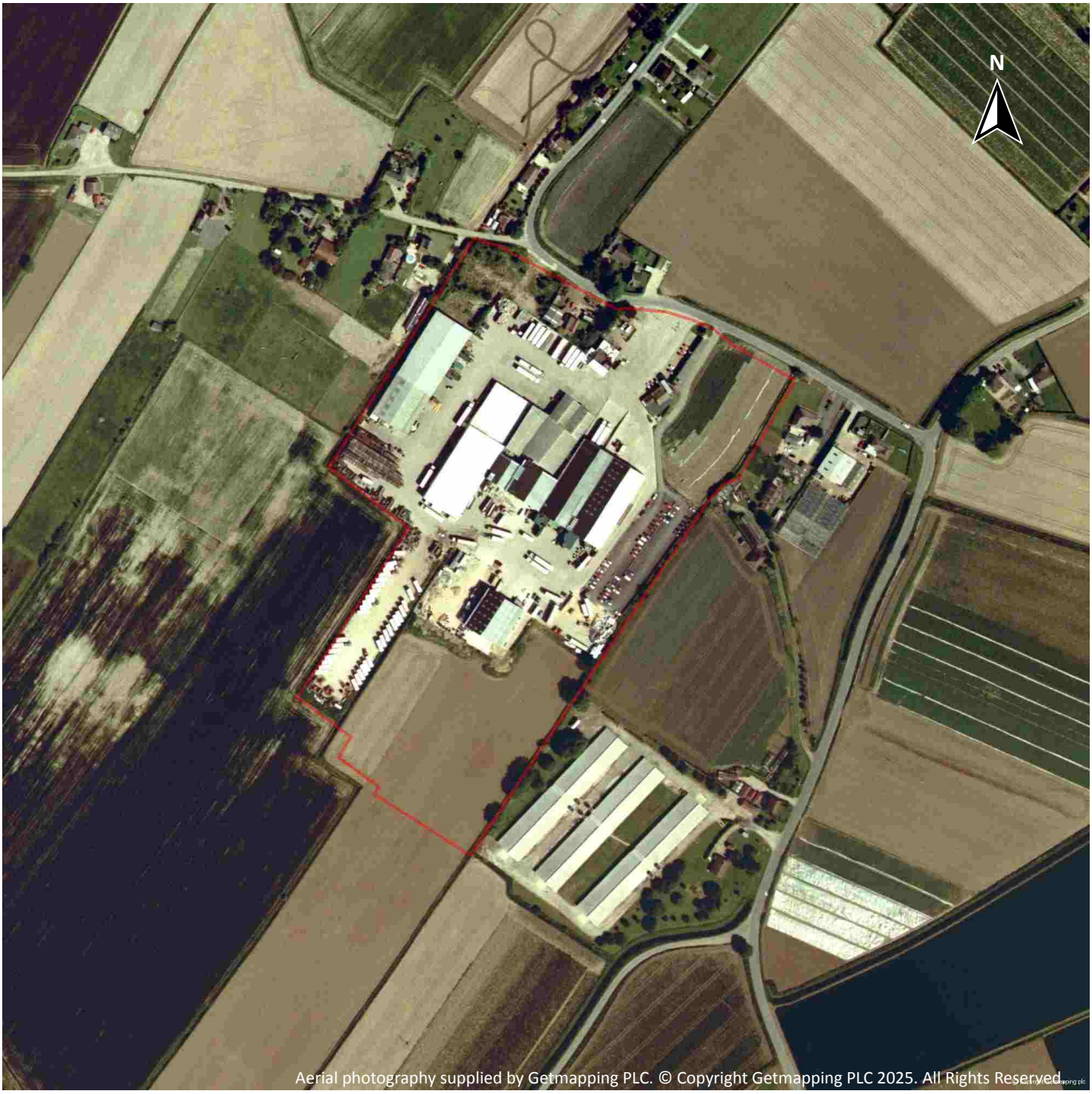
Recent site history - 2006 aerial photograph



Capture Date: 29/10/2006

Site Area: 6.44ha

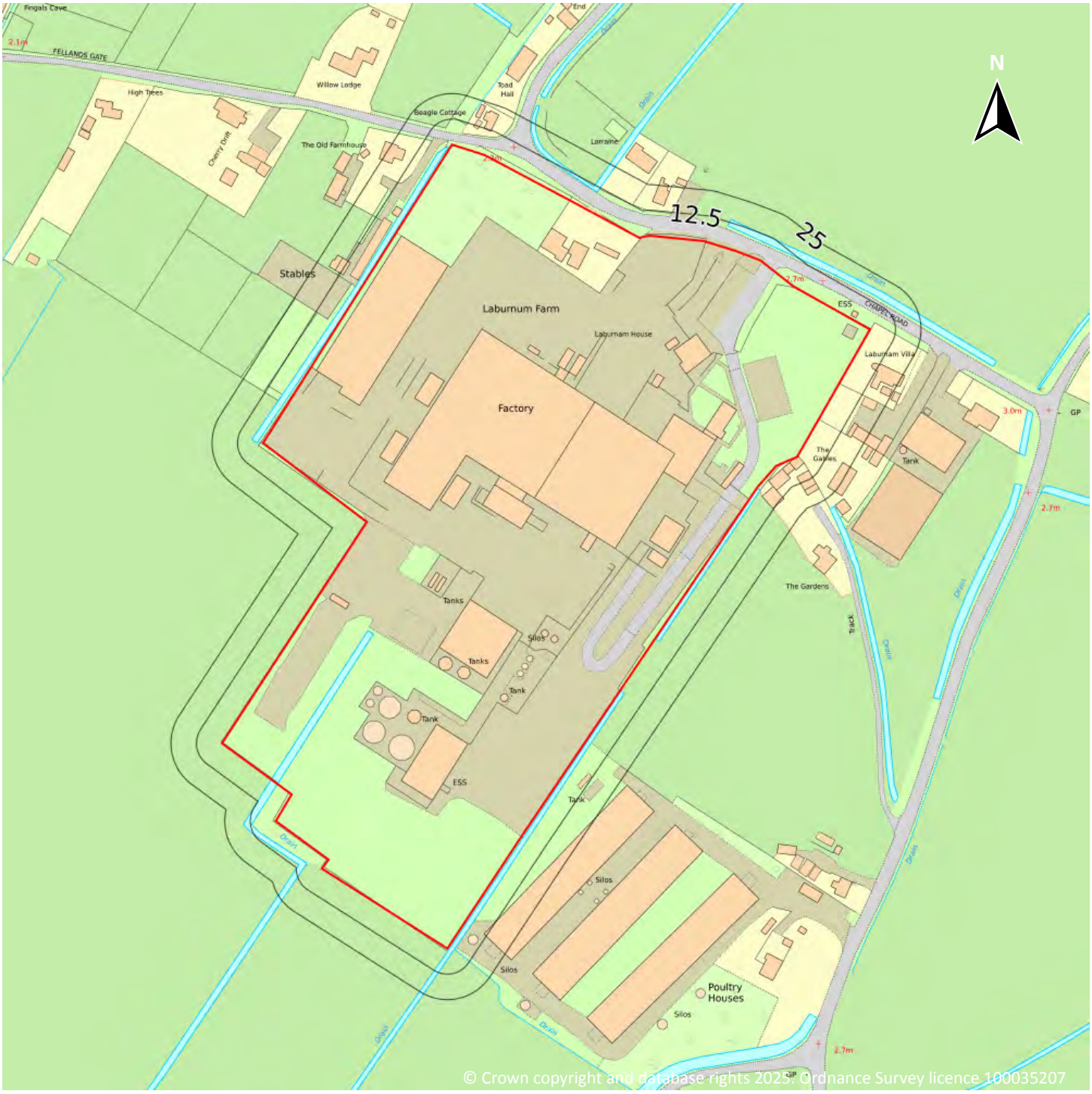
Recent site history - 1999 aerial photograph



Capture Date: 05/05/1999

Site Area: 6.44ha

OS MasterMap site plan



Site Area: 6.44ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

1.1 Historical industrial land uses

Records within 500m	13

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Smithy**	**1979**	**2041160**

ID	Location	Land use	Dates present	Group ID
2	47m SE	Chimney	1972	2042226
A	201m NE	Windmill	1887	2042080
A	246m NE	Unspecified Windmill	1887	2034560
B	282m NE	Smithy	1947	2048289
B	298m NE	Smithy	1906	2049556
3	378m E	Nurseries	1972	2043591
C	384m N	Corn Windmill	1887	2053944
C	385m N	Windmill	1906	2050329
C	415m N	Corn Windmill	1887	2066134
C	415m N	Windmill	1951	2068850
C	416m N	Windmill	1946	2057415
C	417m N	Windmill	1904	2064381

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	0

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

2.1 Historical industrial land uses

Records within 500m	13

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Smithy**	**1979**	**2041160**
2	47m SE	Chimney	1972	2042226
A	201m NE	Windmill	1887	2042080

ID	Location	Land Use	Date	Group ID
A	246m NE	Unspecified Windmill	1887	2034560
B	282m NE	Smithy	1947	2048289
B	298m NE	Smithy	1906	2049556
3	378m E	Nurseries	1972	2043591
C	384m N	Corn Windmill	1887	2053944
C	385m N	Windmill	1906	2050329
C	415m N	Corn Windmill	1887	2066134
C	415m N	Windmill	1951	2068850
C	416m N	Windmill	1946	2057415
C	417m N	Windmill	1904	2064381

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	0

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

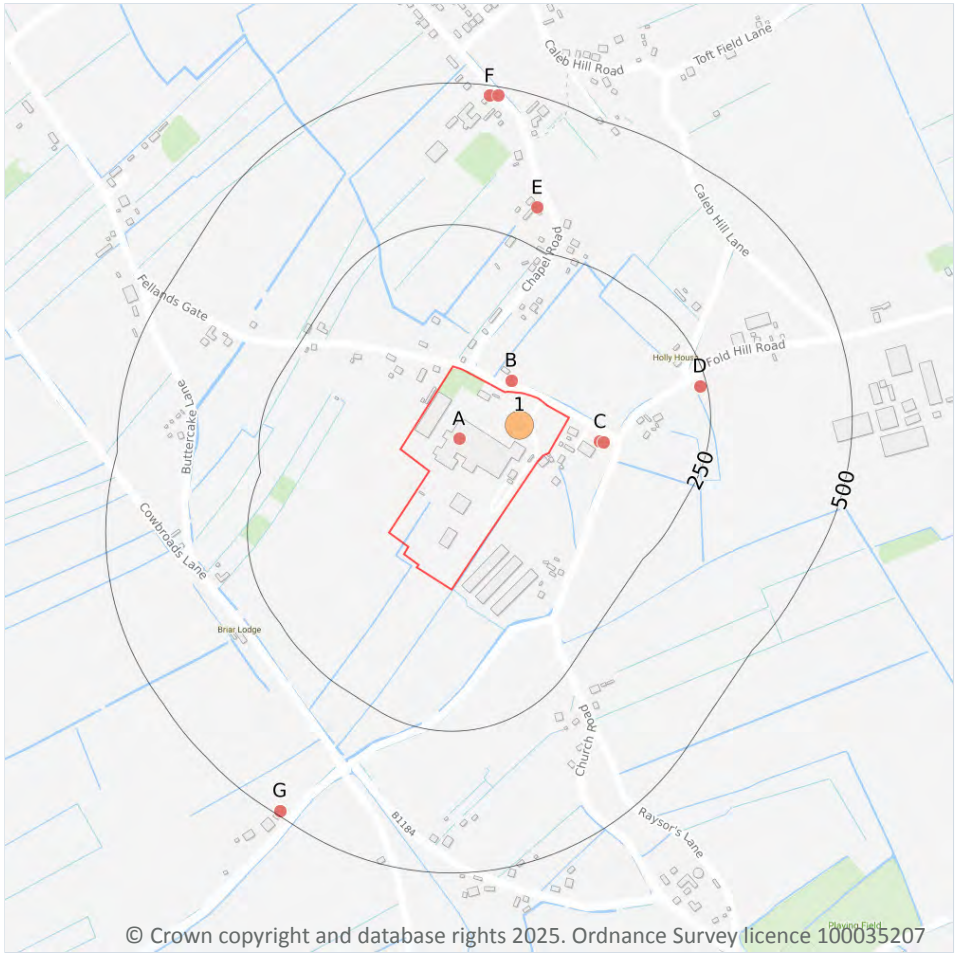
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	1

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Address	Further Details	Date
1	**On site**	**Site Address: Laburnum Farm, Chapel Road, Old Leake, Boston, Lincolnshire, PE22 9PN**	**Type of Site: Effluent Treatment Building Planning application reference: B/14/0398 Description: Scheme comprises effluent treatment plant building and associated external tanks and equipment. Data source: Historic Planning Application Data Type: Point**	**12/02/2015**

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	121

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	**On site**	**Laburnum Farm, Chapel Road, Old Leake, Boston, Pe22 9pn**	**WEX207083**	**Treating waste exemption**	**Not on a farm**	**Preparatory treatments (baling, sorting, shredding etc)**
A	**On site**	**Rural Location,small A Roads, Drainage Dykes And Farmland Surround Site**	**WEX265905**	**Treating waste exemption**	**Not on a farm**	**Recovery of scrap metal**
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Disposing of waste exemption	On a farm	Burning waste in the open
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Using waste exemption	On a farm	Use of waste in construction
B	20m N	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX438172	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising

ID	Location	Site	Reference	Category	Sub-Category	Description
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Using waste exemption	On a farm	Use of waste in construction
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Disposing of waste exemption	On a farm	Burning waste in the open
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX018501	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Using waste exemption	On a farm	Use of waste in construction
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Disposing of waste exemption	On a farm	Burning waste in the open
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX175085	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Disposing of waste exemption	On a farm	Burning waste in the open
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit

ID	Location	Site	Reference	Category	Sub-Category	Description
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	69m SE	Daubneys Bungalow, Chapel Road, Old Leake, Boston, Pe22 9pn	WEX306572	Using waste exemption	On a farm	Use of waste in construction
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Disposing of waste exemption	Agricultural waste only	Deposit of waste from dredging of inland waters
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Treating waste exemption	Agricultural waste only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Using waste exemption	Agricultural waste only	Use of waste in construction
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Disposing of waste exemption	Agricultural waste only	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Disposing of waste exemption	Agricultural waste only	Burning waste in the open
C	74m SE	The Bungalow Fold Hill Pe22 9pn	EPR/ME5252QS/A001	Using waste exemption	Agricultural waste only	Spreading waste on agricultural land to confer benefit
D	237m E	Cucina Sano Laburnum Farm Chapel Road Old Leake Lincolnshire Pe22 9pn	EPR/UF0803CS/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in secure containers
D	237m E	Cucina Sano Laburnum Farm Chapel Road Old Leake Lincolnshire Pe22 9pn	EPR/UF0803CS/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
D	237m E	Cucina Sano Laburnum Farm Chapel Road Old Leake Lincolnshire Pe22 9pn	EPR/UF0803CS/A001	Treating waste exemption	Non-agricultural waste only	Preparatory treatments (baling, sorting, shredding etc)

ID	Location	Site	Reference	Category	Sub-Category	Description
E	314m NE	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX439276	Disposing of waste exemption	Not on a farm	Burning waste in the open
E	314m NE	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX439276	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX014631	Disposing of waste exemption	Not on a farm	Burning waste in the open
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX174644	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX014631	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX174644	Disposing of waste exemption	Not on a farm	Burning waste in the open
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX307140	Disposing of waste exemption	Not on a farm	Burning waste in the open
F	481m N	The Mill, Chapel Road, Old Leake, Boston, Pe22 9pw	WEX307140	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
F	484m N	The Mill Chapel Road Boston Lincolnshire Pe22 9pw	EPR/WH0971SU/A001	Disposing of waste exemption	Agricultural waste only	Burning waste in the open
F	484m N	The Mill Chapel Road Boston Lincolnshire Pe22 9pw	EPR/WH0971SU/A001	Disposing of waste exemption	Agricultural waste only	Deposit of waste from dredging of inland waters
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Deposit of waste from dredging of inland waters

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Deposit of waste from a portable sanitary convenience
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in secure containers
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in a secure place
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Cleaning, washing, spraying or coating relevant waste
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Aerobic composting and associated prior treatment
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Preparatory treatments (baling, sorting, shredding etc)
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading of plant matter to confer benefit

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Disposal by incineration
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Sorting mixed waste
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste food
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Screening and blending of waste
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
G	493m SW	Faunt Bridge Farm Faunt Bridge Boston Lincolnshire Pe22 9qt	EPR/NF0939MJ/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of mulch
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Disposing of waste exemption	On a farm	Disposal by incineration

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Disposing of waste exemption	On a farm	Burning waste in the open
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Sorting mixed waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Treatment of waste food
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Screening and blending of waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Use of mulch
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Storing waste exemption	On a farm	Storage of waste in a secure place
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Storing waste exemption	On a farm	Storage of waste in secure containers
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Disposing of waste exemption	On a farm	Deposit of waste from a portable sanitary convenience
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Incorporation of ash into soil
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Use of waste for a specified purpose
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Use of waste in construction
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Disposing of waste exemption	On a farm	Deposit of waste from a portable sanitary convenience
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Storing waste exemption	On a farm	Storage of waste in secure containers
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Storing waste exemption	On a farm	Storage of waste in a secure place
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Use of waste in construction
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Incorporation of ash into soil
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX051828	Using waste exemption	On a farm	Use of waste for a specified purpose
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Disposing of waste exemption	On a farm	Burning waste in the open
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Disposing of waste exemption	On a farm	Disposal by incineration
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Treatment of waste food
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Sorting mixed waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Treating waste exemption	On a farm	Screening and blending of waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Use of mulch
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX205574	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Use of mulch

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Screening and blending of waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Sorting mixed waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Treatment of waste food
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Disposing of waste exemption	On a farm	Disposal by incineration
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Disposing of waste exemption	On a farm	Burning waste in the open
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Use of waste in construction
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Use of waste for a specified purpose
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Using waste exemption	On a farm	Incorporation of ash into soil
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment

ID	Location	Site	Reference	Category	Sub-Category	Description
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Disposing of waste exemption	On a farm	Deposit of waste from a portable sanitary convenience
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Storing waste exemption	On a farm	Storage of waste in secure containers
G	493m SW	Faunt Bridge Farm, Faunt Bridge, Old Leake, Boston, Pe22 9qt	WEX330242	Storing waste exemption	On a farm	Storage of waste in a secure place

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- NGD current or recent tanks
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers

4.1 Recent industrial land uses

Records within 250m	4

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Factory**	**Lincolnshire, PE22**	**Unspecified Works Or Factories**	**Industrial Features**
B	**On site**	**Electricity Sub Station**	**Lincolnshire, PE22**	**Electrical Features**	**Infrastructure and Facilities**
1	6m NE	Electricity Sub Station	Lincolnshire, PE22	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
4	124m SE	Poultry Houses	Lincolnshire, PE22	Poultry Farming, Equipment and Supplies	Farming

This data is sourced from Ordnance Survey.

4.2 National Geographic Database (NGD) - Current or recent tanks

Records within 250m **15**

Current or recent tanks identified from the Ordnance Survey NGD.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Tank description	Activity	Date first identified
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**18/07/2015**
B	**On site**	**Open Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Open Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**21/04/2022**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**21/04/2022**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**18/07/2015**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**18/07/2015**
B	**On site**	**Roofed Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Open Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Open Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
B	**On site**	**Open Storage Tank**	**Commercial Activity: Distribution Or Storage**	**01/05/2018**
2	9m SE	Roofed Storage Tank	Commercial Activity: Distribution Or Storage	17/06/2014
3	41m SE	Roofed Storage Tank	Commercial Activity: Distribution Or Storage	12/06/2011

This data is sourced from Ordnance Survey.

