GeoDyne

Geotechnical &
Environmental
Consultants

Millfield Nursery
Spalding

Combined Phase I Desk Study & Phase II Exploratory Investigation For Seagate Homes

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GeoDyne

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Project No: D38185		**Date: 20th August 2019**	
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EXECUTIVE SUMMARY

Ground Conditions	Localised topsoil with average thickness of 0.30m. Localised Made Ground up to 0.85m begl. Natural Strata typically comprised soft (locally very soft or firm) silty CLAY and / or clayey SILT, with PEAT. Bedrock geology from depths in excess of 12.40m begl.
Foundation Design	Piled foundation solution anticipated.
Floor Slabs	Assuming piled foundations, Engineer designed suspended slabs likely to be required.
Ground Gas	Further works required to determine level of protection.
Radon	No radon precautions required.
Building Near Trees	Soils of high volume change potential should be assumed for design purposes.
Water	Dewatering should be anticipated for excavations advanced to depths greater than approximately 1.0m begl and locally shallower.
Excavations / Stability	All excavations likely to require trench support for stability and health and safety reasons. The assessment of excavations and provision of support will be the responsibility of the contractor on site.
Sulphate Classification	Design Sulfate Class DS-2 and an Aggressive Chemical Environment for Concrete classification of AC-2.
Coal Mining	No coal mining precautions required.
CBRs	A CBR value of less than 2% can be anticipated within the Made Ground and a CBR value of between 2% and 4% can be anticipated within the shallow Natural Strata, subject to confirmation by in-situ testing.
Surface Water Drainage	The site is unlikely to be suitable for the use of soakaways.
Contamination Assessment	Localised hydrocarbon impaction in some areas of the site.
Remediation Proposals	Subject to further works.
Off Site Disposal	If off-site disposal is required, a separate contamination assessment may be required to include bespoke leachate analysis.
Flood Risk	The site is at risk from flooding.
Unforeseen Circumstances	Should any areas of potentially contaminated soil be encountered during site construction works we would recommend consultation with GeoDyne Limited to ensure that our recommendations continue to apply
Asbestos	A pre-demolition asbestos survey should be undertaken.
Utilities	Prior to development, we would recommend that a copy of this report is supplied to the appropriate utility companies, and that their recommendations relating to appropriate supply pipes are adhered to.
Construction Workers	A copy of this report should be included in the site health and safety file, and site workers should be made fully aware of the sites setting.
Licenses, Permits etc.	The Contractor/Developer is responsible for, and must ensure that, all necessary licenses, permits, plans, registrations and approvals are in place prior to commencing with the earthworks at the site.

1.0 INTRODUCTION

1.1 Introduction

GeoDyne Limited has been appointed by the Client, Seagate Homes, to undertake a Combined Phase I Desk Study and Phase II Exploratory Investigation of land located to the southwest of Spalding, Lincolnshire.

1.2 Scope of Works

The scope of the Phase I Desk Study included the following:

- Detailed site walkover.
- Review of historical and contemporary Ordnance Survey publications.
- Review of the sites geology, hydrology and hydrogeology.
- Review of commissioned Landmark geological maps.
- Review of the sites coal mining status.
- Review of the sites radon status.
- Review of a commissioned Landmark Envirocheck Report.
- A written enquiry to the Petroleum Licensing Officer (PLO).

Phase II Exploratory Investigation works comprised:

- A sub-contracted utility avoidance scan of proposed exploratory hole locations.
- A series of window sample, hand auger and cable percussive boreholes across accessible areas of the site.
- Geotechnical and environmental soils testing.
- A programme of ground gas and water level monitoring.

1.3 Project Understanding

We understand that it is proposed to redevelop the site for a low-rise residential end-use incorporating private gardens, public open space and a balancing pond. A plan showing the currently proposed site layout (provided by the Client) has been reproduced in Appendix XIII (Figure No. D38185/06). This understanding has formed the basis of our report.

For the purposes of the assessments detailed herein, we have adopted a residential with plant uptake end-use (where applicable) for the proposed development. If our understanding is incorrect (for example if a commercial end-use was proposed), it would be necessary to review our report to ensure it continues to apply.

1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made based on the findings of the investigation. Where comments are made based on information obtained from third parties, GeoDyne Limited assumes that all third party information is true and correct. No independent action has been undertaken to validate the findings of third parties, unless specifically stated.

This report has been prepared in accordance with our understanding of current good practice. However changes to good practice, guidance or legislation may necessitate revision of this report after the date of issue.

We would note that the scope of laboratory testing and our assessment of the chemical soil test results have been primarily focussed on potential risks to human health. Our scope of chemical testing and assessment has not been specifically designed to fulfil any landfill or waste disposal company's requirements to suitably characterise any waste soil arising during future redevelopment of the site, or accurately determine disposal costs for any waste soil, although it will assist in such an assessment.

GeoDyne Limited has prepared this report for the sole use and reliance of the Client, Seagate Homes, in accordance with our Standard Conditions and Limitations (included in Appendix XIV). This report may not be used or relied upon by any unauthorised third party without the explicit written agreement of GeoDyne Limited.

1.5 Confidentiality

The risk assessment herein remains the intellectual property and trade secret of GeoDyne Limited. The information contained within this report must not be disclosed or divulged to any commercial Consultant or other third party without the prior written agreement of GeoDyne Limited.

2.0 SITE DESCRIPTION & HISTORY

2.1 Site Description

The site comprises an irregular shaped parcel of land located approximately 3km to the southwest of Spalding town centre in Lincolnshire. The site may be located centred around approximate Ordnance Survey National Grid Reference 523440E 320020N. A site location plan (Figure No. D38185/01) is included in Appendix I. The site covers an area of approximately 4.7 hectares.

At the time of our works (March 2019), the majority of the site generally comprised an operating garden nursery. The southern area of the site comprised a horse paddock (grass field), with a residential property and associated gardens to the paddocks east. A hedgerow lay between the paddock and the nursery. The topography of the site was noted to be sensibly level.

Large metal framed glasshouses, used to grow plants, were located across much of the site. Open areas around the glasshouses were variously surfaced with hardstanding (typically macadam or concrete) and soft landscape.

A number of smaller outbuildings, typically of brick construction, were located in the southern half of the site. Some of these buildings incorporated suspected asbestos containing materials (ACMs). The buildings generally appeared to be used for storage associated with the nursery. One of the buildings appeared to comprise a possible former boiler house. The outbuildings situated towards the central western area of the site showed evidence of former above ground fuel storage tank(s) (ASTs) in two locations. An in-situ AST was noted adjacent to the larger commercial premises building (empty former garage / warehouse type facility and currently occupied offices) in the southwest of the site. An area of mown grass, sloping up towards the west, was located between this building and the road to the sites west.

A partially demolished derelict windmill was located in the northwest of the site, adjacent to the western site boundary.

The site was typically surrounded by both a variety of fencing and mature conifer trees.

The site was bordered to the east (beyond an open ditch) and west by two roads (Cradge Bank and Spalding Common). Where the western site boundary was set back from the road, residential properties and a care home were situated between the western site boundary and Spalding Common. Further residential properties were located to the immediate north of the site and beyond the road to the west.

Arable farmland bordered the site to the south, and was also present across much of the wider geographic area. A narrow strip of pastoral farmland lay between Cradge Bank and the River Welland to the east of the site. This land rose towards the east to form an embankment type feature, indicative of landscaped topography associated with flood defence.

The Annotated Site Plan in Appendix II of this report (Figure No. D38185/02) shows the main features of the site and immediate surrounding area. General views of the site are included on the plan in Appendix III of this report (Figure No. D38185/03). Further site views are shown on the plates presented in Appendix XII (Plate Nos. 15 to 18).

2.2 Site History

The historical and contemporary Ordnance Survey publications included within the Landmark Envirocheck report have been reviewed by GeoDyne to establish the history of the site and its environmental setting.

The historical Ordnance Survey maps are included as Appendix IX of this report. It should be noted that the site boundaries marked on the historical sheets within the Envirocheck report appear to 'shift' on several of the maps. This is due to Envirocheck transposition and scaling algorithm inaccuracies.

The key findings of the historical search are summarised in Table 1.

TABLE 1 – HISTORICAL PUBLICATION DATA

Date	Features on Site	Features off Site
1880s	• The site generally comprises open fields (presumably farmland). • A *'Windmill'* is located adjacent to the western site boundary.	• The site is generally surrounded by a continuation of the open farmland, locally with open ditches. One of the open ditches appears to border the site to the north, with a further ditch bordering part of the eastern site boundary. • The site is bordered to the east and west by roads. • Small buildings (locally with *'Pumps'*, and possibly associated with the windmill), are located to the immediate northwest of the site. • The *'River Welland'* is shown approximately 70m to the east of the site. A raised embankment is located between the site and the river. • Residential properties are shown approximately 100m to the southwest of the site and Ash Holt Farm is situated approximately 100m to the south. • An area containing ponds and marshy ground labelled as '*Brick Field*' and '*Draining Pump'* is indicated from approximately 175m to the north of the site. The closest pond feature is shown approximately 225m from the site. • A railway line runs approximately 220m to the northwest of the site.
1890s	• No maps available for viewing.	• No maps available for viewing.
1900s	• A small building is located adjacent to the western site boundary.	• An orchard is shown from approximately 15m to the northwest of the site.
1910s & 1920s	• No maps available for viewing.	• No maps available for viewing.
1930s	• The small building formerly located adjacent to the western site boundary is no longer shown. • Two small buildings are shown to the immediate north of the windmill with a '*Pump'* adjacent.	• The open ditch which appeared to formerly border the site to the north is no longer identified (presumed to have been infilled). • The majority of the ponds to the north of the site are no longer shown, with only a small pond remaining approximately 275m from the site. Residential housing has been constructed in the area of the former ponds. • Residential properties are shown from approximately 120m to the north and northwest of the site.
1940s	• No maps available for viewing.	• No maps available for viewing.