4.3 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.4 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.5 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.6 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.7 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.8 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.9 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.10 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed industrial activities (Part A(1))

Records within 500m	5

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Details	
C	63m SE	Operator: BERNARD MATTHEWS FOODS LIMITED Installation Name: Fold Hill Turkey Farm Process: INTENSIVE FARMING; > 40,000 POULTRY Permit Number: RP3537DM Original Permit Number: RP3537DM	EPR Reference: EPR/RP3537DM Issue Date: 21/12/2016 Effective Date: 21/12/2016 Last date noted as effective: 28/04/2025 Status: Superseded
C	63m SE	Operator: BERNARD MATTHEWS FROZEN LIMITED Installation Name: Fold Hill Farm Process: INTENSIVE FARMING; > 40,000 POULTRY Permit Number: VP3632HM Original Permit Number: VP3632HM	EPR Reference: EPR/VP3632HM Issue Date: 11/07/2014 Effective Date: 11/07/2014 Last date noted as effective: 28/04/2025 Status: Superseded

ID	Location	Details	
C	63m SE	Operator: HOOK 2 SISTERS LIMITED Installation Name: Fold Hill Turkey Farm - EPR/ZP3732YL Process: INTENSIVE FARMING; > 40,000 POULTRY Permit Number: ZP3732YL Original Permit Number: ZP3732YL	EPR Reference: EPR/ZP3732YL Issue Date: 14/06/2017 Effective Date: 30/11/2020 Last date noted as effective: 28/04/2025 Status: Effective
C	63m SE	Operator: Bernard Matthews Limited Installation Name: Fold Hill Farm Process: INTENSIVE FARMING; > 40,000 POULTRY Permit Number: EP3333VY Original Permit Number: VP3632HM	EPR Reference: - Issue Date: 11/07/2014 Effective Date: 11/07/2014 Last date noted as effective: 21/03/2023 Status: Superceded
C	63m SE	Operator: Hook 2 Sisters Limited Installation Name: Fold Hill Turkey Farm - EPR/ZP3732YL Process: INTENSIVE FARMING; > 40,000 POULTRY Permit Number: WP3702SE Original Permit Number: ZP3732YL	EPR Reference: - Issue Date: 30/11/2020 Effective Date: 30/11/2020 Last date noted as effective: 21/03/2023 Status: Effective

This data is sourced from the Environment Agency and Natural Resources Wales.

4.12 Licensed pollutant release (Part A(2)/B)

Records within 500m **1**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Address	Details	
A	**On site**	**Old Leake Growers, Assoc Fellandsgate, Old Leake, Boston, PE22 9PN**	**Process: Combustion & Incineration** **Status: Historical Permit** **Permit Type: Part B**	**Enforcement: No Enforcement Notified** **Date of enforcement: No Enforcement Notified** **Comment: No Enforcement Notified**

This data is sourced from Local Authority records.

4.13 Radioactive Substance Authorisations

Records within 500m **0**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Licensed Discharges to controlled waters

Records within 500m	3

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Address	Details	
B	**On site**	**BAKKAVOR MEALS BOSTON, CHAPEL ROAD, OLD LEAKE, BOSTON, LINCS, PE22 9PN**	**Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: PRNNF18564 Permit Version: 1 Receiving Water: UNNAMED TRIB. OF HOBHOLE DRAIN**	**Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 13/10/2006 Effective Date: 16/05/2006 Revocation Date: -**
5	177m E	LYNWOOD, FOLD HILL, OLD LEAKE, BOSTON, LINCOLNSHIRE, PE22 9PG	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPREB3399WC Permit Version: 1 Receiving Water: DITCH LEADING TO LEAKE GRIDE	Status: NEW ISSUED UNDER EPR 2010 Issue date: 25/05/2016 Effective Date: 25/05/2016 Revocation Date: -
6	367m SE	FOLD HILL, OLD LEAKE, PEA VINER SITE	Effluent Type: UNSPECIFIED Permit Number: PR3NFS280 Permit Version: 1 Receiving Water: Unknown Trib **********SEE	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 02/06/1963 Effective Date: 02/06/1963 Revocation Date: 19/02/1992

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution Incidents (EA/NRW)

Records within 500m	1

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 34 >**

ID	Location	Details	
B	**On site**	**Incident Date: 13/05/2011** **Incident Identification: 884865** **Pollutant: Contaminated Water** **Pollutant Description: Other Contaminated Water**	**Water Impact: Category 2 (Significant)** **Land Impact: Category 4 (No Impact)** **Air Impact: Category 4 (No Impact)**

This data is sourced from the Environment Agency and Natural Resources Wales.

4.20 Pollution inventory substances

Records within 500m	3

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 34 >**

ID: C, Location: 63m SE, Permit: ZP3732YL
Operator: Hook 2 Sisters Limited
Activity: INTENSIVE FARMING; > 40,000 POULTRY
Address: Fold Hill Turkey Farm Church Road Old Leake Lincolnshire PE22 9PE
Sector Agriculture, Sub-sector: Intensive Farming
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Particulate matter - PM10	1000kg	17221.8kg

ID: C, Location: 63m SE, Permit: ZP3732YL
Operator: Hook 2 Sisters Limited
Activity: INTENSIVE FARMING; > 40,000 POULTRY
Address: Fold Hill Turkey Farm Church Road Old Leake Lincolnshire PE22 9PE
Sector Agriculture, Sub-sector: Intensive Farming
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold

ID: C, Location: 63m SE, Permit: ZP3732YL
Operator: Hook 2 Sisters Limited
Activity: INTENSIVE FARMING; > 40,000 POULTRY
Address: Fold Hill Turkey Farm Church Road Old Leake Lincolnshire PE22 9PE
Sector Agriculture, Sub-sector: Intensive Farming
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Ammonia	1000kg	6334.1kg

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory waste transfers

Records within 500m	**1**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 34 >**

ID: C, Location: 63m SE, Permit: ZP3732YL
Operator: Hook 2 Sisters Limited
Activity: INTENSIVE FARMING; > 40,000 POULTRY
Address: Fold Hill Turkey Farm Church Road Old Leake Lincolnshire PE22 9PE
Sector Agriculture, Sub-sector: Intensive Farming
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R1	Use principally as a fuel or other means to generate energy	1477	Absolute Value	02 01 06	animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site	No
D1	Deposit into or onto land (eg landfill, etc.)	11.5	Absolute Value	20 03 01	mixed municipal waste	No
R5	Recycling/reclamation of other inorganic materials	Below Reporting Threshold	Below Reporting Threshold	15 01 02	plastic packaging	No

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

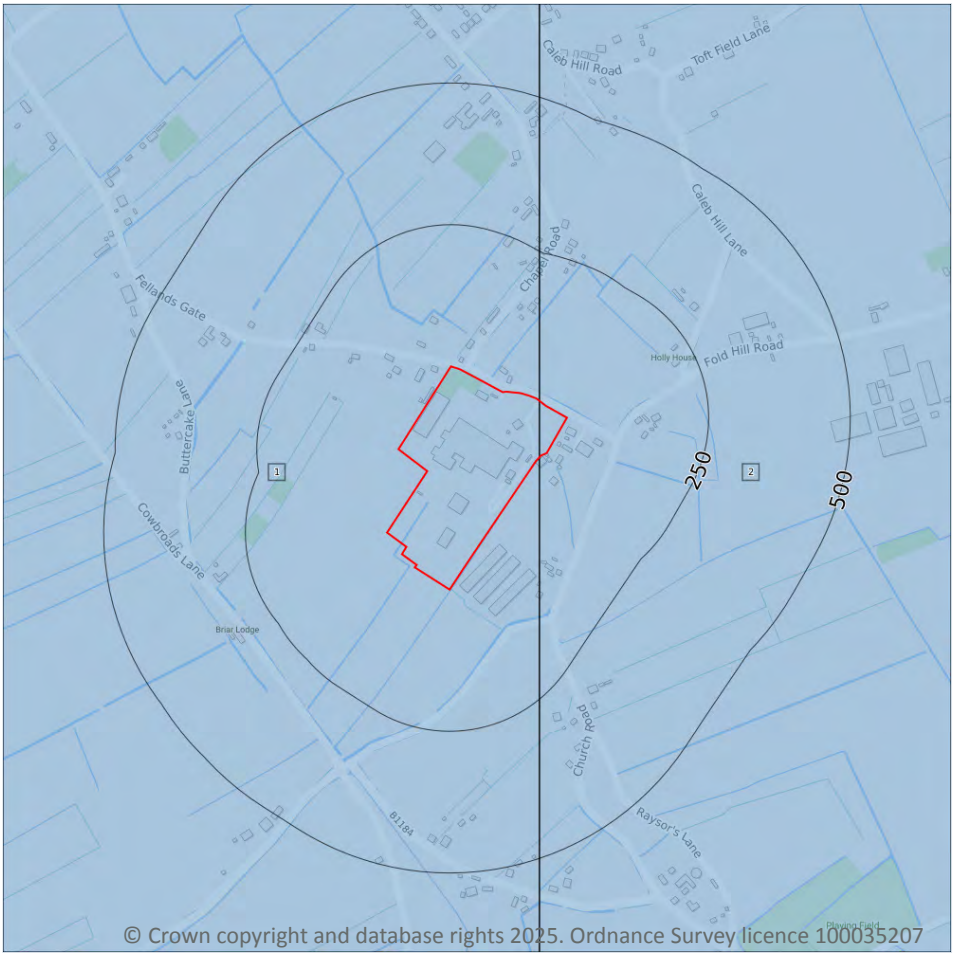
4.22 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

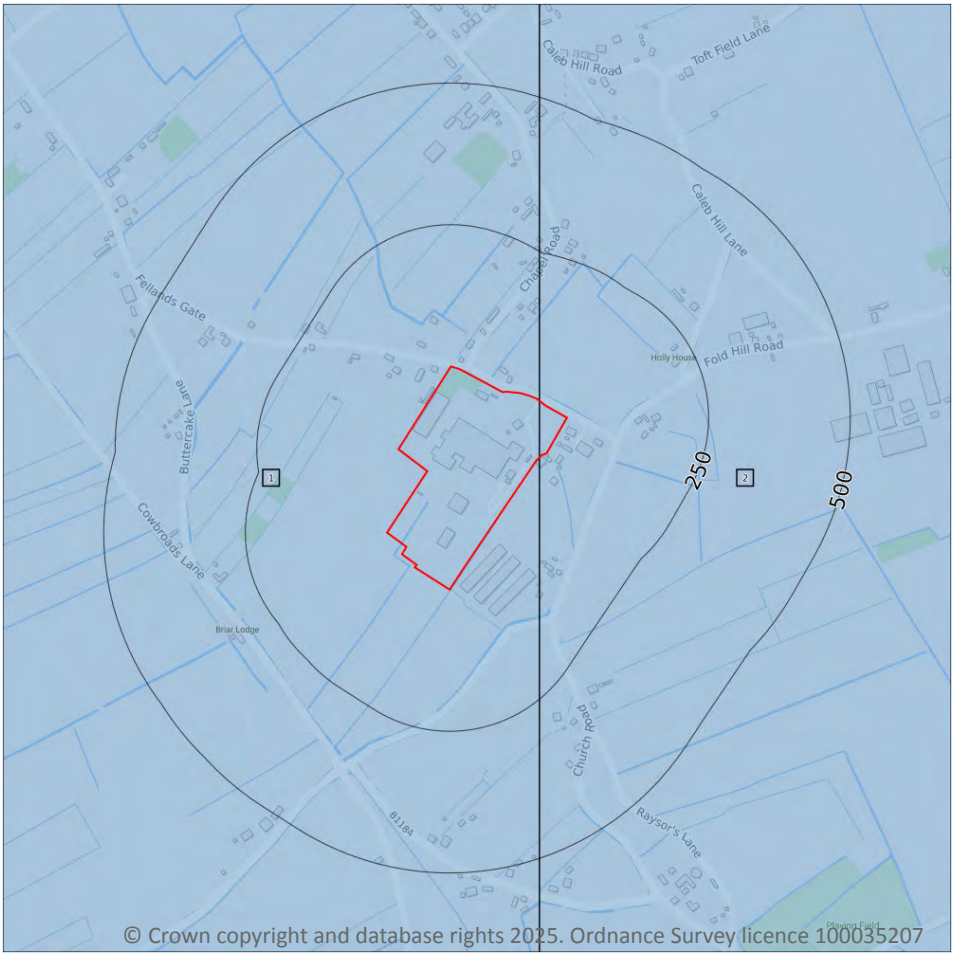
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 43 >**

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

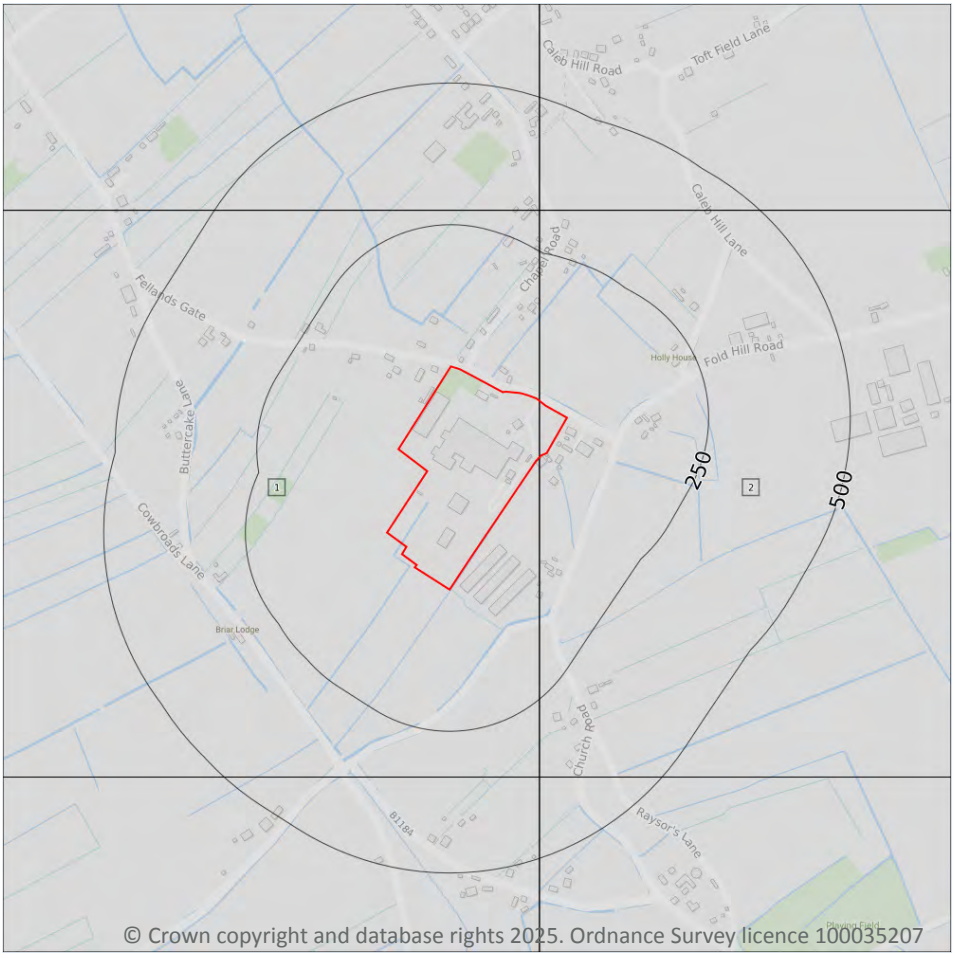
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 44 >**

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 45 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures
2	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**19**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 47 >**

ID	Location	Details	
1	406m E	Status: Historical Licence No: 6/33/53/*S/0663/R01 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: INLAND DRAIN AT MARCH SIXTH IDB Data Type: Line Name: JC & MA MARTIN Easting: 540480 Northing: 300140	Annual Volume (m^3): 55000 Max Daily Volume (m^3): 1820 Original Application No: NPS/WR/036604 Original Start Date: 01/04/2023 Expiry Date: 31/03/2037 Issue No: 1 Version Start Date: 01/04/2023 Version End Date: -
-	870m S	Status: Active Licence No: AN/030/0013/033 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIPARIAN DRAIN, SIBSEY Data Type: Line Name: STAPLES BROS LTD Easting: 537352 Northing: 350306	Annual Volume (m^3): 44552 Max Daily Volume (m^3): 1632 Original Application No: NPS/WR/029805 Original Start Date: 14/12/2010 Expiry Date: 31/03/2028 Issue No: 2 Version Start Date: 07/03/2019 Version End Date: -
-	1123m SW	Status: Active Licence No: AN/030/0013/011 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN, SIBSEY Data Type: Line Name: B Bush & Sons Ltd Easting: 538895 Northing: 350246	Annual Volume (m^3): 12864 Max Daily Volume (m^3): 1515 Original Application No: NPS/WR/037530 Original Start Date: 18/01/2011 Expiry Date: 31/03/2028 Issue No: 3 Version Start Date: 15/07/2022 Version End Date: -
-	1127m SW	Status: Historical Licence No: 4/30/13/*S/0327 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN N TO O Data Type: Line Name: B BUSH & SONS Easting: 538900 Northing: 350250	Annual Volume (m^3): 13000 Max Daily Volume (m^3): 1515 Original Application No: - Original Start Date: 18/05/2001 Expiry Date: 31/10/2010 Issue No: 3 Version Start Date: 21/01/2008 Version End Date: -

ID	Location	Details	
-	1294m SW	Status: Historical Licence No: 4/30/13/*S/0327 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN L TO M Data Type: Line Name: B BUSH & SONS Easting: 538260 Northing: 350210	Annual Volume (m^3): 13000 Max Daily Volume (m^3): 1515 Original Application No: - Original Start Date: 18/05/2001 Expiry Date: 31/10/2010 Issue No: 3 Version Start Date: 21/01/2008 Version End Date: -
-	1303m SW	Status: Active Licence No: AN/030/0013/011 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN, SIBSEY Data Type: Line Name: B Bush & Sons Ltd Easting: 538264 Northing: 350215	Annual Volume (m^3): 12864 Max Daily Volume (m^3): 1515 Original Application No: NPS/WR/037530 Original Start Date: 18/01/2011 Expiry Date: 31/03/2028 Issue No: 3 Version Start Date: 15/07/2022 Version End Date: -
-	1411m SW	Status: Active Licence No: AN/030/0013/011 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN, SIBSEY Data Type: Line Name: B Bush & Sons Ltd Easting: 538484 Northing: 350599	Annual Volume (m^3): 12864 Max Daily Volume (m^3): 1515 Original Application No: NPS/WR/037530 Original Start Date: 18/01/2011 Expiry Date: 31/03/2028 Issue No: 3 Version Start Date: 15/07/2022 Version End Date: -
-	1413m SW	Status: Historical Licence No: 4/30/13/*S/0327 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN J TO K Data Type: Line Name: B BUSH & SONS Easting: 538490 Northing: 350600	Annual Volume (m^3): 13000 Max Daily Volume (m^3): 1515 Original Application No: - Original Start Date: 18/05/2001 Expiry Date: 31/10/2010 Issue No: 3 Version Start Date: 21/01/2008 Version End Date: -
-	1418m NE	Status: Historical Licence No: 4/30/13/*S/0045 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: POND FED BY DYKES WRANGLE Data Type: Point Name: A J SAUL FARM ACCOUNTS Easting: 541300 Northing: 352300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/01/1990 Version End Date: -