TABLE 1 – HISTORICAL PUBLICATION DATA		
Date	Features on Site	Features off Site
1950s	• Two large buildings are shown in the southwest of the site. • One of the buildings adjacent to the windmill is no longer shown. • The windmill is labelled *'disused'*.	• The surrounding area remains essentially unchanged.
1960s	• Further large buildings (possible glasshouses), and smaller outbuildings with tracks, have been constructed in the south and northwest of the site. The buildings are collectively called *'Millfield Nurseries'*. • A residential property has been constructed in the southeast of the site.	• The embankment between the site and the River Welland appears to have been enlarged.
1970s	• The buildings in the southwest of the site appear to have been reconfigured and include a new building to the west of the glasshouses.	• A building has been constructed to the immediate southwest of the site. • A *'Sewage Pumping Station'* is located approximately 150m to the southwest of the site. • A small '*Works*' is indicated approximately 230m to the north of the site in part of the area formerly occupied by a pond.
1980s	• The two buildings in the northwest of the site have been replaced by a large glasshouse. • A further large glasshouse has been constructed in the central area of the site. • *'Tanks'* are shown in the central western area of the site. (Mapping incomplete)	• A residential property has been constructed to the immediate west of the site. (Mapping incomplete)
1990s	• The site remains essentially unchanged.	• The surrounding area remains essentially unchanged.
2000 to 2019	• The site remains essentially unchanged.	• The surrounding area remains essentially unchanged.

3.0 GEOLOGY & ENVIRONMENTAL SETTING

3.1 Geological References

The following geological publications were referred to:

- BGS 1:50000 Series Sheet 144 *'Spalding'* (1995).
- BGS publication, British Regional Geology *'Eastern England'* Second Edition (1980).
- Landmark geological plans – see Appendix X.
- The Coal Authority and The Law Society Publication *'Coal Mining and Brine Subsidence Claim Searches - Directory and Guidance'*, Sixth Edition (2006).
- Environment Agency website: www.environment-agency.gov.uk.
- British Geological Survey website: www.bgs.ac.uk.

3.2 Geology

Superficial Drift Deposits

The site and immediate surrounding area are indicated on the BGS website to be underlain by Tidal Flat Deposits which date from the Quaternary. The 1:50,000 scale map refers to the majority of these strata as the Barroway Drove Beds which are described as *'older marine alluvium; salt marsh deposits (silty clay)'*. The 1:50.000 scale map refers to these strata in the northeast of the site as Terrington Beds which are described as *'younger Marine Deposits; salt marsh, tidal creek and river deposits (sandy silt, sand and clay)'*. Both the Barroway Drove and Terrington Beds are indicated to be sequentially underlain by the Abbey Sand and Gravel, described on the 1:50,000 scale mapping as *'brackish and marine (sand and gravel)'*.

Drift deposits have the potential to alter rapidly in character and geotechnical properties both laterally and vertically over relatively short distances and may also be water bearing. These deposits may also contain peat as pockets, lenses or discrete layers.

Any peat deposits beneath, and in the general vicinity of, the site are considered to represent a potential source of hazardous ground gas (i.e. methane and carbon dioxide).

Bedrock Geology

The Drift Deposits at the site and in the immediate surrounding area are indicated to be underlain at depth by the Oxford Clay Formation, dating from the Jurassic.

The Oxford Clay Formation is described on the 1:50,000 scale mapping as *'grey, calcareous mudstone'*.

3.3 Faults

No faults are indicated beneath the site or within the general vicinity of the site.

3.4 Man-Made Deposits

No man-made deposits (i.e. Made Ground, Worked Ground or Infilled Ground) are indicated on the reviewed geological map publications relating to the site.

We would note that the reviewed historical publications have revealed the possible presence of a former ditch to the immediate north of the site which appears to have been infilled circa the 1930s. Any infill materials to this feature are considered to represent potential source of hazardous ground gas (i.e. carbon dioxide and methane) that may, under the right circumstances, affect the proposed development site. However, due to the relatively small scale of this feature, the risk of significant ground gas generation is considered to be very low.

3.5 Coal Mining

The site does not lie within an area requiring the commission of a coal mining report in accordance with The Coal Authority and The Law Society publication *'Coal Mining and Brine Subsidence Claim Searches - Directory and Guidance'*, Sixth Edition (2006). No specific investigation or mitigation in relation to historical coal mining issues is therefore considered to be necessary at the site.

3.6 Landmark Envirocheck Report

A Landmark Envirocheck report was commissioned to assist in ascertaining the environmental setting of the site. The full Envirocheck report is presented in Appendix X and has revealed the following relevant information (details are only listed where they are within potential influencing distance, i.e. 250m, of the site).

3.6.1 Agency & Hydrological

Aquifer Status

The superficial deposits comprising the Tidal Flat Deposits and the underlying bedrock geology comprising the Oxford Clay Formation are both designated as Unproductive Strata.

The Environment Agency describes Unproductive Strata as *'…rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow'*.

Source Protection Zones

The Envirocheck report indicates that the site does not lie within a Source Protection Zone (SPZ), as designated by the Environment Agency. SPZs relate to the protection of groundwater used for public drinking water supply.

Surface Water

The nearest surface water feature is indicated to be on-site. Based on our recent site walkover, this feature is likely to be represented by the open ditch which borders much of the eastern site boundary. These open ditches proliferate across the local geographic area.

Discharge Consents

One discharge consent is indicated to have been issued within 250m of the site. This is located on-site within the horse paddock in the south of the site. The consent relates to a permit issued in 1990 for the discharge, of unknown type, onto land from a domestic property. The permit was revoked in 1997. It is considered that this discharge consent is likely to be associated with a sewage discharge given it is referenced as a single domestic property.

Local Authority Pollution Prevention and Controls

Four permits have been issued within 250m of the site, the closest of which is 196m to the north. All relate to air pollution control associated with foundry type processes at premises operated by South Lincs Patterns. All permits are shown to be currently authorised.