ID	Location	Details	
-	1433m W	Status: Active Licence No: AN/030/0013/055 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WITHAM IV SEWER G-H - OLD LEAKE Data Type: Line Name: J W GRANT LIMITED Easting: 537327 Northing: 351753	Annual Volume (m^3): 80270 Max Daily Volume (m^3): 1363 Original Application No: NPSWR4538 Original Start Date: 24/01/2011 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 24/01/2011 Version End Date: -
-	1440m W	Status: Historical Licence No: 4/30/13/*S/0303 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WITHAM IV SEWER G-H - OLD LEAKE Data Type: Line Name: J W GRANT CO Easting: 537320 Northing: 351750	Annual Volume (m^3): 36368 Max Daily Volume (m^3): 1363 Original Application No: - Original Start Date: 30/05/2001 Expiry Date: 31/10/2010 Issue No: 2 Version Start Date: 01/04/2009 Version End Date: -
-	1473m W	Status: Active Licence No: AN/030/0013/055 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIPARIAN DRAIN K-L - OLD LEAKE Data Type: Line Name: J W GRANT LIMITED Easting: 537640 Northing: 351116	Annual Volume (m^3): 80270 Max Daily Volume (m^3): 1363 Original Application No: NPSWR4538 Original Start Date: 24/01/2011 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 24/01/2011 Version End Date: -
-	1479m W	Status: Historical Licence No: 4/30/13/*S/0303 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIPARIAN DRAIN K-L - OLD LEAKE Data Type: Line Name: J W GRANT CO Easting: 537620 Northing: 351100	Annual Volume (m^3): 36368 Max Daily Volume (m^3): 1363 Original Application No: - Original Start Date: 30/05/2001 Expiry Date: 31/10/2010 Issue No: 2 Version Start Date: 01/04/2009 Version End Date: -
-	1775m NE	Status: Historical Licence No: 4/30/13/*S/0045 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: PINDER DRAIN WRANGLE COMMON Data Type: Line Name: A J SAUL FARM ACCOUNTS Easting: 541050 Northing: 353100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/01/1990 Version End Date: -

ID	Location	Details	
-	1884m SW	Status: Active Licence No: AN/030/0013/099 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: REACH AT LEVERTON Data Type: Line Name: M Leggate and Sons Easting: 538674 Northing: 349845	Annual Volume (m^3): 48000 Max Daily Volume (m^3): 3600 Original Application No: NPS/WR/030648 Original Start Date: 14/12/2020 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 14/12/2020 Version End Date: -
-	1918m SW	Status: Active Licence No: AN/030/0013/033 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WITHAM IV SEWER, SIBSEY Data Type: Line Name: STAPLES BROS LTD Easting: 537773 Northing: 350265	Annual Volume (m^3): 44552 Max Daily Volume (m^3): 1632 Original Application No: NPS/WR/029805 Original Start Date: 14/12/2010 Expiry Date: 31/03/2028 Issue No: 2 Version Start Date: 07/03/2019 Version End Date: -
-	1918m SW	Status: Historical Licence No: 4/30/13/*S/0323 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WITHAM IV SEWER - SIBSEY Data Type: Line Name: STAPLES BROS LTD Easting: 537770 Northing: 350260	Annual Volume (m^3): 13638 Max Daily Volume (m^3): 1011 Original Application No: - Original Start Date: 16/05/2001 Expiry Date: 31/10/2010 Issue No: 2 Version Start Date: 15/07/2003 Version End Date: -
-	1977m W	Status: Active Licence No: AN/030/0013/055 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIPARIAN DRAIN I-J - OLD LEAKE Data Type: Line Name: J W GRANT LIMITED Easting: 537388 Northing: 351435	Annual Volume (m^3): 80270 Max Daily Volume (m^3): 1363 Original Application No: NPSWR4538 Original Start Date: 24/01/2011 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 24/01/2011 Version End Date: -
-	1981m W	Status: Historical Licence No: 4/30/13/*S/0303 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIPARIAN DRAIN I-J - OLD LEAKE Data Type: Line Name: J W GRANT CO Easting: 537380 Northing: 351430	Annual Volume (m^3): 36368 Max Daily Volume (m^3): 1363 Original Application No: - Original Start Date: 30/05/2001 Expiry Date: 31/10/2010 Issue No: 2 Version Start Date: 01/04/2009 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

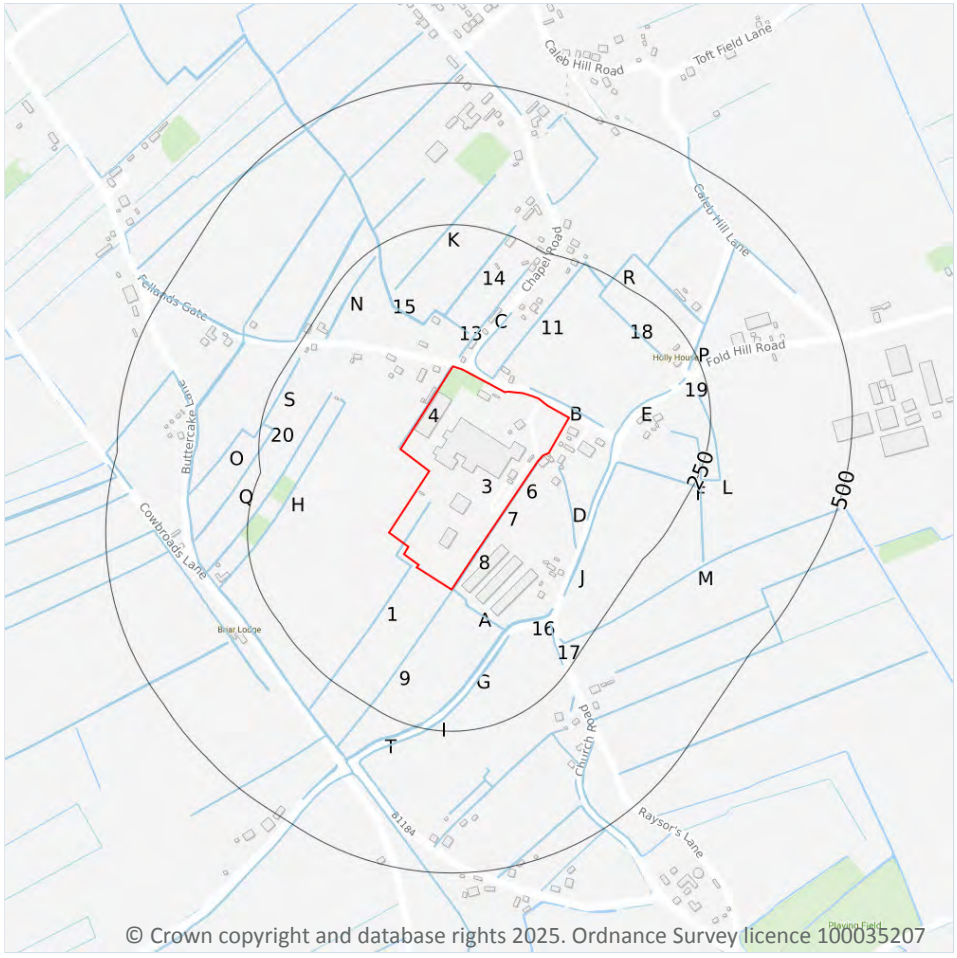
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



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Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	47

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 53 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
4	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
6	1m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
7	2m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
8	2m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
9	2m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	2m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	11m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	11m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	19m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	30m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	34m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	39m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
13	64m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
D	87m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	87m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	88m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
14	90m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
15	90m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	95m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	101m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	112m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	112m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
16	119m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	119m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	126m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	128m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	130m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	130m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	145m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
J	146m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	156m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	170m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
17	178m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	181m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
18	192m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
19	203m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	206m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	217m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
P	227m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
20	227m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	227m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
R	231m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
S	233m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
T	242m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	246m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	27

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 53 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 53 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
3	**On site**	**River**	**East & West Fen Drains**	**GB205030056405**	**Fens East and West**	**Witham**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**1**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 53 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2429m W	River	East & West Fen Drains	GB205030056405 ↗	Bad	Fail	Bad	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**0**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	1

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 59 >**

Distance	Flood risk category
On site	**Low**
0 - 50m	Low

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	**0**

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

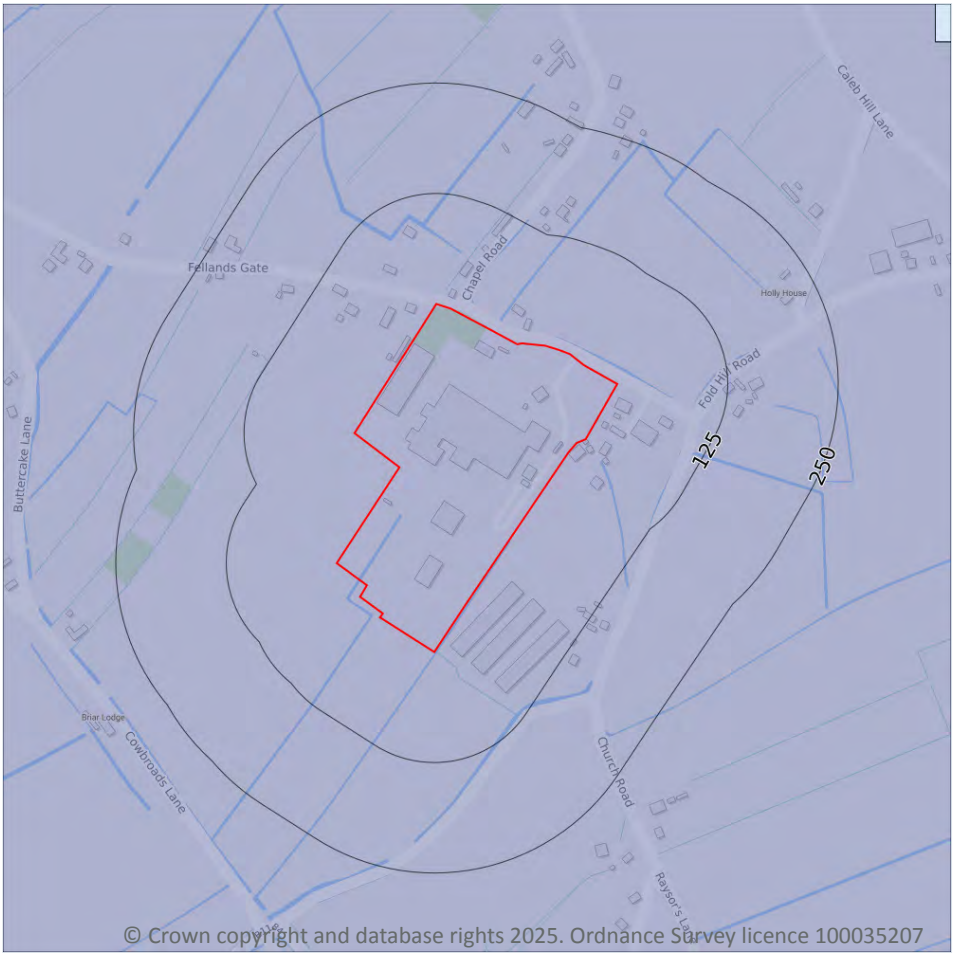
7.5 Flood Storage Areas

Records within 250m	**0**

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	1

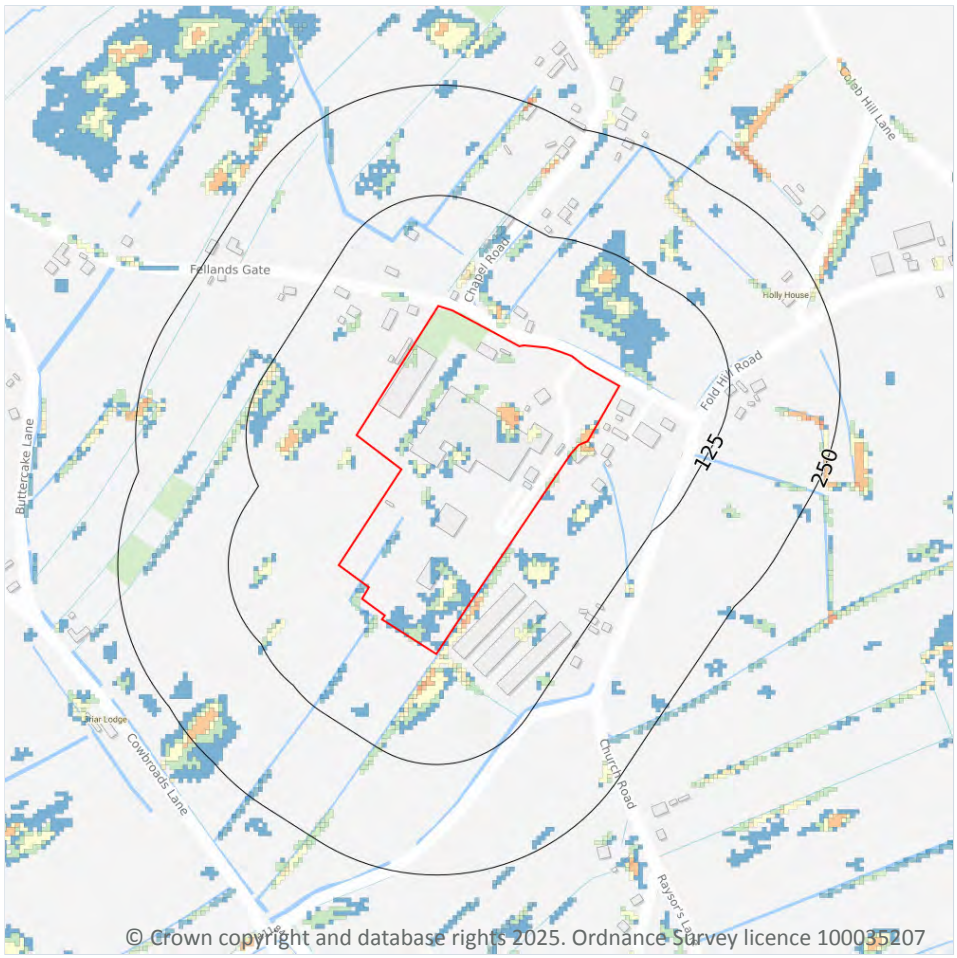
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 59 >**

Location	Type
On site	**Zone 3 - (Fluvial /Tidal Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 63 >**

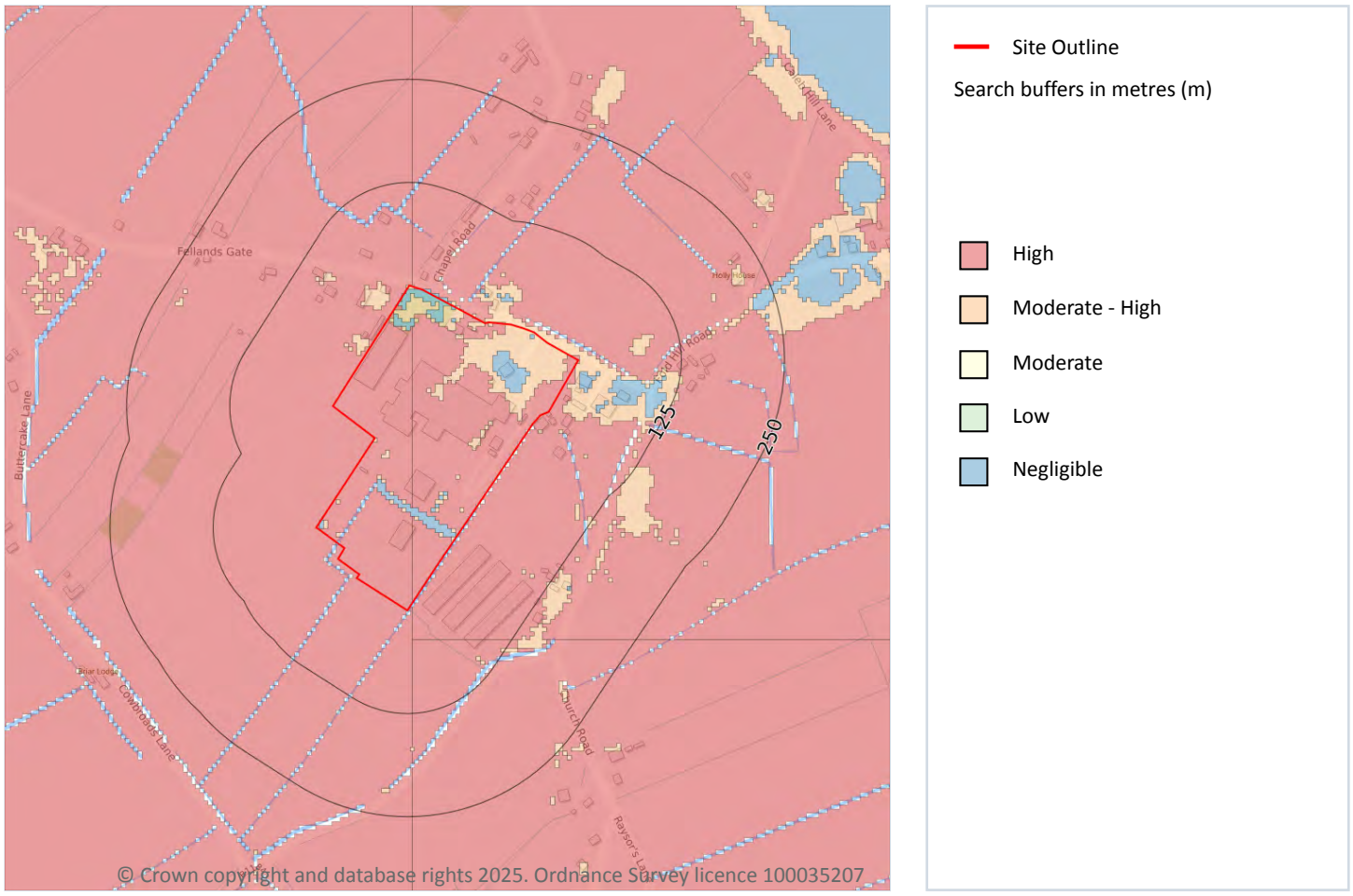
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site	**High**
Highest risk within 50m	**High**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 65 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

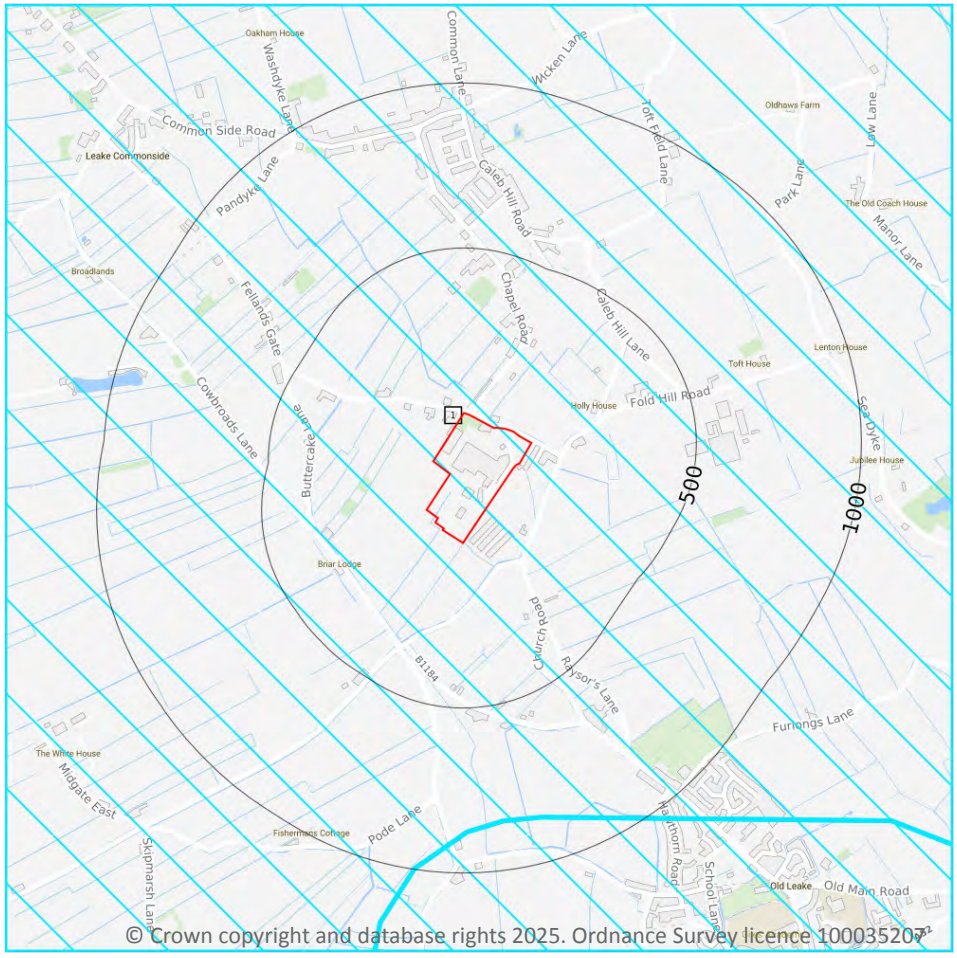
Records within 2000m	1

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Witham Drains NVZ**	**Surface Water**	**716**	**Existing**

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 70 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**https://irz.geodata.org.uk/IRZ/step2.html?irzcode=0300000000000&notes=&location=538227,358807%20(IRZ%20polygon%20centre)**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 74 >**

ID	Location	Classification	Description
1	On site	Grade 1	**Excellent quality agricultural land. Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	2

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

Location	Reference	Scheme	Start Date	End date
224m E	AG00530014	Entry Level Stewardship	01/12/2013	30/11/2018
227m E	AG00530014	Entry Level Stewardship	01/12/2013	30/11/2018

This data is sourced from Natural England.