Pollution Incidents to Controlled Waters

One pollution incident to controlled waters has been recorded within 250m of the site. The incident is shown to have occurred 27m to the north of the site and relates to animal carcasses within an open ditch in 1999. The incident is described as a Category 3 – Minor Incident.

River Quality

The River Welland to the east of the site was categorised as River Quality Grade B (Good) in 2000.

Water Abstractions

One water abstraction licence has been issued within 250m of the site (located on-site). The permit was issued in 2004 for the abstraction of surface water for the purposes of spray irrigation. The permit is described as in perpetuity.

Flood Risk

The site and surrounding areas are identified to be at risk from extreme flooding from rivers or sea without defences. This report should not be regarded as a formal flood risk assessment.

3.6.2 Waste

There are no landfill sites, or registered waste management facilities, identified in the Landmark report within 250m of the site.

An area of potentially infilled land is recorded within 250m of the site (from 175m to the north). This is recorded as unknown filled ground. Based on the historical mapping, it would appear that the potentially infilled land is associated with an area of former ponds (known as *'Brick Field'* which appear to have been infilled sometime between 1906 and the 1930s. Based on our recent site walkover, this area appears to be developed with predominantly residential properties.

3.6.3 Hazardous Substances

There are no sites associated with hazardous substances (e.g. explosives) identified within 250m of the site.

3.6.4 Geological & Radon

Geological Hazards

No potentially significant onerous geological issues have been identified within the Envirocheck report which relate to the site. However, it should be noted that the site is listed as having a Moderate Hazard Potential associated with both the Potential for Compressible Ground and Running Sand.

BGS Estimated Soil Chemistry Data Maps

The BGS has prepared estimated soil concentration maps for several metals (including arsenic, lead, nickel, chromium and cadmium), which are extrapolated from records available for use within their assessments.

Whilst potentially useful for the inference of Natural Metal Enrichment (NME) of the natural soils in a general locale, the data should not be used to inform any detailed decisions with regards to the chemistry of a particular site as it does not allow for anthropogenic effects.

BGS estimates of the soil chemistry at the site indicate anticipated concentrations of arsenic of <15mg/kg, cadmium of <1.8mg/kg, chromium of 60-90mg/kg, lead of <100mg/kg and nickel of 15-30mg/kg.

Based on the information supplied within the Envirocheck report, the site is not shown to be located within an area where Natural Metal Enrichment of the underlying natural soils is likely to be present. However, this is only applicable to the specific determinands listed above.

Radon

The Envirocheck report states that *'The property is in a lower probability radon area, as less than 1% of homes are above the action level…No radon protective measures are necessary in the construction of new dwellings or extensions'*. No specific mitigation in relation to radon issues are therefore required at the site.

3.6.5 Industrial Land Use

Contemporary Trade Directory Entries

One contemporary trade directory entry is recorded on site. This relates to an inactive frozen food processing and distribution outlet, formerly operating from what was noted during the site walkover to comprise the empty garage / warehouse type facility (and occupied offices) in the west of the site.

One further contemporary trade directory entry is listed within 250m of the site. This relates to an active foundry 239m to the north of the site.

Points of Interest – Manufacturing and Production

Five entries are listed on site; all relating to tanks and all positioned in the approximate central western area of the site which showed evidence of former ASTs during the site walkover.

Two points of interest relating to manufacturing and production entries are listed within 250m of the site. These relate to a property registered for arable farming 34m to the west of the site (immediately beyond Spalding Common road) and an unspecified works 223m to the northwest of the site (which appears to be associated with South Lincs Foundry).

3.6.6 Sensitive Land Use

The site is shown to lie within a Nitrate Vulnerable Zone. In our experience large parts of this area of the country are defined as a Nitrate Vulnerable Zone and this classification is considered not to present a potential risk to the development of the site.

3.7 Petroleum Licensing Officer Enquiry and Response

A written enquiry was made to the Petroleum Licensing Officer (PLO) at Lincolnshire Fire and Rescue in order to attempt to obtain information on any of the fuel storage tanks present (or formerly present) at the site and any other relevant information regarding the site.

A copy of the response received is included in Appendix XI of this report and the salient points are summarised below:

- A drawing shows the location of a *'Fuel Oil Tank'* within a brick bund (positioned where the AST was noted during our site walkover in the southwestern portion of the site adjacent to the commercial premises building). The drawing also indicates a *'Tank Pit'* 30ft (approximately 9m) to the south of the tank, along with a 'Pump' situated adjacent to the 'Fuel Oil Tank' in between the 'Tank Pit' and the tank position. The fuel type is described as *'Petroleum Spirit'*.
- The accompanying data sheets are not clear with respect to whether they relate to the aforementioned tank (associated with the *'Tank Pit'*) shown on the drawing or other tanks either formerly or currently present at the site. It is not clear whether the data sheets relate to two tanks.
- Tank installation dates are indicated to be 1975 and the records indicate inspections were carried out up to February 1997.

No further pertinent information (for example decommissioning dates, spillages etc) is given on the data sheets received, in the context of our desk study enquiries.

3.8 Land Use Assessment

As part of the land use assessment, reference has been made to the '*Desk Reference Guide to potentially Contaminative Land Uses*' produced by Mr P Syms and published jointly by the ISVA (The Professional Society for Valuers and Auctioneers) in association with The Royal Institution of Chartered Surveyors and the Chartered Institute of Environmental Health.