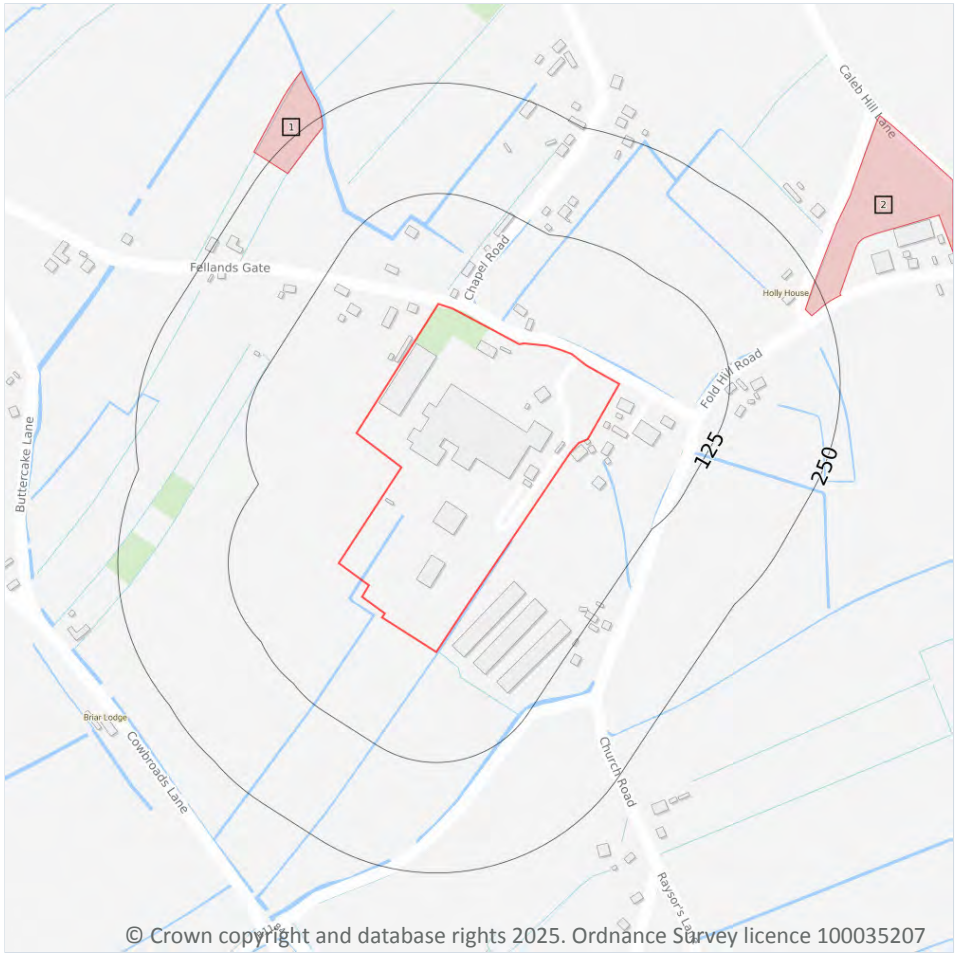
12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



13.1 Priority Habitat Inventory

Records within 250m	2

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 76 >**

ID	Location	Main Habitat	Other habitats
1	225m NW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
2	227m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 78 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**No coverage**	**No coverage**	**No coverage**	**NoCov**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

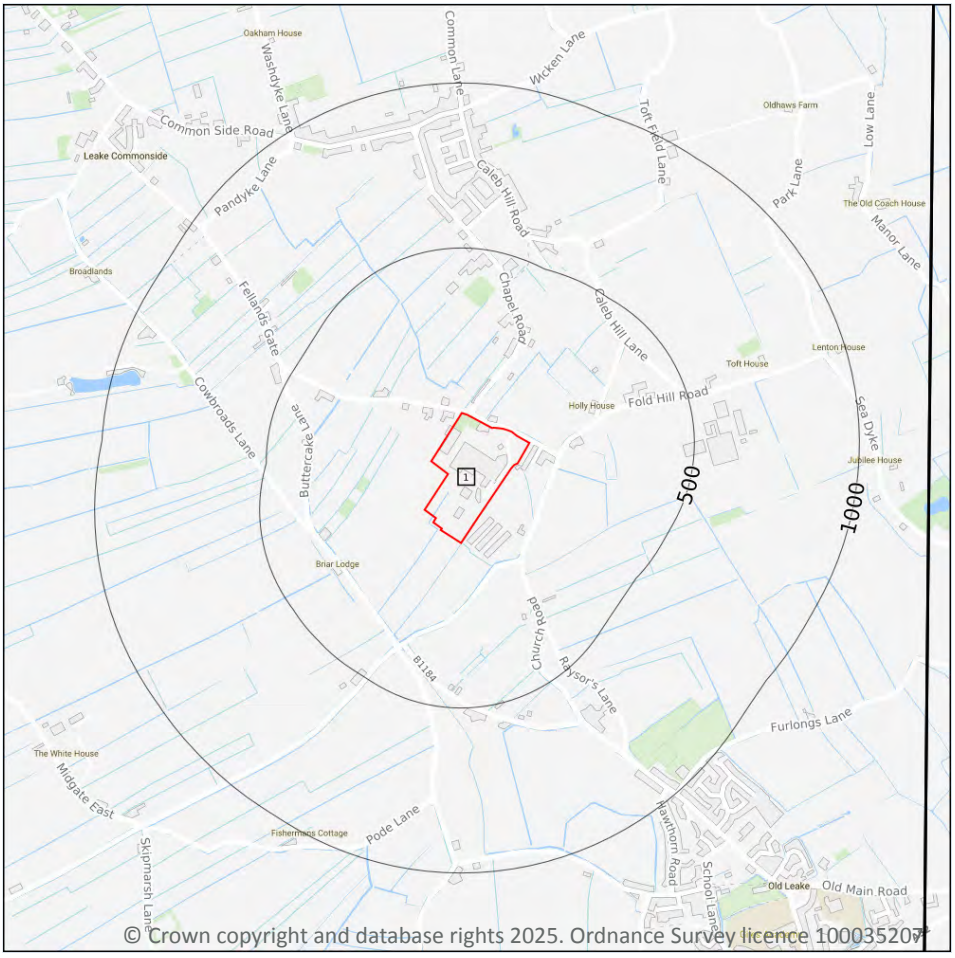
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 82 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**EW128_boston_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

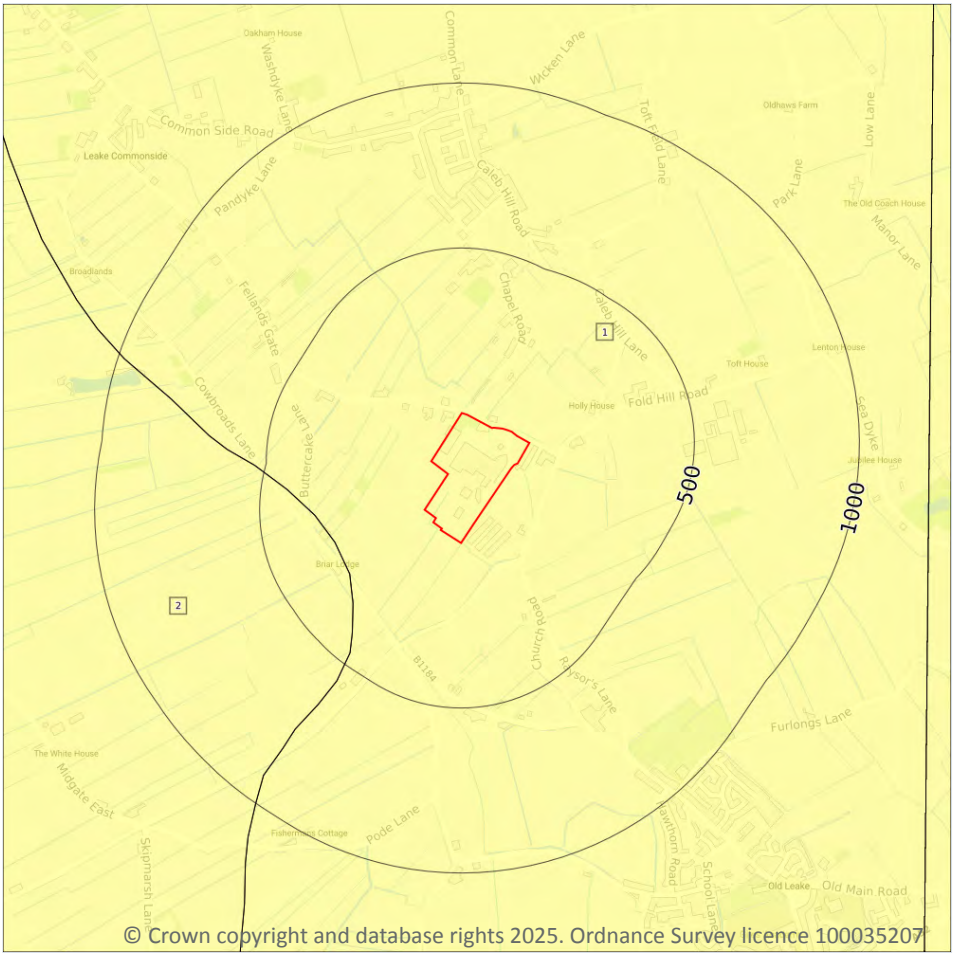
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m	2

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 84 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD-XCZ**	**TIDAL FLAT DEPOSITS**	**CLAY AND SILT**
2	288m SW	TFD1-XCZ	TIDAL FLAT DEPOSITS, 1	CLAY AND SILT

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

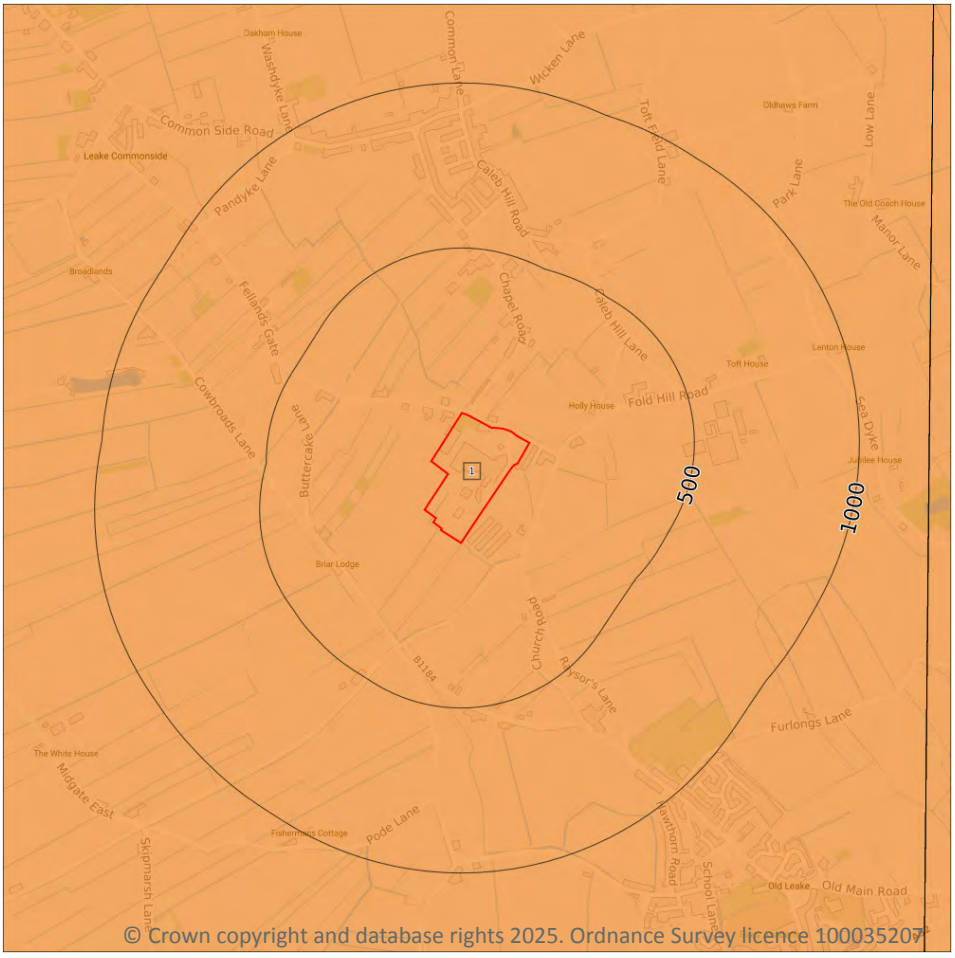
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 86 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**KC-MDST**	**KIMMERIDGE CLAY FORMATION - MUDSTONE**	**KIMMERIDGIAN**

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes

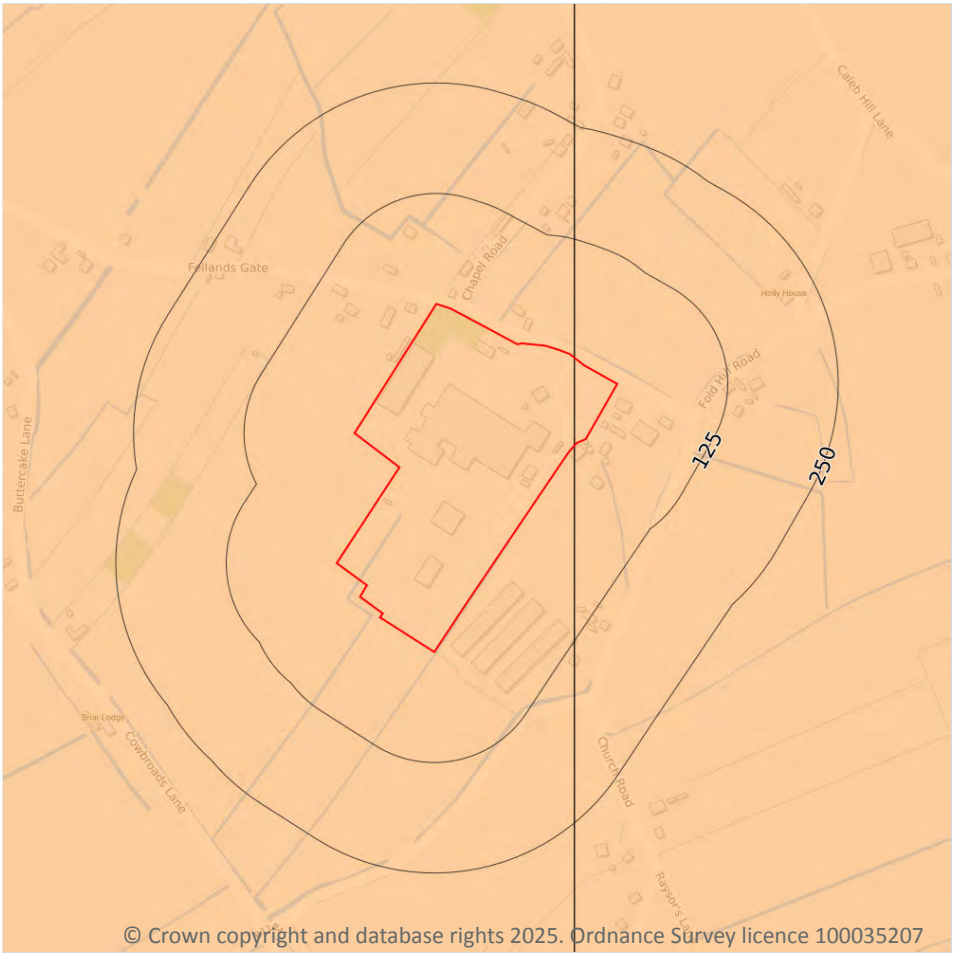
16.1 BGS Boreholes

Records within 250m	0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

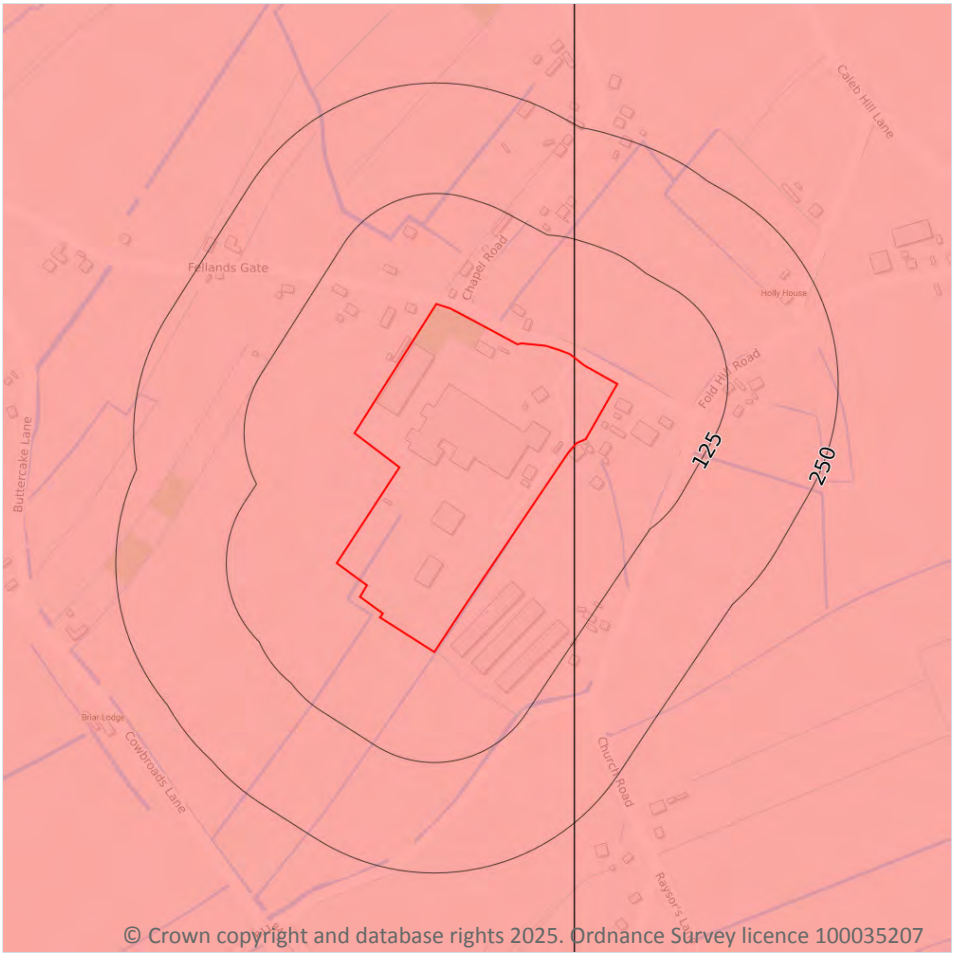
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 89 >**

Location	Hazard rating	Details
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