We have also made reference to the Department for Environment, Food and Rural Affairs and the Environment Agency Contaminated Land Report CLR8 '*Potential Contaminants for the Assessment of Land*' (March 2002). This document identifies key contaminants which may potentially be present at a site as a result of a given historical land use, and whilst formally withdrawn is still considered to be a useful desk based reference guide.

3.8.1 On Site Assessment

The site generally comprised open farmland prior to being progressively developed as a garden nursery from circa the 1960s. The nursery was operational at the time of our recent site walkover. A commercial premises building (of various usage) has been present in the southwest of the site from circa the 1970s. A residential property is shown to have been present in the southeast of the site from the 1960s and now includes a horse paddock to its west.

Fuel storage tanks are indicated to have been present in the central western and southwestern areas of the site from around the 1970s. According to the *'Desk Reference Guide to potentially Contaminative Land Uses'*, the storage, handling and leakage from fuel storage tanks may all lead to soil contamination. Contamination due to overfilling, faulty pipes or caps was not uncommon in the past. Leaks may occur from underground storage tanks and pipework, and redundant tanks may also present problems unless they have been properly decommissioned.

Fuels such as petrol and diesel are highly mobile and have the potential to cause widespread contamination. This may result in free product forming a migratory plume away from the site. Vapour may also diffuse into the soil and advance ahead of the free product. Lighter fractions of the fuel may float on the surface of groundwater, with heavier fractions migrating downwards through the water. Contaminants are less mobile in clay soils and those with high organic content, which will adsorb the contaminants, and they are most mobile in permeable soils such as coarse grained sands and gravels.

Based on our walkover of the site and the information obtained from the desk study (including reference to the above mentioned publications), potential contamination that may be present could include:

- Metals associated with any Made Ground beneath the site.
- Polycyclic Aromatic Hydrocarbons (PAHs) derived from any ashy or carbonaceous inclusions in the near surface soils, as well as within oils / fuels.
- Petroleum hydrocarbons associated with any spillages or leakages from the underground and above ground fuel storage tanks, associated pipe work, and spillages during delivery and / or operation. Potential contaminants include total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX) compounds and potentially methyl tertiary butyl ether (MTBE) and organic lead.
- Asbestos Containing Materials (ACMs) associated with the current (and historical) structures on the site.
- Pesticides associated with the sites former and current use as a garden nursery.
- Potentially hazardous ground gases (i.e. methane and carbon dioxide) associated with any natural peat / organic deposits beneath the site.

3.8.2 Off Site Assessment

Based on the information obtained from the desk study, there are a limited number of industrial / commercial land uses in the vicinity of the site, the closest of which include a farm 34m west of the site, then the next closest being a sewage works 150m / 170m south and a foundry 196m north. In view of this, it is considered that potentially mobile contaminants (such as hydrocarbons) arising from such sources are unlikely to migrate and significantly impact the study site.

The Phase I enquiries have also revealed the presence of the following potential sources of hazardous ground gas (i.e. carbon dioxide and methane), which lie within a possible influencing distance (i.e. <250m) of the site:

- Peat / organic deposits within the sites general environs.
- Made Ground associated with any infill materials to former drainage ditches within the vicinity of the site and the area of former marshy ground and ponds known as '*Brick Field*' situated 175m north of the site (which has subsequently been developed for residential housing).

It is considered that as the anticipated soils beneath and in the vicinity of the site are of generally low permeability, together with the small scale of these features (ditches) and the distances to the site (particularly for the '*Brick Field*' area), it is considered unlikely that significant quantities of ground gas could potentially migrate and significantly impact the study site from these off-site sources.

In terms of the potential risks to human health, it is considered that the identified on-site sources of contamination are likely to be more significant than off-site sources.

4.0 GROUND INVESTIGATION

4.1 Introduction

Sub-Surface Utility Avoidance Scan

Prior to the commencement of our intrusive works at the site, a sub-contracted sub-surface utility scan of proposed exploratory hole locations was undertaken to attempt to avoid buried services. Based on the results of the service scan, the exploratory holes were positioned in order to maximise the amount of information obtained during our site works, whilst avoiding known utilities.

Access for advancing exploratory holes was restricted in certain areas, particularly inside the glasshouses (due to insufficient headroom for the investigation plant) and the commercial premises due to the operational nature of this building.

Window Sample Boreholes

Twenty-three window sample boreholes (WS1 to WS23) were advanced at the site between 7th and 15th March 2019 to depths of between 3.00m and 5.00m below existing ground level (begl). Upon completion, nine of the boreholes (WS1, WS3, WS7, WS9, WS10, WS14, WS17, WS18 and WS21) were installed with ground gas monitoring points to facilitate a programme of ground gas monitoring.

Cable Percussive Boreholes

Three cable percussive boreholes (BH1 to BH3) were advanced at the site between 11th and 14th March 2019 to depths of between 18.70m and 19.00m begl.

Hand Auger Holes

Eight hand auger holes (HAH1 to HAH8) were advanced at the site on 11th and 14th March 2019 to depths of between 0.80m and 1.20m begl. The hand auger holes were advanced to augment site coverage in areas which were difficult to access with both the window sample and cable percussive borehole rigs.