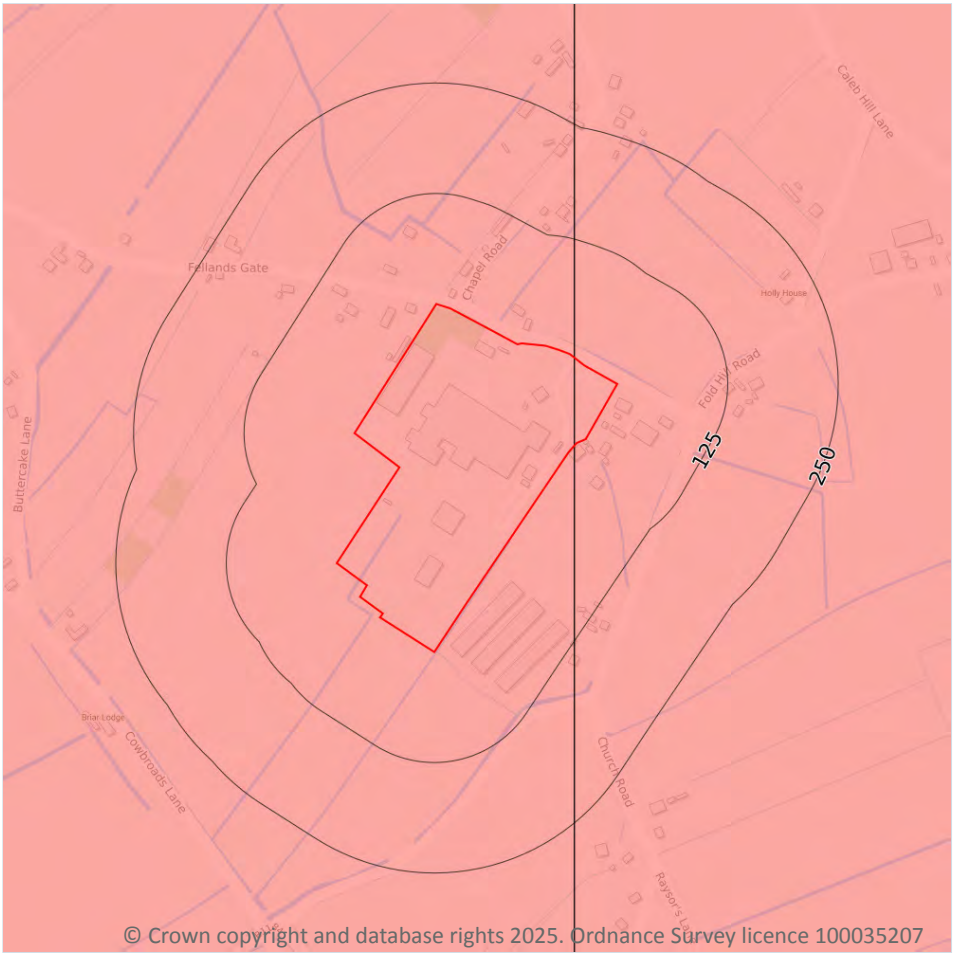
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 90 >**

Location	Hazard rating	Details
On site	**Moderate**	**Running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

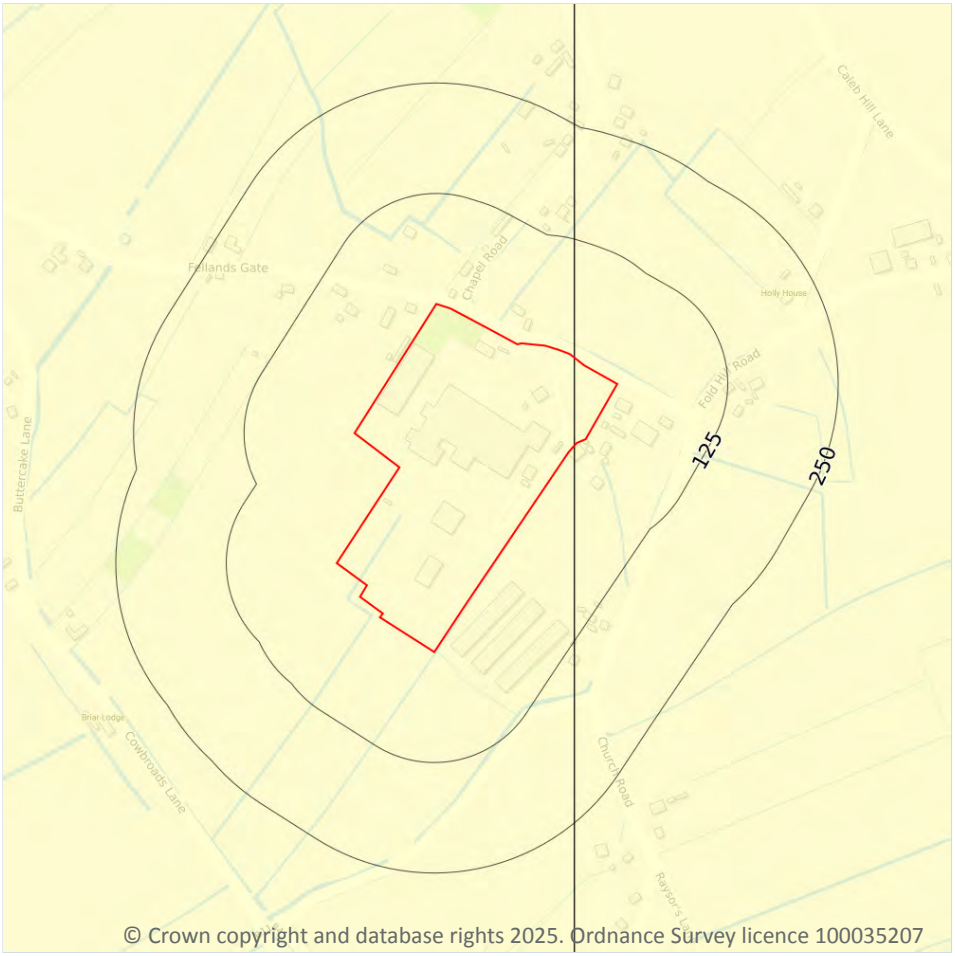
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 91 >**

Location	Hazard rating	Details
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m	1

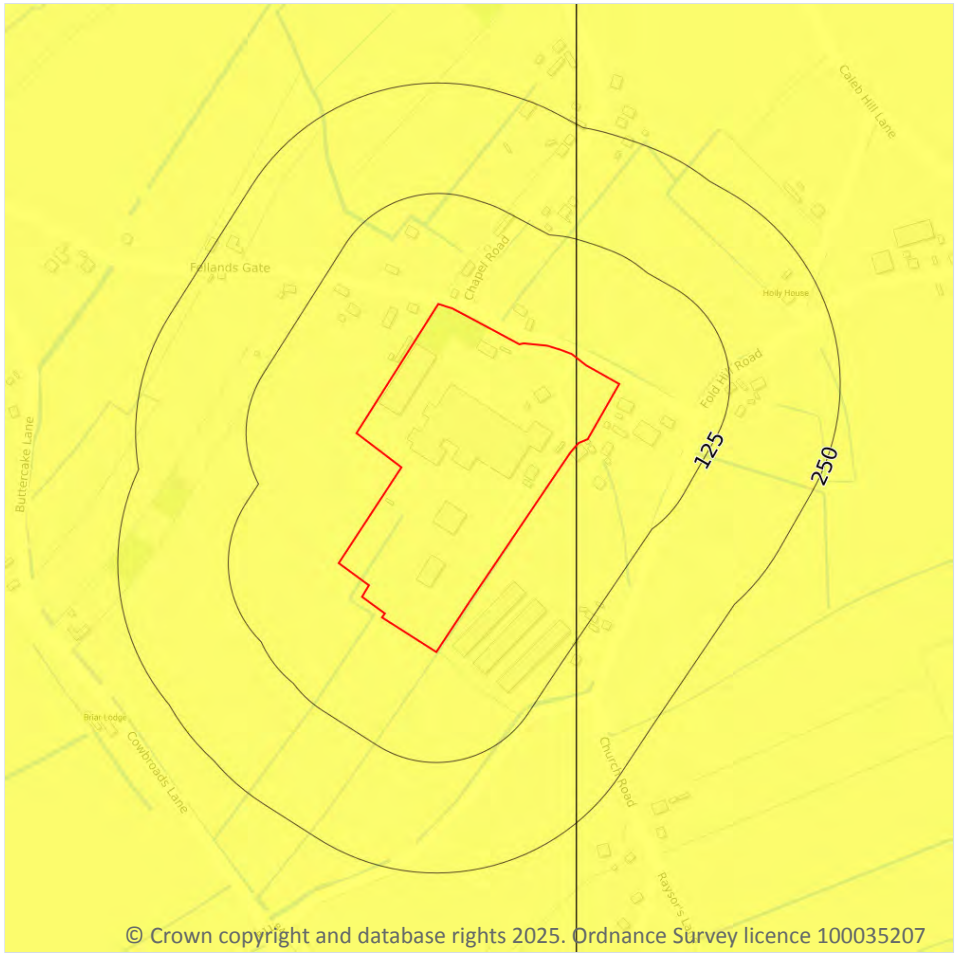
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 92 >**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m	1

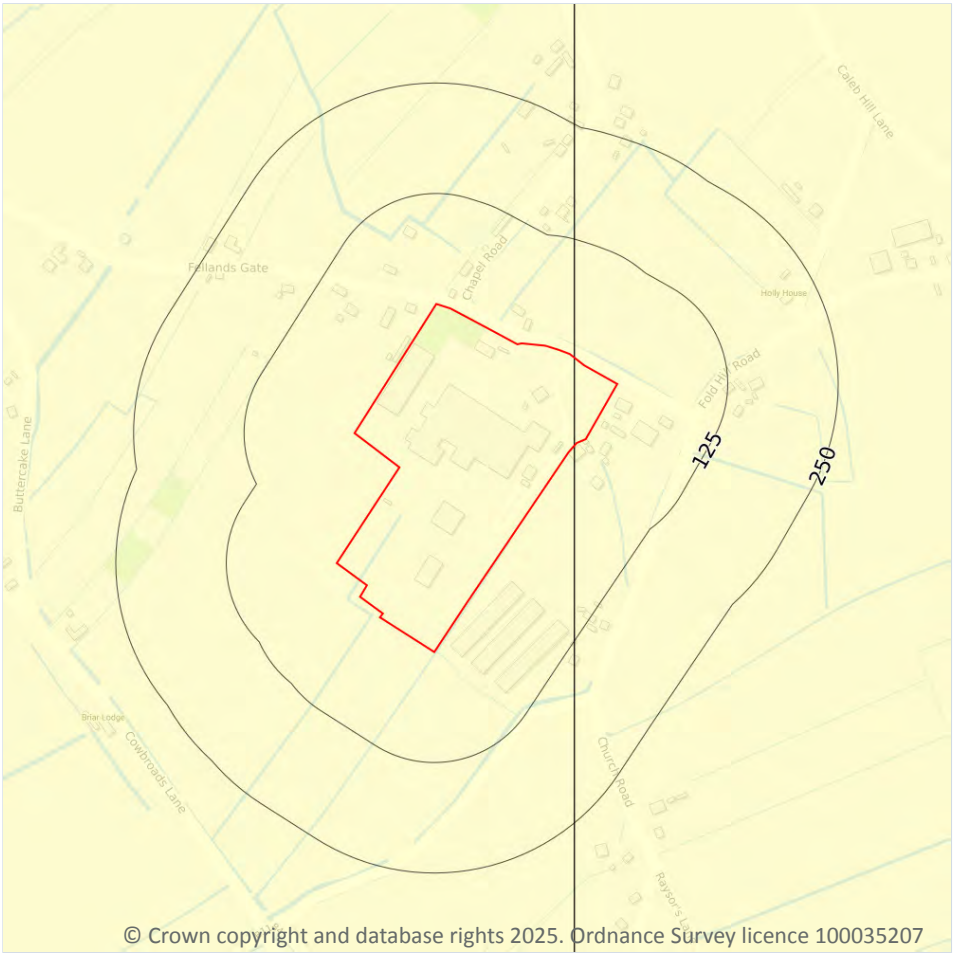
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 93 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m	1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 94 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings

18.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	0

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

20 Radon



20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 102 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	4

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
37m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.9 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

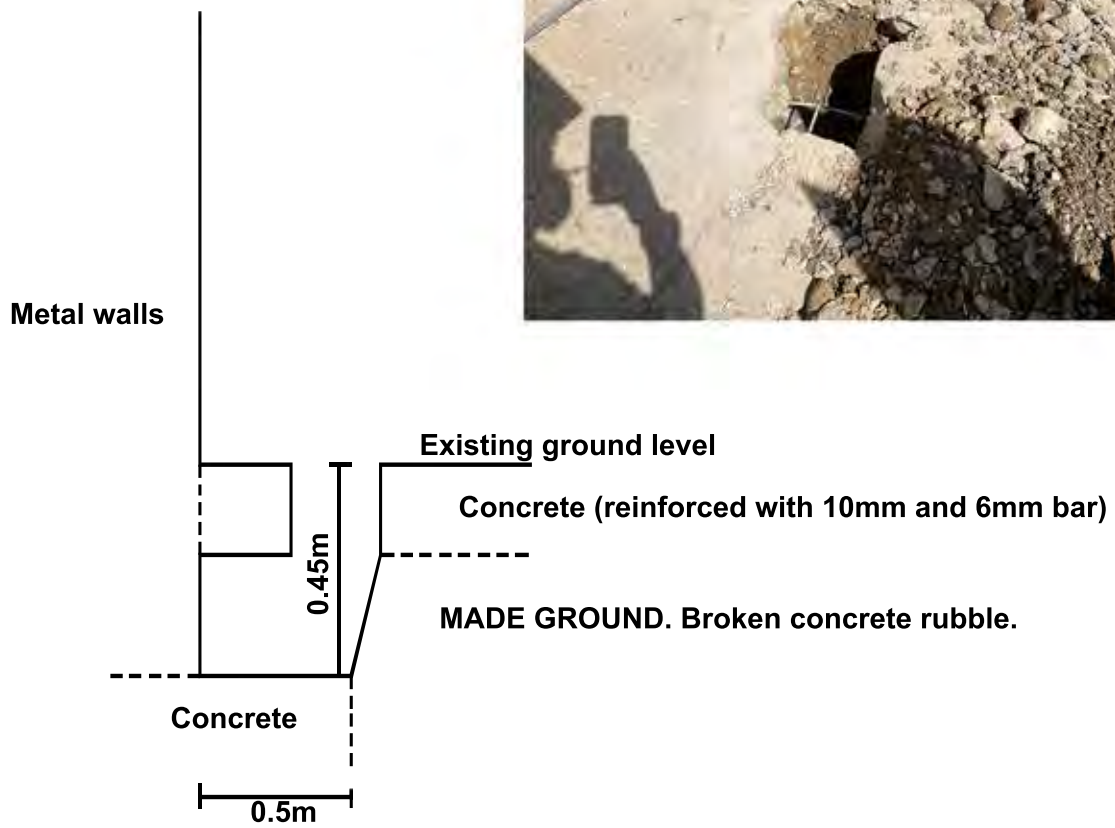
APPENDIX 4

BOREHOLE LOGS

APPENDIX 5

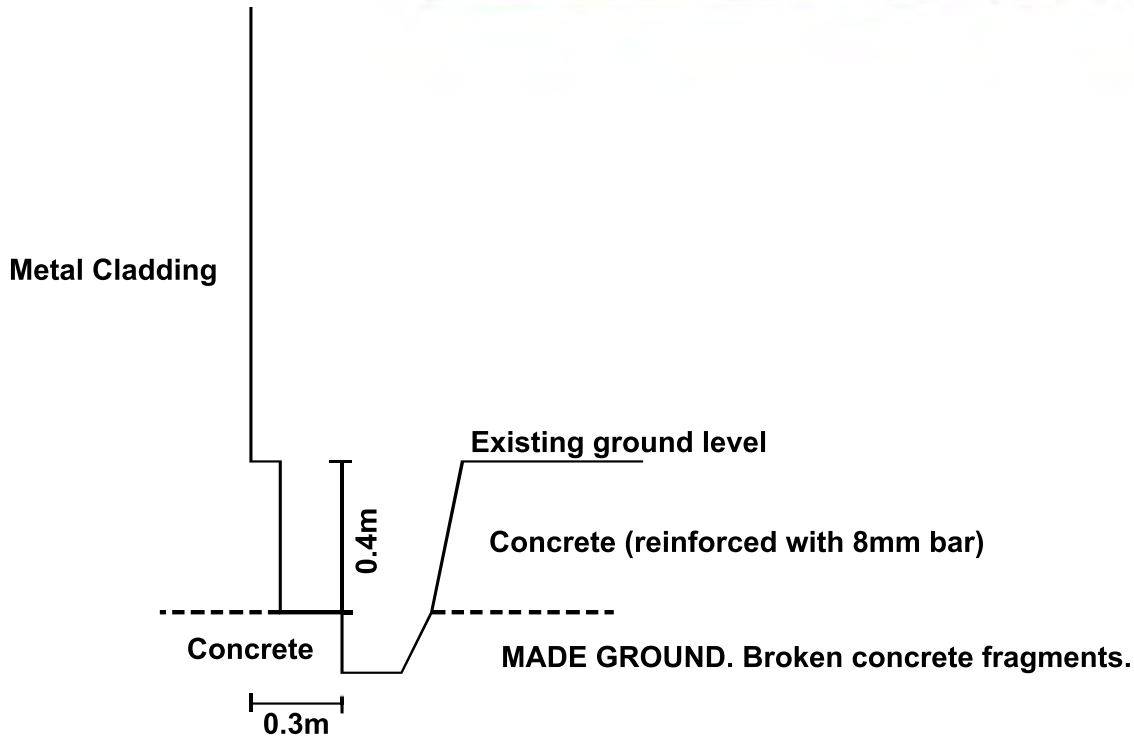
TRIAL PIT LOGS





Site: **Bakkavor Boston**			
Title: **TP1**		Project: **25-747**	
Client: **Arctica Ltd**	Date: **July 25**	Drawn: **MP**	

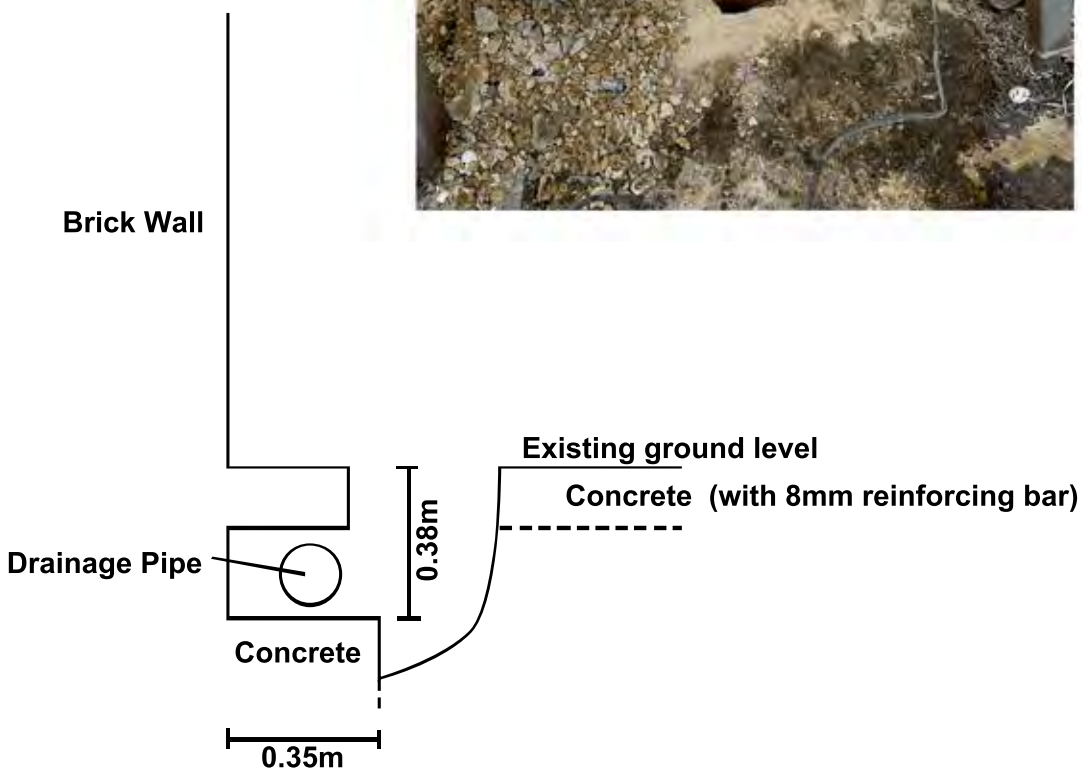




Site: **Bakkavor Boston**		
Title: **TP2**	Project: **25-747**	
Client: **Arctica Ltd**	Date: **July 25**	Drawn: **MP**

gei.