Exploratory Hole Locations / Logs

The approximate locations of the exploratory holes are shown on the plan presented in Appendix IV (Figure No. D38185/04). The exploratory hole logs are presented in Appendix V of this report.

4.2 Ground Conditions

Topsoil

Natural silty clayey topsoil was only encountered in localised areas of the site, principally the horse paddock, and garden areas to the residential property, in the south of the site. The natural topsoil was encountered to depths of between 0.10m and 0.50m begl (average thickness 0.30m).

The remaining topsoil, which was generally encountered beneath geotextile membranes within the large glasshouses, was logged as Made Ground topsoil due to its disturbed nature (being utilised as a growing medium for plant cultivation) and the localised presence of anthropogenic materials including compost and rare brick fragments. Rare shards of glass were noted in the topsoil in one of the exploratory holes (WS7). Where encountered, the Made Ground topsoil was recorded to typical depths of up to 0.50m begl. In one location (BH2), the Made Ground topsoil was recorded to a depth of 0.85m begl.

Made Ground

General Made Ground was encountered in 11 of the exploratory holes advanced at the site to depths recorded up to 0.85m begl. In general, the Made Ground comprised silt and clay, with gravel and anthropogenic materials; predominantly fragments of broken brick and broken concrete. The exploratory hole locations where the general Made Ground has been encountered were advanced in the vicinity of the fuel tanks and adjacent to the buildings. Where exploratory holes were advanced around the periphery of existing buildings (including the locations of the tanks), the Made Ground was typically surfaced with concrete and / or macadam hardstanding to depths of up to 0.25m begl. Elsewhere silt and clay rich materials were encountered at surface mixed with pockets of topsoil.

A plan showing the approximate depth to the base of the Made Ground (including Made Ground topsoil) encountered within the exploratory holes is included in Appendix VI (Figure No. D38185/05).

Natural Strata – Drift Deposits

The Natural Strata typically comprised silty CLAY and / or clayey SILT (which was locally sandy) to the base of the exploratory holes. Both Clay and Silt were encountered in approximately half of the exploratory holes, with the Silt more commonly encountered overlying the Clay to variable depths of between 0.90m and 2.75m begl. Nine of the exploratory holes exclusively comprised Silt and seven of the exploratory holes exclusively comprised Clay.

The Silt / Clay strata were typically recorded as soft (locally very soft or firm). The strength of these strata was noted to be inconsistent, both vertically and laterally, across the site. Within three of the exploratory holes (WS3, WS5 and WS13), bands of running silt were encountered at depths of between 1.00m and 2.25m begl.

The Silt / Clay was only fully penetrated in the three deeper cable percussive boreholes, at depths of either 10.10m or 10.80m begl. Where fully penetrated the Silt / Clay was underlain by medium dense (locally very dense) gravelly SAND. The gravelly Sand had recorded thicknesses of between 1.60m and 2.80m.

In the majority of the exploratory holes, fibrous PEAT was encountered within the Silt / Clay strata from various depths in excess of 1.60m begl. The Peat was typically observed as small pockets. In five of the exploratory holes, isolated strands of poorly decomposed reed-type vegetation was also encountered from similar depths. In BH1 narrow bands of fibrous Peat were encountered between 5.50m and 6.00m begl. In BH3 a discrete band of amorphous Peat was encountered at the base of the Silt / Clay between 10.10m and 10.40m begl.

These Silt / Clay deposits are considered to be typically representative of the Tidal Flat Deposits (Barroway Drove and Terrington Beds) indicated to underlie the site on the reviewed geological publications.

The underlying gravelly Sand is considered to be typically representative of the Abbey Sand and Gravel which is indicated to sequentially underlie Tidal Flat Deposits on the reviewed geological publications

Natural Strata – Solid (Bedrock) Geology

The bedrock geology was only encountered in the three deeper cable percussive boreholes where the drift deposits were fully penetrated at depths of between 12.40m and 13.30m begl. The bedrock generally comprised very stiff (locally slightly gravelly) CLAY. The Clay generally became more stiff towards the base of the boreholes which were terminated, due to standard penetration test (SPT) refusals, at depths of between 18.70m and 19.00m begl.

These deposits are considered to be typically representative of the Oxford Clay, indicated to underlie the drift deposits on the reviewed geological publications.

4.3 Visual & Olfactory Evidence of Soil Contamination

Both olfactory and visual evidence of potential hydrocarbon contamination was recorded in three boreholes in the central area of the site (WS15, WS20 and WS21), advanced in close proximity to an anticipated former AST. The potential contamination was noted between depths of approximately 1.00m and 3.00m begl.

We would note that no obvious visual or olfactory evidence of significant soil contamination was identified during the advancement of the remaining exploratory holes across the site.

4.4 Photo-Ionisation Detector Screening

Following the intrusive works, soil samples were analysed using a portable MiniRAE 2000 Photo Ionisation Detector (PID).

The MiniRAE 2000 is a robust, portable PID used to investigate the potential presence of Volatile Organic Compounds (VOCs) and hydrocarbon vapours. Whilst the PID does not quantitatively discriminate between discrete VOCs, the gross presence of VOCs is taken to be a reliable indicator of soil impaction.

The selected soil samples were placed in sealed containers (glass jars), agitated, and the headspace in each container aspirated into the PID for analysis.