Site: **Bakkavor Boston**			
Title: **TP3**		Project: **25-747**	
Client: **Arctica Ltd**	Date: **July 25**	Drawn: **MP**	

gei.

APPENDIX 6

GAS AND GROUNDWATER MONITORING RESULTS

SOIL GAS SURVEY

Project:	Bakkavor			Date:	19/07/2025				Equipment Used:	GFM 436		
Location:	Boston			Weather:	Clear							
Job No.	25-747			Temp:	27°C							

Monitoring Point No.	Time	O2 (% v/v)	CO2 (% v/v)	CH4 (% v/v)	H2S (PPM)	CO (PPM)	PID (PPM)	Flow (l/hr)	Differential Pressure (mbar)	Water (mbgl)	Site Observations/ Comments	
											Time	Barometric Pressure
BH2		8.5	1.4	0	0	0	<5	<0.1	-	2.09	09:57	1011
BH4		6.2	2.2	0	0	0	<5	<0.1	-	2.22		falling
											Datum:	

Tested by: MP

mbgl = metres below ground level

Ground and Environmental Investigation Limited

Accuracy and range of Gas Analyser GFM436

Gas	Accuracy: Gas Concentrations 0-5%	5-15%	0-FS	Range
CH_4	+/-0.5%	+/-3%		0-70% to specification, 0-100% reading
CO_2	+/-0.5%	+/-3%		0-40% to specification, 0-100% reading
O_2	+/-1%	+/-1%		0-25%
CO			+/-10%FS	0-500ppm
H_2S			+/-10%FS	0-200ppm
B.P.	+/- 5 mBar			700-1200 mBar
Flow:				

Notes:

CH4: methane in percent volume per volume (% v/v)

CO2: carbon dioxide in %v/v

O2: oxygen in % v/v

H2S: hydrogen sulphide in part per million (ppm)

CO: carbon monoxide in ppm

B.P.: Barometric pressure in mBar

Flow: Gas flow in litre per hour (l/h)

SOIL GAS SURVEY

Project:	Bakkavor			Date:	29/07/2025				Equipment Used:		GFM 436	
Location:	Boston			Weather:	Slight cloud							
Job No.	25-747			Temp:	17°C							

Monitoring Point No.	Time	O2 (% v/v)	CO2 (% v/v)	CH4 (% v/v)	H2S (PPM)	CO (PPM)	PID (PPM)	Flow (l/hr)	Differential Pressure (mbar)	Water (mbgl)	Site Observations/ Comments	
											Time	Barometric Pressure
BH2		7.9	1.1	0	0	0	<5	<0.1	-	2.13	09:57	1018
BH4		6.0	2.1	0	0	0	<5	<0.1	-	2.23		
											Datum:	

Tested by: MP

mbgl = metres below ground level

Ground and Environmental Investigation Limited

Accuracy and range of Gas Analyser GFM436

Gas	Accuracy: Gas Concentrations 0-5%	5-15%	0-FS	Range
CH_4	+/-0.5%	+/-3%		0-70% to specification, 0-100% reading
CO_2	+/-0.5%	+/-3%		0-40% to specification, 0-100% reading
O_2	+/-1%	+/-1%		0-25%
CO			+/-10%FS	0-500ppm
H_2S			+/-10%FS	0-200ppm
B.P.	+/- 5 mBar			700-1200 mBar
Flow:				

Notes:

CH4: methane in percent volume per volume (% v/v)

CO2: carbon dioxide in %v/v

O2: oxygen in % v/v

H2S: hydrogen sulphide in part per million (ppm)

CO: carbon monoxide in ppm

B.P.: Barometric pressure in mBar

Flow: Gas flow in litre per hour (l/h)

SOIL GAS SURVEY

Project:	Bakkavor			Date:	06/08/2025				Equipment Used:		GFM 436	
Location:	Boston			Weather:	Clear							
Job No.	25-747			Temp:	23°C							

Monitoring Point No.	Time	O2 (% v/v)	CO2 (% v/v)	CH4 (% v/v)	H2S (PPM)	CO (PPM)	PID (PPM)	Flow (l/hr)	Differential Pressure (mbar)	Water (mbgl)	Site Observations/ Comments	
											Time	Barometric Pressure
BH2		7.7	1.5	0	0	0	<5	<0.1	-	2.15	10:13	1018
BH4		5.7	2.4	0	0	0	<5	<0.1	-	2.25		falling
											Datum:	

Tested by: MP

mbgl = metres below ground level

Ground and Environmental Investigation Limited

Accuracy and range of Gas Analyser GFM436

Gas	Accuracy: Gas Concentrations 0-5%	5-15%	0-FS	Range
CH_4	+/-0.5%	+/-3%		0-70% to specification, 0-100% reading
CO_2	+/-0.5%	+/-3%		0-40% to specification, 0-100% reading
O_2	+/-1%	+/-1%		0-25%
CO			+/-10%FS	0-500ppm
H_2S			+/-10%FS	0-200ppm
B.P.	+/- 5 mBar			700-1200 mBar
Flow:				

Notes:

CH4: methane in percent volume per volume (% v/v)

CO2: carbon dioxide in %v/v

O2: oxygen in % v/v

H2S: hydrogen sulphide in part per million (ppm)

CO: carbon monoxide in ppm

B.P.: Barometric pressure in mBar

Flow: Gas flow in litre per hour (l/h)

APPENDIX 7

LABORATORY TESTING RESULTS

F.S.T

FLAWLESS

SOIL TESTING

REPORT NUMBER:
GEI059

CLIENT :
Ground & Environmental Investigation Ltd
8 Wapping Lane
Marton

SITE ADDRESS:
Bakkavor Boston
(25-747)

DATE OF SITE VISIT:
11 July 2025

DATE RECEIVED BY LABORATORY:
15 July 2025

Complied By:.....
L. Kirby - Office Administrator

Approved By:.....
J. Garrett - Director

DATE REPORTED:
23 July 2025

UKAS TESTING
28443

22 Francis Road, Braintree, Essex, CM7 2NR
Tel : 07778442814
Registered in England Company Reg. No. 14487335
VAT No: 443 1025 40

www.Flawless-Soils.com
Email - Enquiries@flawless-soils.com

Laboratory Summary Results

Our Ref : GEI059

Location : Bakkavor Boston (25-747)

Client: Ground & Environmental Investigation Ltd

Address: 8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

Date Sampled: 11/07/2025

Date Received : 15/07/2025

Date Tested : 15/07/2025

Date of Report : 23/07/2025

Sample Ref TP/BH No	Depth (m)	Type	Water Content (%) [1]	Soil Fraction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity Index* [5]	Modified Plasticity Index* (%) [6]	Soil Class* [7]	Filter Paper Contact Time (d)	Soil Sample Suction (kPa) [8]	Roots Present or No Roots Observed* [9]	In situ Shear Vane Strength* (kPa) [10]	Organic Matter O.M (%)[11]	pH Value [12]	Sulphate Content (g / l) SO_3 [13]	Sulphate Content (g / l) SO_4 [14]	Class* [15]
BH1	3.0	D			Please see PSD sheet 1 of 4														
	6.0	D			Please see PSD sheet 2 of 4														
	13.0	D	15.8	16	36	14	22	0.08	19	CI						7.6	0.27	0.33	DS-1
	19.0	D	24.0	<5	58	29	29	-0.17	29	CH									
BH2	11.0	D														7.6	0.24	0.29	DS-1
BH3	4.0	D			Please see PSD sheet 3 of 4														

Test Methods / Notes

[1] BS EN ISO 17892-1 : 2014 + A1 : 2022

[2] Not recorded if <5%, otherwise measured as agreed with client

[3] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 5.3 - 1 Pt Test - Cone 80g/30°

[4] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 5.5

[5] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 6.5

[6] BRE Digest 240 : 1993

[7] BS 5930 : 2018 : Figure 8 - Plasticity Chart for the classification of fine soils

[8] BRE IP 4/93

[9] Roots present at depth or below. Info taken from logs if provided

[10] Values of shear strength were determined in situ using a pilcon hand vane.

[11] E010 based on Walkely-Black methodology. Completed by DETS UKAS no. 4480.

[12] BS 1377 : Part 3 : 2018 + A1 2021 Clause 12. PH testing is completed by K4 Soils Ltd who are accredited for the test UKAS no.2519. Full reports can be provided upon written request.

[13] BS 1377 : Part 3 : 2018 + A1 2021 Clause 7.6. Sulphate testing is completed by K4 Soils Ltd who are accredited for the test UKAS no.2519. Full reports can be provided upon written request.

[14] $SO_4 = 1.2 \times SO_3$

[15] BRE Special Digest One (Concrete in Aggressive Ground) August 2005
Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4M or DS-5M class respectively unless water soluble magnesium testing is undertaken to prove otherwise.

*** Non UKAS Accredited Testing.**

Key

D	Disturbed sample (small)
B	Disturbed sample (bulk)
U	Undisturbed sample
W	Groundwater sample
ENP	Essentially Non-Plastic by inspection
U/S	Underside of Foundation
H&F	Hair & Fibrous
D&D	Dead & Decomposing
DEV	Deviation

UKAS TESTING 28443

Test results reported relate only to the items tested.

This report shall not be reproduced except in full without approval of the laboratory.

Version: SumRep (Issue 1, Rev 0 & Issued 17.11.23)

Our Ref : GEI059

Laboratory Testing Results

Date Sampled : 11/07/2025

Location : Bakkavor Boston (25-747)

Date Received : 15/07/2025

Client: Ground & Environmental Investigation Ltd

Date Tested : 15/07/2025

Address: 8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

Date of Report : 23/07/2025

Sample Ref		Type	Water Content	Soil Fraction > 0.425mm	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index*	Modified Plasticity Index*	Soil Class*	Filter Paper Contact Time	Soil Sample Suction	Roots Present or No Roots Observed*	In situ Shear Vane Strength*	Organic Matter O.M	pH Value*	Sulphate Content (g / l)*		Class*
TP/BH No	Depth (m)		(%) *[1]*	(%) *[2]*	(%) *[3]*	(%) *[4]*	(%) *[5]*	*[5]*	(%) [6]	*[7]*	(d)	(kPa) [8]	*[9]*	(kPa) [10]	(%)*[11]*	*[12]*	SO_3 *[13]*	SO_4 *[14]*	*[15]*
BH4	5.0	D	Please see PSD sheet 4 of 4																
	8.0	D	17.3	13	31	12	19	0.28	17	CL						7.9	0.37	0.44	DS-1

Test Methods / Notes

[1] BS EN ISO 17892-1 : 2014 + A1 : 2022

[2] Not recorded if <5%, otherwise measured as agreed with client

[3] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 5.3 - 1 Pt Test - Cone 80g/30°

[4] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 5.5

[5] BS EN ISO 17892-12 : 2018 + A2 : 2022 Clause 6.5

[6] BRE Digest 240 : 1993

[7] BS 5930 : 2018 : Figure 8 - Plasticity Chart for the classification of fine soils

[8] BRE IP 4/93

[9] Roots present at depth or below. Info taken from logs if provided

[10] Values of shear strength were determined in situ using a pilcon hand vane.

[11] E010 based on Walkely-Black methodology. Completed by DETS UKAS no. 4480.

[12] BS 1377 : Part 3 : 2018 + A1 2021 Clause 12. PH testing is completed by K4 Soils Ltd who are accredited for the test UKAS no.2519. Full reports can be provided upon written request.

[13] BS 1377 : Part 3 : 2018 + A1 2021 Clause 7.6. Sulphate testing is completed by K4 Soils Ltd who are accredited for the test UKAS no.2519. Full reports can be provided upon written request.

[14] SO_4 = 1.2 x SO_3

[15] BRE Special Digest One (Concrete in Aggressive Ground) August 2005 Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4M or DS-5M class respectively unless water soluble magnesium testing is undertaken to prove otherwise.

*** Non UKAS Accredited Testing.**

Key

D	Disturbed sample (small)
B	Disturbed sample (bulk)
U	Undisturbed sample
W	Groundwater sample
ENP	Essentially Non-Plastic by inspection
U/S	Underside of Foundation
H&F	Hair & Fibrous
D&D	Dead & Decomposing
DEV	Deviation

UKAS TESTING 28443

Test results reported relate only to the items tested.

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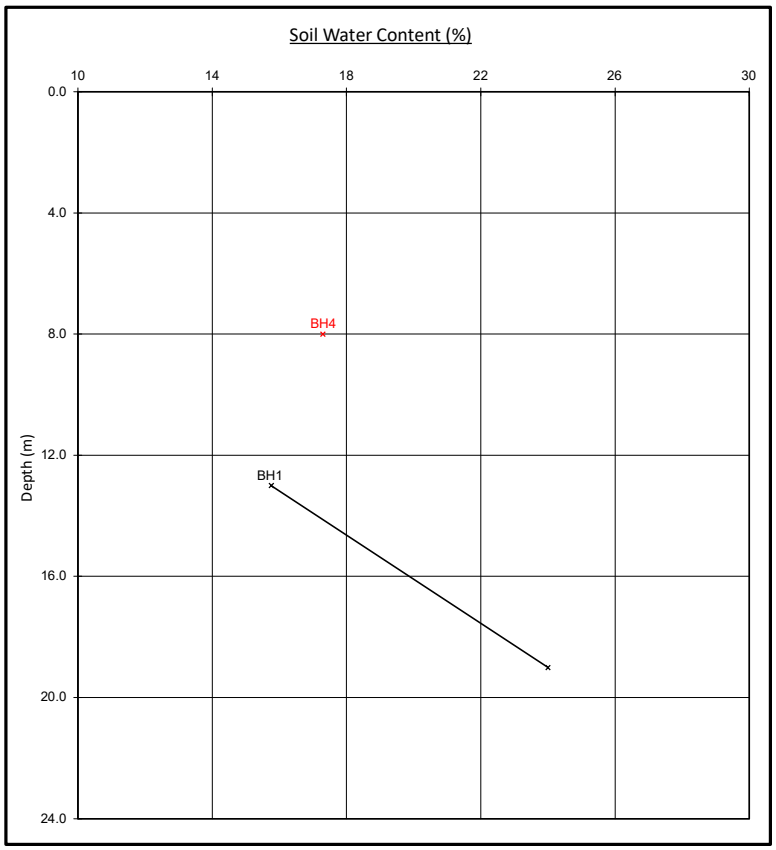
Version: SumRep (Issue 1, Rev 0 & Issued 17.11.23)

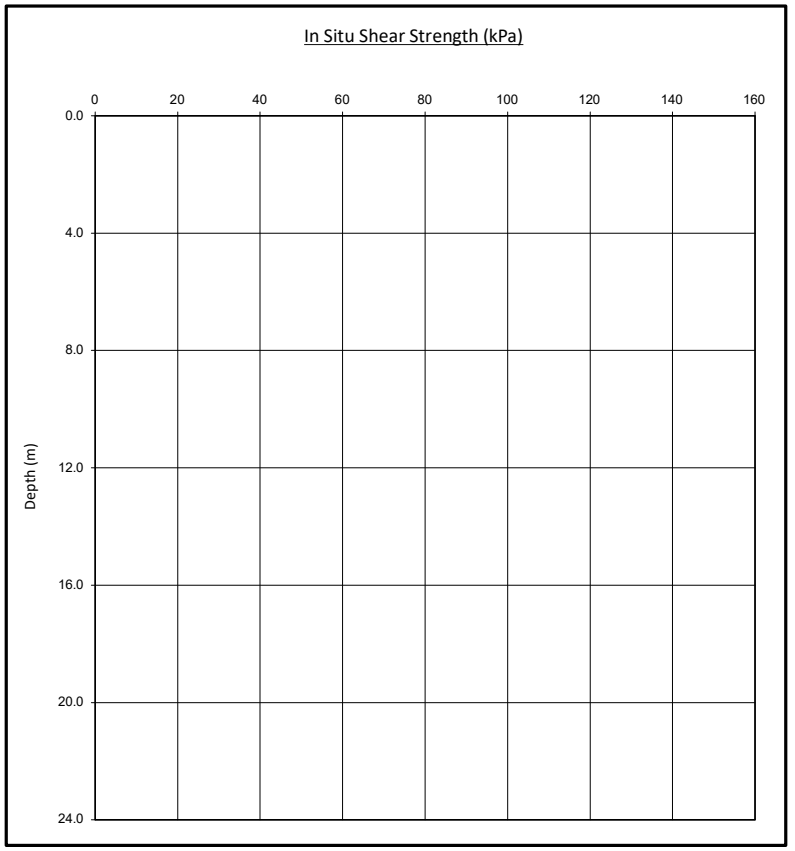
Water Content Profiles

Shear Strength Profiles

Our Ref : GEI059
Location : Bakkavor Boston (25-747)
Work carried out for: Ground & Environmental Investigation Ltd
8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

Date Sampled : 11/07/2025
Date Received : 15/07/2025
Date Tested : 15/07/2025
Date of Report : 23/07/2025





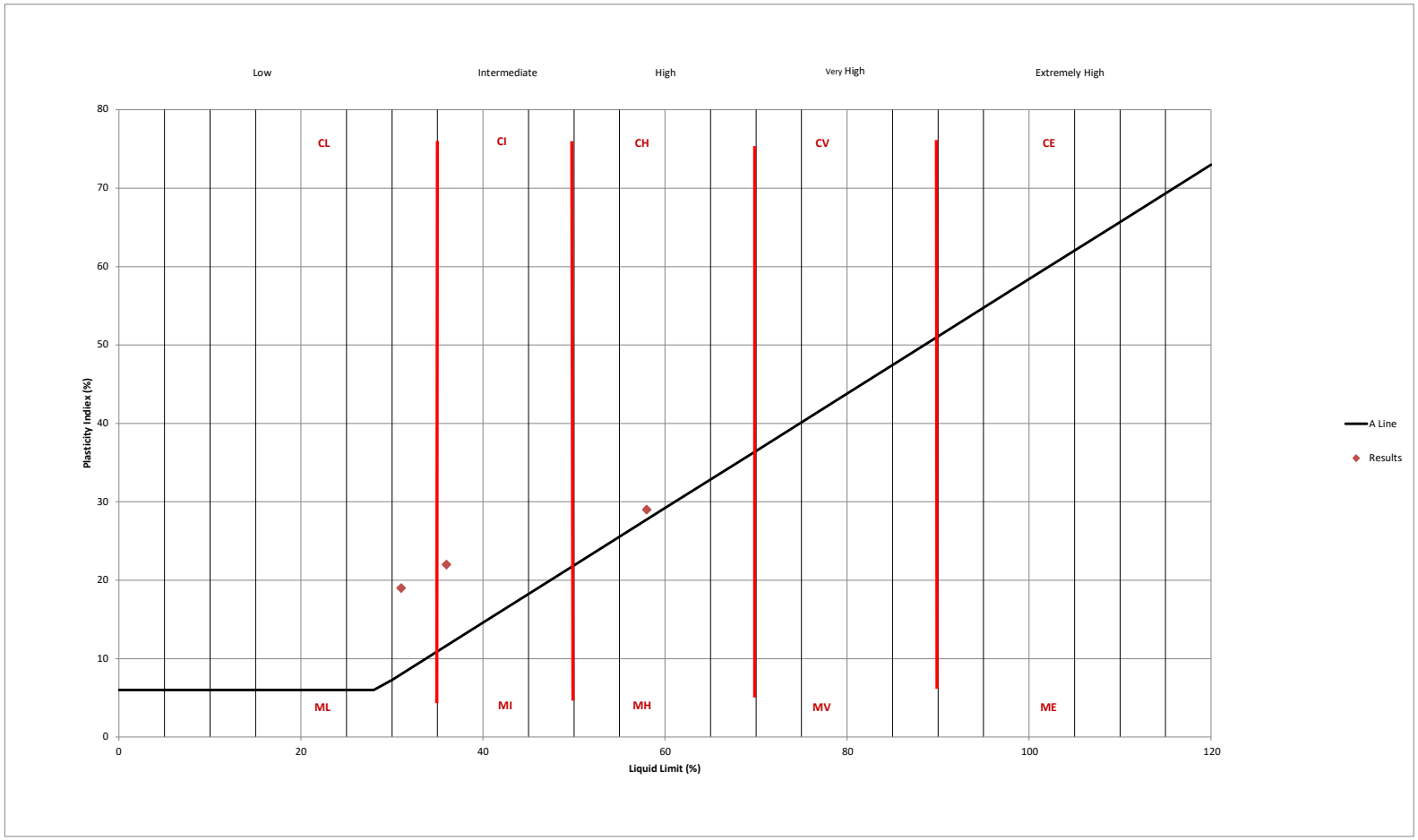
Notes
1. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clay) at shallow depths.

Note
1. Values of Shear Strength were determined in situ by use of a pilcon hand vane of which is limited to a maximum reading of 140kPa.

Plasticity Chart

Our Ref : GEI059
Location : Bakkavor Boston (25-747)
Work carried out for: Ground & Environmental Investigation Ltd
8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

Date Sampled : 11/07/2025
Date Received : 15/07/2025
Date Tested : 15/07/2025
Date of Report : 23/07/2025



Particle Si e Distribution Chart

Our Ref : GEI059

Location : Bakkavor Boston (25-747)

Work carried out for: Ground & Environmental Investigation Ltd

8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

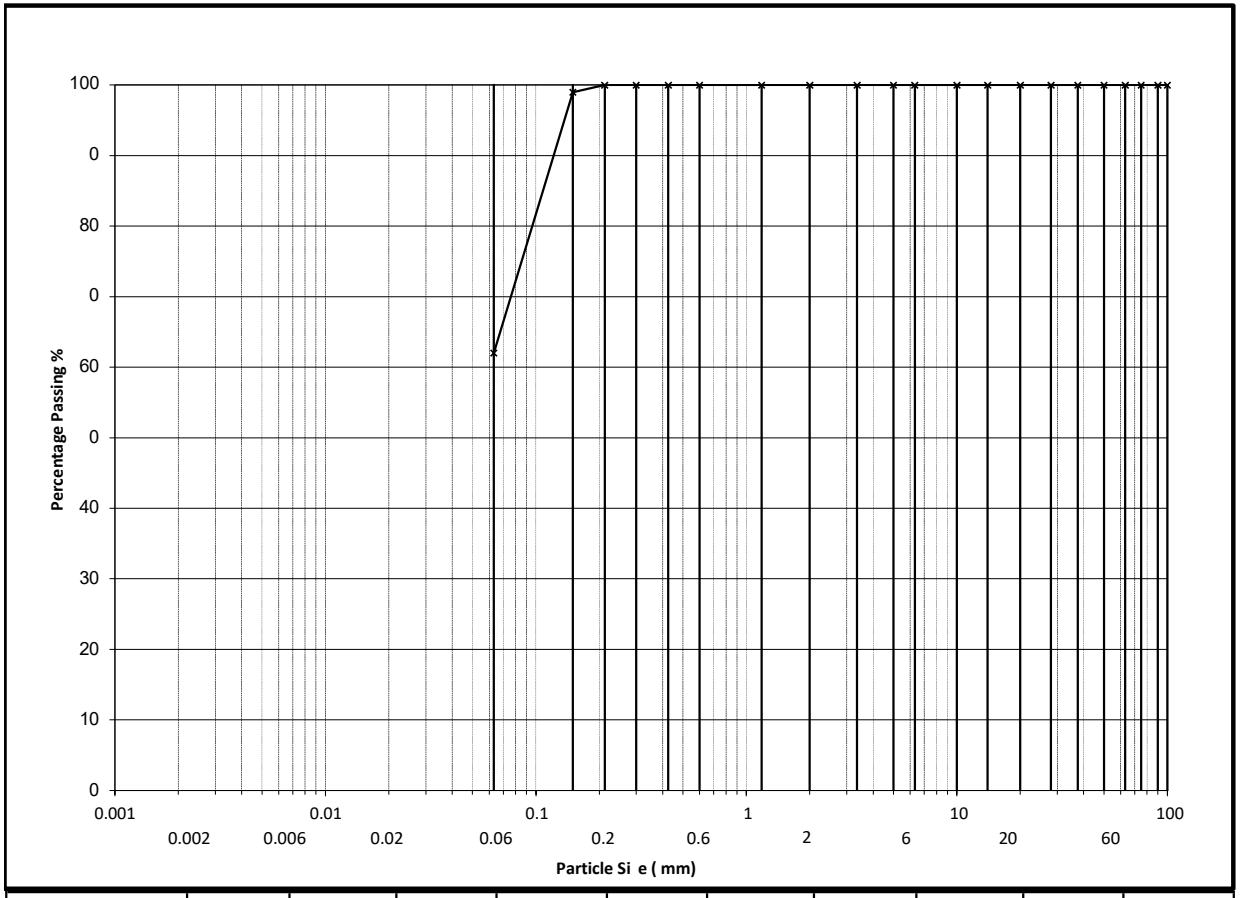
Sample	Sample Ref.	
Type	BH	Depth (m)
D	1	3.0

Date Sampled : 11/07/2025

Date Received : 15/07/2025

Date Tested : 15/07/2025

Date of Report : 23/07/2025



	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	
CLA	SILT			SAND			GRAVEL			COBBLES

Test Method

BS ISO 17892-4 : 2016 Clause 5.2

Sieve Si e (mm)	Percentage Passing
125	100
100	100
90	100
75	100
63	100
50	100
38	100
28	100
20	100
14	100
10	100
6.3	100
5.0	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.150	99
0.063	62

UKAS TESTING

28443

Particle Si e Distribution Chart

Our Ref : GEI059

Location : Bakkavor Boston (25-747)

Work carried out for: Ground & Environmental Investigation Ltd

8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

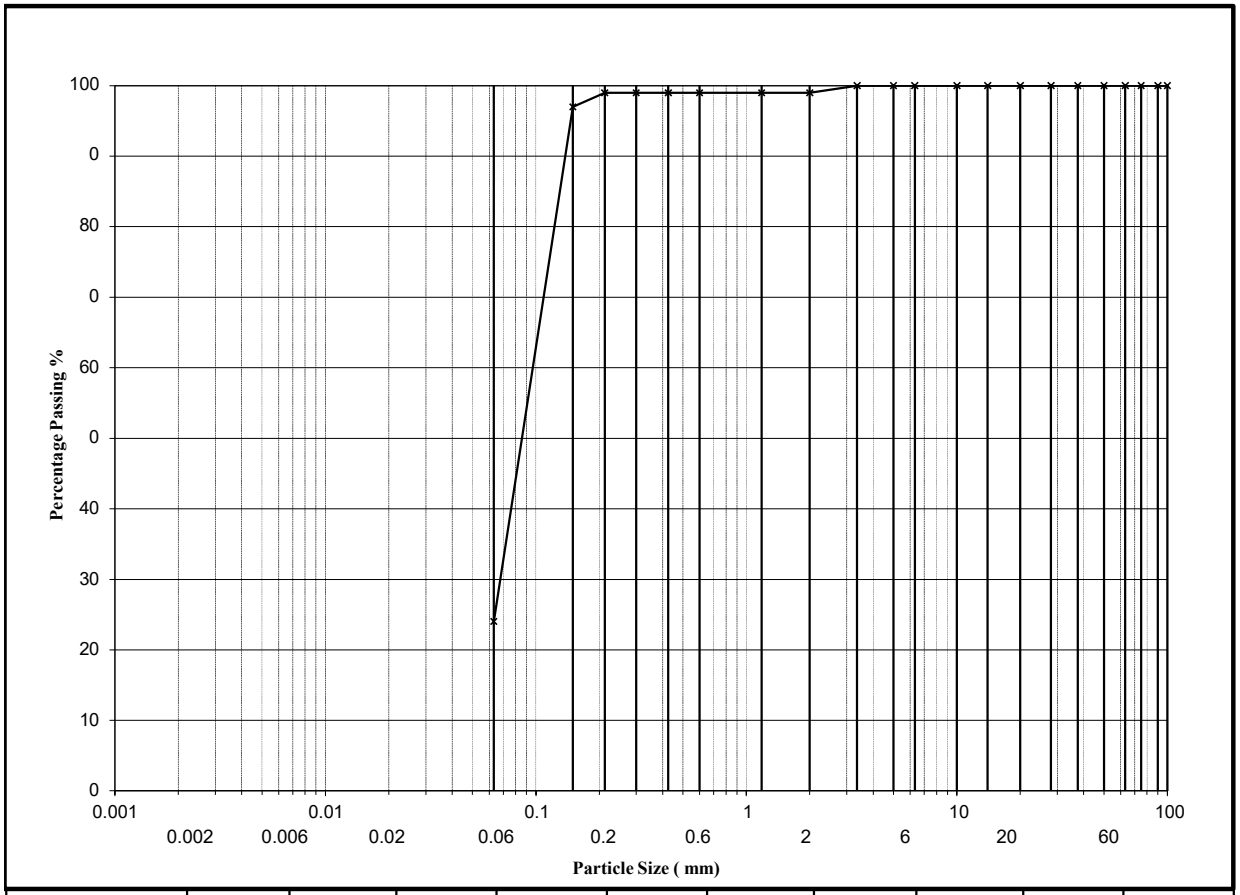
Sample	Sample Ref.	
Type	BH	Depth (m)
D	1	6.0

Date Sampled : 11/07/2025

Date Received : 15/07/2025

Date Tested : 15/07/2025

Date of Report : 23/07/2025



	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	
CLA	SILT			SAND			GRAVEL			COBBLES

Test Method

BS ISO 17892-4 : 2016 Clause 5.2

Sieve Si e (mm)	Percentage Passing
125	100
100	100
90	100
75	100
63	100
50	100
38	100
28	100
20	100
14	100
10	100
6.3	100
5.0	100
3.35	100
2.00	99
1.18	99
0.600	99
0.425	99
0.300	99
0.212	99
0.150	97
0.063	24

UKAS TESTING

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Particle Si e Distribution Chart

Our Ref : GEI059

Location : Bakkavor Boston (25-747)

Work carried out for: Ground & Environmental Investigation Ltd

8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

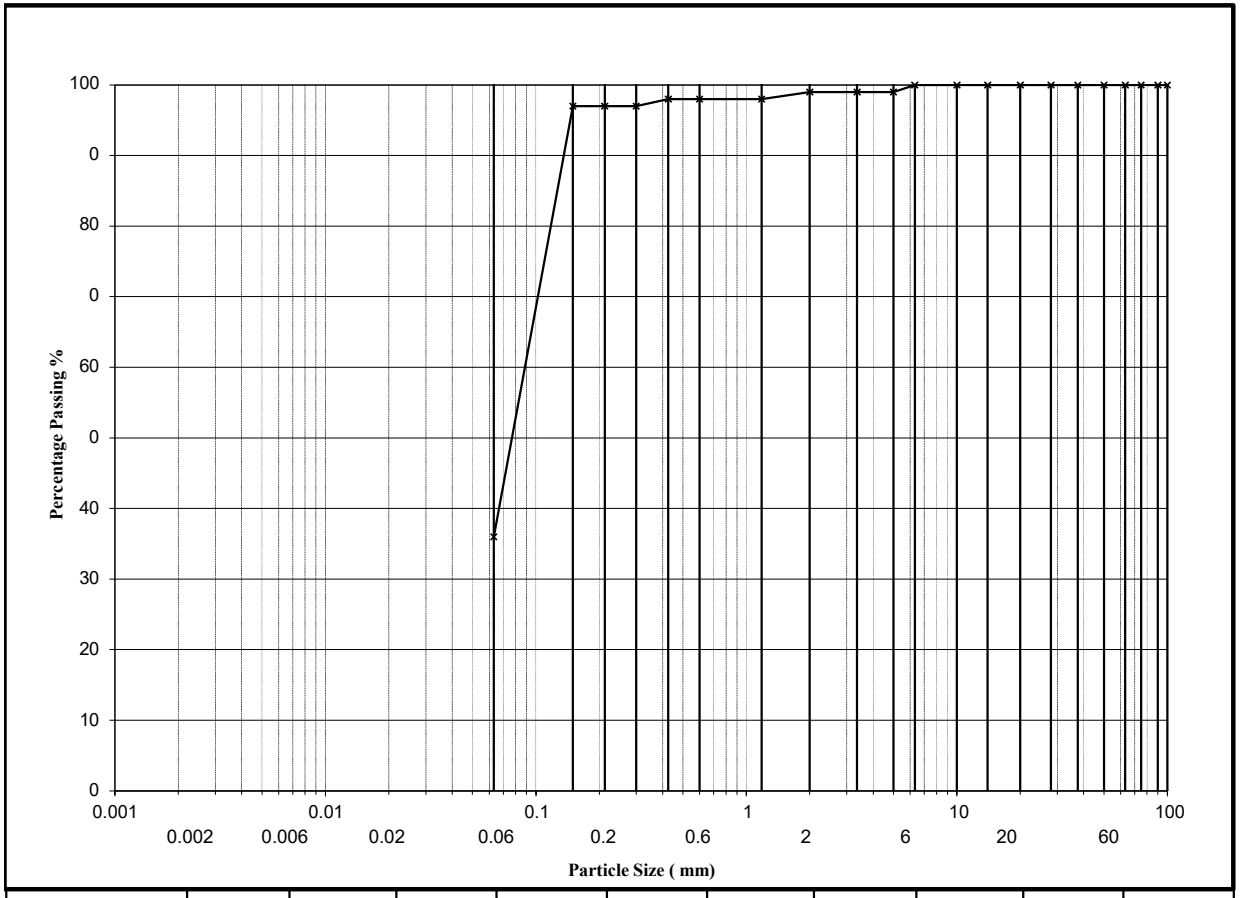
Sample	Sample Ref.	
Type	BH	Depth (m)
D	3	4.0

Date Sampled : 11/07/2025

Date Received : 15/07/2025

Date Tested : 15/07/2025

Date of Report : 23/07/2025



	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	
CLA	SILT			SAND			GRAVEL			COBBLES

Test Method

BS ISO 17892-4 : 2016 Clause 5.2

Sieve Si e (mm)	Percentage Passing
125	100
100	100
90	100
75	100
63	100
50	100
38	100
28	100
20	100
14	100
10	100
6.3	100
5.0	99
3.35	99
2.00	99
1.18	98
0.600	98
0.425	98
0.300	97
0.212	97
0.150	97
0.063	36

UKAS TESTING

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Particle Si e Distribution Chart

Our Ref : GEI059

Location : Bakkavor Boston (25-747)

Work carried out for: Ground & Environmental Investigation Ltd

8 Wapping Lane, Marton, Gainsborough, Lincolnshire, DN21 5AJ

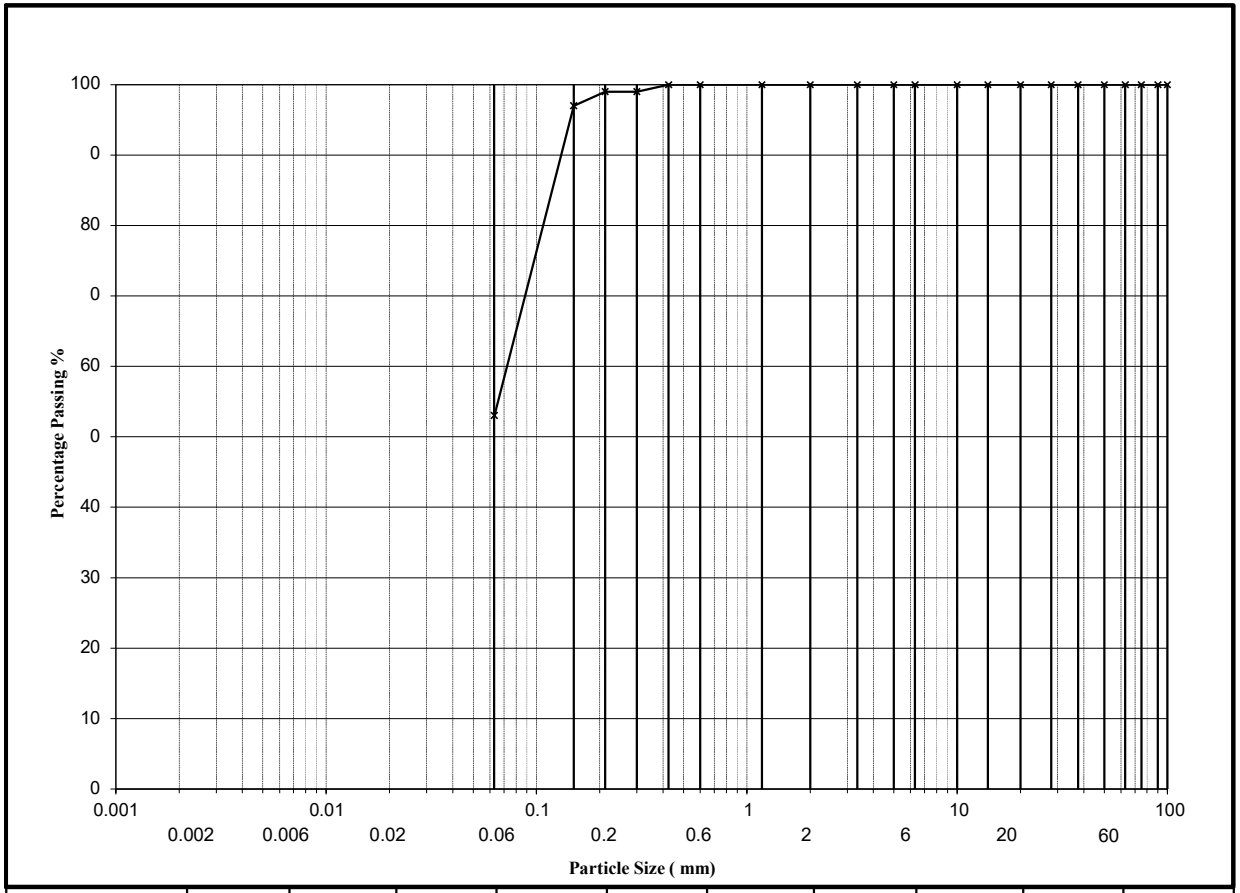
Sample	Sample Ref.	
Type	BH	Depth (m)
D	4	5.0

Date Sampled : 11/07/2025

Date Received : 15/07/2025

Date Tested : 15/07/2025

Date of Report : 23/07/2025



	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	
CLA	SILT			SAND			GRAVEL			COBBLES

Test Method

BS ISO 17892-4 : 2016 Clause 5.2

Sieve Si e (mm)	Percentage Passing
125	100
100	100
90	100
75	100
63	100
50	100
38	100
28	100
20	100
14	100
10	100
6.3	100
5.0	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	100
0.300	99
0.212	99
0.150	97
0.063	53

UKAS TESTING

28443

APPENDIX 8

ANALYTICAL TESTING RESULTS

Ground and Environmental Investigation Ltd
8 Wapping Lane
Marton
Gainsborough, DN21 5AJ
DN21 5AJ

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Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-037198

Project / Site name:	Bakkavor Boston	Samples received on:	14/07/2025
Your job number:	25-747	Samples instructed on/ Analysis started on:	14/07/2025
Your order number:	2289	Analysis completed by:	21/07/2025
Report Issue Number:	1	Report issued on:	21/07/2025
Samples Analysed:	4 soil samples		

Signed:

Arslaan Saleem
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 25-037198
Project / Site name: Bakkavor Boston
Your Order No: 2289

Lab Sample Number				613916	613917	613918	613919
Sample Reference				BH1	BH2	BH3	BH4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.50-1.00	0.50-1.00	0.50-1.00	0.50-1.00
Date Sampled				11/07/2025	11/07/2025	11/07/2025	11/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	19	18	18
Total mass of sample received	kg	0.1	NONE	0.9	0.9	0.9	0.9
Asbestos							
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ
Analysis completed	N/A	N/A	N/A	18/07/2025	18/07/2025	18/07/2025	18/07/2025
General Inorganics							
pH (L099)	pH Units	N/A	MCERTS	8.6	8.7	9.2	8.6
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	59	260	350	71
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	29.4	131	177	35.6
Organic Matter (automated)	%	0.1	MCERTS	1.1	2.4	2.4	1.4
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.07	1.7	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.27	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.18	2.1	0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.15	1.9	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.69	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.85	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.08	0.97	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.44	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.82	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.46	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.58	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	11.2	< 0.80

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Analytical Report Number: 25-037198
Project / Site name: Bakkavor Boston
Your Order No: 2289

Lab Sample Number				613916	613917	613918	613919
Sample Reference				BH1	BH2	BH3	BH4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.50-1.00	0.50-1.00	0.50-1.00	0.50-1.00
Date Sampled				11/07/2025	11/07/2025	11/07/2025	11/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.9	9.7	11	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	68	61	72	100
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.56	0.48	0.62	0.64
Boron (water soluble)	mg/kg	0.2	MCERTS	1	0.9	1.4	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	17	22	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.5	11	23	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.2	15	28	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	12	16	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	1.2	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	26	33	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	43	84	50
Petroleum Hydrocarbons							
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	9.7	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
VOCs							
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 25-037198
Project / Site name: Bakkavor Boston

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
613916	BH1	None Supplied	0.50-1.00	Brown clay and sand with gravel
613917	BH2	None Supplied	0.50-1.00	Brown clay and loam with gravel
613918	BH3	None Supplied	0.50-1.00	Brown clay and loam with gravel
613919	BH4	None Supplied	0.50-1.00	Brown clay and sand with gravel

Analytical Report Number : 25-037198
Project / Site name: Bakkavor Boston

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

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Analytical Report Number : 25-037198
Project / Site name: Bakkavor Boston

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-037200

Project / Site name:	Bakkavor Boston	Samples received on:	14/07/2025
Your job number:	25-747	Samples instructed on/ Analysis started on:	14/07/2025
Your order number:	2289	Analysis completed by:	21/07/2025
Report Issue Number:	1	Report issued on:	21/07/2025
Samples Analysed:	1 10:1 WAC sample		

Signed:

Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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Some records may be kept for longer according to other legal/best practice requirements.