Screening revealed values (in ppm Isobutylene Equivalent Units) of 14.6ppm and 28.8ppm within the respective soil samples recovered from WS20 (1.45m begl) and WS15 (1.80m begl); i.e. two of the boreholes advanced in close proximity to an assumed former AST and where hydrocarbon odours were noted in the field. Screening revealed values below background levels (assumed to be </=10ppm) were recorded in all of the remaining soil samples obtained from within the subject site, which indicates the absence of any significant volatile contamination within the analysed soil samples across the wider site area.

4.5 Water

Water was encountered in all of the window sample and cable percussive boreholes advanced across the site, from a typical depth of approximately 1.00m begl. In two of the exploratory holes (WS10 and WS11) shallower water seepages were encountered from approximately 0.50m begl.

4.6 Stability

Each of the window sample boreholes was cased to variable depths of up to 4.00m begl, as a precautionary measure to prevent collapse of borehole sides, during their advancement. The cable percussive boreholes required casing, to prevent collapse, during their advancement through the drift deposits.

4.7 Plates

A photographic record of the exploratory investigation was obtained during the intrusive works. Selected photographs are presented in the Plates included in Appendix XII.

4.8 Shear Vane Values

In-situ shear vane testing was undertaken within the visually cohesive (clayey Silt and Clay) soils, at a depth of 1.00m begl, in the open window sample boreholes during their advancement. The results revealed soil shear strength values of between 14N/m^2 and 41kN/m^2.

4.9 Standard Penetration Test (SPT) Data

In order to establish a strength / depth profile of the soils beneath the site, in-situ Standard Penetration Testing (SPT) was undertaken at regular intervals within the cable percussive boreholes and selected window sample boreholes.

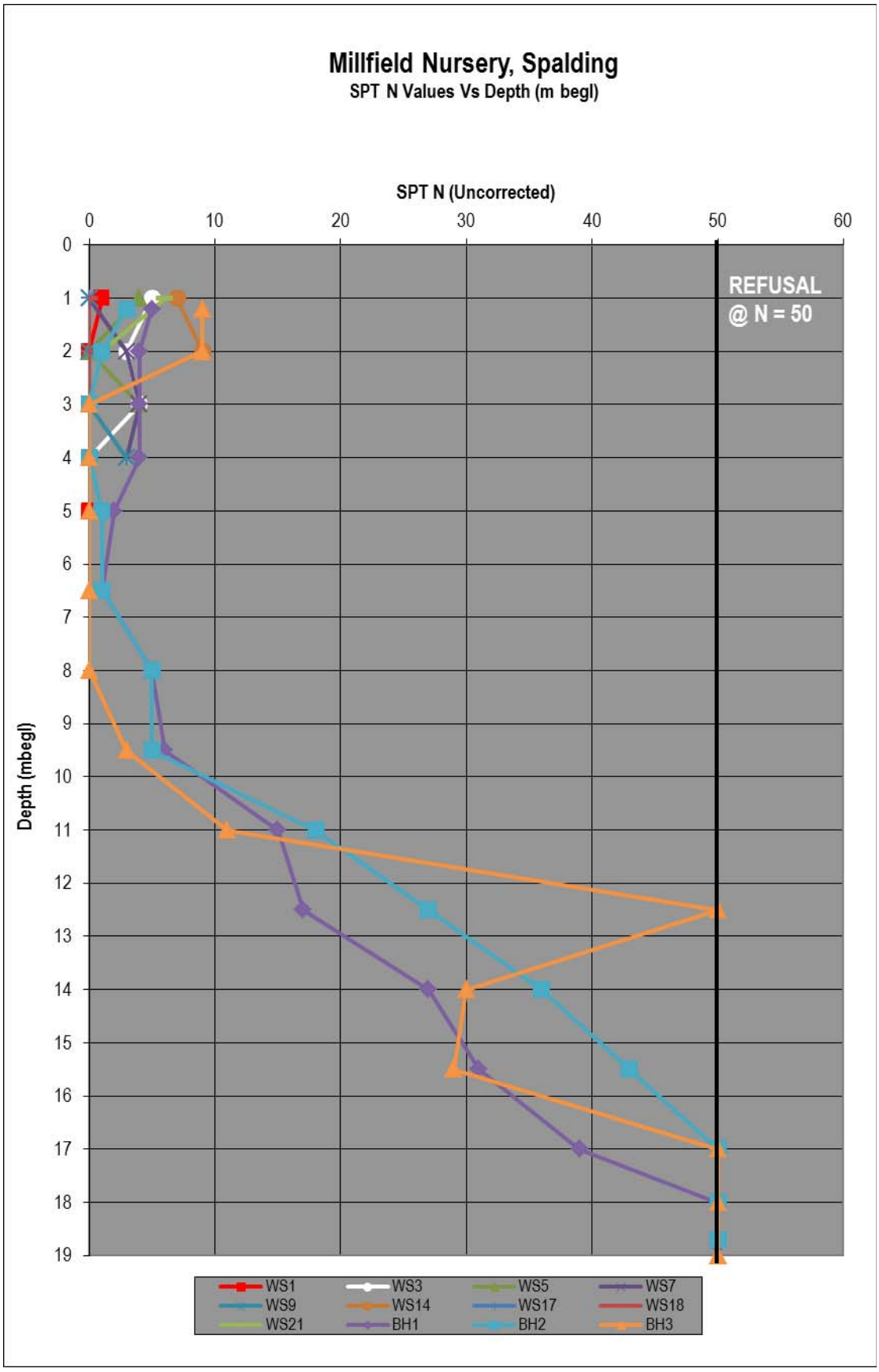
At a depth of 1.00m begl (or 1.20m in the cable percussive boreholes), uncorrected SPT 'N' values of between 0 (i.e. the sampling rod fell under its own weight) or 9 were recorded within the Natural Strata.