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Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 25-037200
Project / Site name: Bakkavor Boston
Your Order No: 2289

Lab Sample Number				613928
Sample Reference				WAC1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				11/07/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	19
Total mass of sample received	kg	0.1	NONE	1
General Inorganics				
pH (L005B)	pH Units	N/A	MCERTS	8
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.4
Loss on Ignition @ 450°C	%	0.2	MCERTS	3.3
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	25
Speciated PAHs				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.09
Pyrene	mg/kg	0.05	MCERTS	0.08
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.06
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05
Total PAH				
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85
Petroleum Hydrocarbons				
Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	< 10
VOCs				
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0
Total BTEX	µg/kg	10	MCERTS	< 10

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Analytical Report Number: 25-037200
Project / Site name: Bakkavor Boston
Your Order No: 2289

Lab Sample Number				613928
Sample Reference				WAC1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				11/07/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
PCBs by GC-MS				
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Waste Acceptance Criteria Analytical Results

Report No:	25-037200						
					Client: Ground and		
Location	Bakkavor Boston						
Lab Reference (Sample Number)	613928				Landfill Waste Acceptance Criteria Limits		
Sampling Date	11/07/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC1						
Depth (m)	None Supplied						
Solid Waste Analysis							
TOC (%)**	1.4				3%	5%	6%
Loss on Ignition (%) **	3.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	25				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.018			0.18	0.5	2	25
Barium *	0.0131			0.131	20	100	300
Cadmium *	0.0001			< 0.00100	0.04	1	5
Chromium *	0.0015			0.015	0.5	10	70
Copper *	0.014			0.14	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00933			0.0933	0.5	10	30
Nickel *	0.0035			0.035	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.005			0.05	4	50	200
Chloride *	12			120	800	15000	25000
Fluoride*	0.76			7.6	10	150	500
Sulphate *	11			110	1000	20000	50000
TDS*	84			840	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	14.3			143	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1						
Dry Matter (%)	81						
Moisture (%)	19						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Analytical Report Number : 25-037200
Project / Site name: Bakkavor Boston

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
613928	WAC1	None Supplied	None Supplied	Brown clay and sand with gravel

Analytical Report Number : 25-037200
Project / Site name: Bakkavor Boston

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
One stage WAC 10:1 leachate preparation	One stage batch test at a liquid to solid ratio of 10 L/kg	BS EN 12457-2-2002	L043B	W	ISO 17025
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025

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Analytical Report Number : 25-037200
Project / Site name: Bakkavor Boston

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Sample Deviation Report

Analytical Report Number : 25-037200
Project / Site name: Bakkavor Boston

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WAC1	N/A	L	613928	b	One stage WAC 10:1 leachate preparation	L043B	b
WAC1	N/A	S	613928	b	BTEX and/or Volatile organic compounds in soil	L073B	b
WAC1	N/A	S	613928	b	PCB's By GC-MS in soil	L027B	b
WAC1	N/A	S	613928	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b

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APPENDIX 9

GUIDELINES ON CONTAMINATION LEVELS

Human Health

CLEA Soil Guideline values (SGV)

The UKs primary contaminated land guidance is contained within the Contaminated Land Exposure Assessment (CLEA) framework. Within this framework a number of Soil Guideline Values (SGVs) were published for key contaminants along with toxicological guideline values relating to intake thresholds. The soil guideline values provided by the CLEA model represent intervention values for end uses based upon potential human exposure and soil concentrations of a contaminant above these values might represent an unacceptable risk to the health of the site users. The Environment Agency had an ongoing programme of SGV publication with associated toxicological information for key contaminants. Where SGVs are available then they should be used as the basis for any human health risk assessment.

All CLEA SGVs were withdrawn for use by the Environment Agency in 2008 whilst they are under review and pending the availability of new toxicological data. To date, new SGV values have been set for benzene, toluene, ethylbenzene and xylene and mercury and selenium. In the absence of the new SGVs and toxicological report data, GEI have used appropriate screening tools or Generic Assessment Criteria Levels as assessment criteria guidelines for those determinands not currently assigned SGVs. It should be noted that the former SGVs for metals were in general agreement with those site specific levels generated by RBCA and other similar computer model based risk assessment tools.

The GEI screening assessment of contaminants within samples has been carried out using these model generated values in the absence of any other values or guidelines. The version of the CLEA model, v1.06, was used. The published SGVs are shown below. Nickel SGV has been withdrawn (2015) pending an assessment of the toxicological data used in the model for nickel. Published SGV values.

	Soil Guideline Value (mg kg^{-1})		
Land use	**Residential**	**Allotment**	**Commercial**
Inorganic arsenic	32	43	640
Nickel	130	230	1,800
Cadmium	10	1.8	230
Phenol	420	280	3200
Elemental Hg	1	26	26
Inorganic Hg	170	80	3600
Methyl Hg	11	8	410
Selenium	350	120	13,000
Benzene	0.33	0.07	95
Toluene	610	120	4400
Ethylbenzene	350	90	2800
o-Xylene	250	160	2600
r-Xylene	240	180	3500
m-Xylene	230	160	3200

Based on a sandy loam soil as defined in Environment Agency (2009b) and 6% SOM.

DEFRA Category four screening level (C4SL)

In addition to the SGVs, guideline screening values proposed in the DEFRA document SP1010-Development of Category 4 Screening Levels for Assessment of Land affected by Contamination Final Project Report (C4SL) are considered along with the suitable for use levels (S4USL) derived by the Chartered Institute of Environmental Health (CIEH) in partnership with the Land Quality Management Organization (LQM). The screening levels are given for residential, commercial, allotment or public open space end uses.

PARAMETER	Residential		Commercial	Allotment	Public open Space near residential POS_{resi}	Public park land POS_{park}	Sources
	With Plant uptake	Without Plant uptake					
Inorganics - mg/kg unless stated							
Arsenic (inorganic)	37	40	640	49	79	170	DEFRA C4SL
Beryllium	1.7	1.7	12	35	2.2	63	LQM/S4USL
Boron	290	11,000	240,000	45	21,000	46,000	LQM/CIEH
Cadmium	22	150	410	3.9	220	880	LQM/S4USL
Chromium III	910	910	8,600	18,000	1,500	33,000	LQM/CIEH
Chromium VI	21	21	49	170	21	250	LQM/S4USL
Copper	2,400	7,100	68,000	520	12,000	44,000	LQM/CIEH
lead	200	310	2,300	80	630	1,300	DEFRA C4SL
Mercury (Inorganic)	40	56	1,100	19	120	240	LQM/CIEH
Nickel	180	180	980	230	230	3,400	LQM/CIEH
Selenium	250	430	12,000	88	1,100	1,800	LQM/CIEH
Vanadium	410	1,200	9,000	91	2,000	5,000	LQM/CIEH
Zinc	3,700	40,000	730,000	620	81,000	170,000	LQM/CIEH
Total sulphate	2400	2400	2400	2400	2400	2400	BRE (2005)
Water-soluble sulphate (g/l)	0.5	0.5	0.5	0.5	0.5	0.5	BRE (2005)
pH	<5	<5	<5	<5	<5	<5	-

CLEA does not currently provide guidance for total Polycyclic Aromatic Hydrocarbons (PAHs). A standalone Defra C4SL for benzo(a)pyrene has been assigned and is shown below. In addition, the Chartered Institute of Environmental Health (CIEH) in partnership with the Land Quality Management Organization (LQM) used CLEA software to derive Generic Assessment Criteria (GAC) and Assessment Sub Criteria (ASC) for the following PAH compounds:

PARAMETER	Residential						Commercial			Allotment			POS resi	POS park	Source
	With Plant uptake			Without Plant uptake											
SOM %	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6			
Organics - mg/kg unless stated															
Acenaphthene	200	490	1080	2000	3600	5200	75000	92000	100000	34	85	202			CLEA/LQM CIEH
Acenaphthylene	170	400	900	2000	3600	5200	76000	92000	100000	28	68	163			CLEA/LQM CIEH
Anthracene	2300	5400	10700	30000	34000	36000	520000	530000	540000	380	947	2230			CLEA/LQM CIEH
Benzo(a)anthracene	7.5	11	13	12	14	15	170	170	180	2.9	6.5	13			CLEA/LQM CIEH
Benzo(a)pyrene C4SL			5			5.3			77			5.7	10	21	DEFRA C4SL
Benzo(a)pyrene	2.2	2.7	3	3.2	3.2	3.2	35	35	36	3.6	3.7	3.7			CLEA/LQM CIEH
Benzo(b)fluoranthene	2.6	3.3	3.7	3.9	4	4	44	45	45	1	2.2	3.9			CLEA/LQM CIEH
Benzo(g,h,i)perylene	315	340	350	360	360	360	3900	4000	4000	290	480	646			CLEA/LQM CIEH
Benzo(k)fluoranthene	77	93	100	110	110	110	1200	1200	1200	37	76	129			CLEA/LQM CIEH
Chrysene	15	22	27	30	31	32	350	350	350	4.1	9.5	19			CLEA/LQM CIEH
Dibenzo(a,h)anthracene	0.24	0.28	0.3	0.31	0.32	0.32	3.5	3.6	3.6	0.14	0.27	0.44			CLEA/LQM CIEH
Fluoranthene	280	560	890	1500	1600	1600	23000	23000	23000	52	127	288			CLEA/LQM CIEH
Fluorene	165	390	850	2200	3400	4200	60000	67000	70000	27	67	158			CLEA/LQM CIEH
Indeno(1,2,3-cd)pyrene	27	36	41	45	46	46	500	510	510	9.5	21	40			CLEA/LQM CIEH
Naphthalene	1	2.3	5.5	1	2.4	6	100	260	600	4	9.8	23			CLEA/LQM CIEH
Phenanthrene	95	220	440	1300	1400	1500	22000	22000	23000	15	38	90			CLEA/LQM CIEH
Pyrene	620	1200	2000	3700	3800	3800	54000	54000	55000	11	271	620			CLEA/LQM CIEH

Petroleum Hydrocarbons represent a complex situation being a mixture of a range of compounds, the relative concentrations of which may change over time.

As discussed above, Generic Assessment Criteria (GAC) for total petroleum hydrocarbons according to both their molecular weight and chemical structure and also for a range of soil organic matter (SOM) content values have been derived using CLEA software.

The LQM CIEH GACs are again presented according to their soil organic matter content and proposed end use of the land. The generic assessment criteria for a 1%, 2.5% and 6% SOM content are tabulated below and presented according to the proposed end use.

	LQM CIEH Generic Assessment Criteria (mg/kg dry weight soil)											
	Residential						Allotment Land Use			Commercial Land Use		
	With Plant Uptake			Without Plant Uptake								
SOM %	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6
Aliphatic												
EC 5 – 6	24	40	80	24	40	80	752	1730	3900	2400	4000	8000
EC > 6 – 8	52	110	250	52	110	250	2304	5580	13000	5200	11000	25000
EC > 8 – 10	13	30	70	13	30	70	321	770	1700	1300	3000	7000
EC > 10 – 12	60	150	360	60	150	360	2153	4300	7150	6000	15000	32000
EC > 12 – 16	500	1200	2600	500	1200	2600	10800	12400	13200	42000	72000	90000
EC > 16 – 35	41000	69000	94000	41000	69000	94000	240000	260000	260000	140000	160000	180000
EC > 35 – 44	41000	69000	94000	41000	69000	94000	240000	260000	260000	140000	160000	180000
Aromatic												
EC 5 – 7 (benzene)	50	110	240	155	300	630	12	25	57	15000	28000	55000
EC > 7 – 8 (toluene)	100	240	550	370	800	1800	21	50	117	33000	68000	130000
EC > 8 – 10	20	50	110	20	53	125	8.6	21	50	2000	5000	120000
EC > 10 – 12	63	150	340	120	280	650	12.5	31	74	11000	22000	31000
EC > 12 – 16	140	320	660	1100	1900	2300	23	57	134	35000	37000	38000
EC > 16 – 21	260	540	930	1800	1900	1900	47	112	260	28000	28000	28000
EC > 21 – 35	1100	1400	1700	1900	1900	1900	370	820	1500	28000	28000	28000
EC > 35 – 44	1100	1400	1700	1900	1900	1900	370	820	1500	28000	28000	28000

													POS_{resi}	POS_{park}
Benzene DEFRA C4SL	0.06	0.13	0.3 (0.87)	0.16	0.3	0.64 (3.3)	0.016	0.033	0.073 (0.18)	15	28	57 (98)	140	230
Toluene	104	240	550	370	830	1800	22	50	117	33000	68000	130000		
Ethylbenzene	30	62	150	34	81	190	16	38	91	3200	7000	16000		
o-xylene	30	70	170	40	90	200	28	67	160	3700	8000	19000		
m-xylene	30	70	160	34	80	190	30	74	170	3400	8000	18000		
p-xylene	30	70	160	33	80	180	28	69	160	3200	8000	17000		

TPH values calculated using CLEA v1.06 with parameter changes in accord with DEFRA (2014) C4SL and LQM/CIEH (2015)

Inert Material

The limit values for inert waste are given in the EC Landfill Directive 1999/31/EC as applied under the Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019 (*SI 2019/39*) and as defined by the council decision establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC(2003/33/EC).

The regulations and associated guidance provide waste acceptance criteria, which set the limits of contaminants permitted in various waste categories going to landfill. These criteria are of particular use where CLEA guidance or DEFRA Screening values has not yet been provided.

Inert waste is defined as waste which contains insignificant potential for pollution and does not endanger the quality of surface water or groundwater. The Landfill Directive states that inert waste will not adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health.

For risk assessment purposes we would consider that any materials (soils) containing concentrations of potential contaminants that would result in them being classified as inert would be considered as uncontaminated and therefore representing a low risk to human health.

Similarly, such material would not be considered to represent a significant risk to water resources.

Where CLEA or Defra screening values exist, these would always be used in preference to inert waste values when assessing risks to human health.

Selected inert waste acceptance criteria as given in Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills for the Landfill Directive are given below.

Landfill acceptance criteria for inert waste (mg/kg)	
Total organic carbon (TOC)	30,000
BTEX compounds	6
Mineral oils (C10 – C40)	500
PCBs	1
PAH	100

Risks to Plants

The CLEA framework does not provide a method for the assessment of phytotoxic risks to plants. However maximum permissible concentrations have been published in the Sludge (Use in Agriculture) Regulations 1989 (SI 1989, No. 1263). This legislation enforces the provisions of the EC Directive 86/278/EEC for potentially toxic elements (PTEs) on soils for agricultural use where sewage sludge has been applied (see table below). These limits relate to the potential risk to plants and not human health for which CLEA is the overriding risk assessment model.

Maximum permissible concentration in agricultural soils following sewage sludge application (mg/kg).				
	pH 5.0<5.5	**pH 5.5<6.0**	**pH 6.0-7.0**	**pH >7.0**
Zinc	200	250	300	450
Copper	80	100	135	200
Nickel	50	60	75	110

Risks to buried concrete

The potential risks to buried concrete can be assessed by reference to the BRE Special Digest 1 (SD1) entitled 'Concrete in Aggressive Ground'. This document provides a methodology for the specification of concrete based on the ground conditions encountered and is based upon chemical analysis and associated factors (e.g. groundwater). The guidance provides a Design Sulphate Class (DS) based upon the ground conditions and it is considered that a low concentration of sulphate and pH (i.e. DS – 1 and DS – 2) is considered to represent a low risk to buildings.

Risks to buried services

In addition, where water is supplied in plastic pipes which could come into contact with contaminated ground then this can lead to premature failures, resulting in leakage and loss of water quality. Risks to water supply pipes are assessed using guidance published by the UK Water Industry Research (UKWIR) entitled '*Guidance for the Selection of Water Pipes to be used in Brownfield Sites'* (Report Ref. No. 10/WM/03/21). This is known as the UKWIR guidance.

Previous guidance from WRAS has been withdrawn but may still be in use by certain water supply companies. In general water companies have adopted a common set of guidelines as given in the ***Contaminated Land Assessment Guidance from January 2014.***

Additional threshold values for determining pipe material have also been published by certain water supply companies. If these threshold values are exceeded then consideration should be given to the selection of pipe material or to the use of barrier pipes. The UKWIR threshold values, together with those of certain water supply companies are presented in the table below for a range of potential hazards.

Substance[1]	Water UK Guidance	Thames Water
Total VOC	0.5	-
Total BTEX & MTBE	0.1	0.1 or either
Total SVOC	2	-
EC5-EC10 aliphatic and aromatic hydrocarbons	2	-
EC5-EC12 aliphatic hydrocarbons		0.5
EC5-EC12 aromatic hydrocarbons		0.5
EC10-EC16 aliphatic and aromatic hydrocarbons	10	-
EC12-EC21 aliphatic hydrocarbons		10
EC12-EC21 aromatic hydrocarbons		10
EC16-EC40 aliphatic and aromatic hydrocarbons	500	-
EC21-EC35 aliphatic hydrocarbons		500
EC21-EC35 aromatic hydrocarbons		500
Phenols	2	5*
Cresols and chlorinated phenols	2	2
Naphthalene	**-**	**5**
Ethers	0.5	-
Nitrobenzene	0.5	-
Ketones	0.5	-
Aldehydes	0.5	-
Amines	0	-
Corrosives pH and EC	# ##	

All units mg kg-1 in soil;
pH <7 for wrapped steel, pH <5 wrapped ductile iron and copper and ##EC >400µS/cm;
*Phenol limit at 2mg/kg in presence of BTEX.