At depths of between 2.00m and 9.50m begl, the uncorrected SPT 'N' values also ranged between 0 and 9.

SPT 'N' values of between 11 and refusal (i.e. an SPT 'N' value equal to or greater than 50) were recorded within the natural gravelly Sand at depths of 11.00m and 12.50m begl.

SPT 'N' values of between 27 and refusal were recorded within the natural Clay (bedrock Oxford Clay) at depths in excess of 12.50m begl.

A Chart showing the SPT results in relation to depth is provided on the next page, with SPT results for each of the boreholes (where undertaken) also provided on the logs included in Appendix V.


Millfield Nursery, Spalding
SPT N Values Vs Depth (m begl)
SPT N (Uncorrected)
0
10
20
30
40
50
60
Depth (mbegl)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
REFUSAL
@ N = 50
WS1
WS3
WS5
WS7
WS9
WS14
WS17
WS18
WS21
BH1
BH2
BH3

5.0 GROUND GAS & WATER MONITORING RESULTS

5.1 Introduction

Due to the possible presence of on and off-site sources of potentially hazardous ground gas (namely carbon dioxide and methane), it was considered necessary to install a series of monitoring points to facilitate an initial programme of ground gas monitoring.

5.2 Monitoring Installations

Upon completion, nine of the window sample boreholes (WS1, WS3, WS7, WS9, WS10, WS14, WS17, WS18 and WS21) were installed with combined ground gas and water monitoring standpipes to facilitate a programme of monitoring. Installations were positioned to provide general site coverage, together with installing standpipes in the vicinity of the tanks, former drainage ditches, etc. (see Section 6.6 for more detailed information relating to the targeting strategy).

5.3 Results of the Ground Gas Monitoring

An initial six monitoring visits over a six week period have been undertaken at the site as part of our works. The full set of ground gas and water monitoring data is presented in Appendix VII of this report.

The ground gas monitoring results are summarised in Table 2 below.

TABLE 2 – SUMMARY OF GROUND GAS MONITORING DATA

Parameter	Minimum % by volume (v/v)	Maximum % by volume (v/v)
Methane	0.0	84.1
Carbon Dioxide	0.0	14.7
Oxygen	0.1	21.5
Flow (L/h)	0.0	15.9

We would note that methane was only recorded in one borehole (WS1) during the monitoring period and that the elevated carbon dioxide and depleted oxygen readings, together with the recorded gas flow rates, were also recorded in WS1. In order to confirm (or otherwise) the high methane readings within WS1, in addition to attempting to ascertain the nature of the source, gas chromatography analysis was undertaken on a gas sample recovered from the WS1 installation during the third monitoring visit. The laboratory gas test results are considered in more detail in Section 5.4 below.

In the remaining 8 No. monitoring standpipes at the site, only low carbon dioxide concentrations (up to 1.6% by volume) and no methane have been recorded during the monitoring carried out at the site.

In general, no or low flow rates were recorded in all of the monitoring standpipes installed at the site, with the exception of WS1 where notable flow rates were recorded during the monitoring programme. Peak positive flow rates ranging between 1.7 and 15.9 litres / hour were recorded within WS1, with the highest value recorded on 11th April 2019 which fell to 0.0 litres / hour after 45 seconds. The only other peak positive flow rate recorded at the site during the monitoring period was 0.3 litres / hour within WS14 on 27th March 2019 which fell to 0.0 litres / hour within seconds.

In view of the above, a review of the groundwater levels recorded within the monitoring standpipes has been carried out. Groundwater was recorded at depths generally ranging between 0.50m to 1.52m begl, although shallower water levels of 0.02m begl were recorded in WS7 and WS9 during the monitoring period. Groundwater levels in a number of the monitoring standpipes during the monitoring undertaken were noted to be at / above the interface between the solid and slotted sections of the standpipes.

As stated in industry guidance, flow rates can be affected by changes in the monitoring standpipe headspace if water levels increase when the gas tap is closed. It is therefore considered that air may have become trapped under pressure within the solid section of the monitoring pipe due to rising groundwater levels caused by rainfall prior to monitoring, and when the gas tap is opened to undertake the monitoring, the trapped air is released and creates and artificially high positive flow rate. The flow rates recorded in WS1 under these circumstances may therefore be considered to be artificially high and potentially unreliable.

In addition to the above, consideration has also been given to the potential effect of atmospheric pressure trends on ground gas emissions and flow rates. Periods of rapidly falling atmospheric pressure are considered to be the optimum barometric conditions for gas emissions from the ground. Atmospheric pressure was recorded on site as between 992mb and 1034mb during the monitoring programme. The gas monitoring carried out on two of the six monitoring visits followed a period of falling atmospheric pressure during the 24 hour period prior to monitoring. None of the monitoring visits were undertaken following a period of rapidly falling pressure.

The atmospheric pressure trends, based on data supplied at http://wow.metoffice.gov.uk/, are summarised below:

- 27th March 2019 – Rise of 3mb
- 4th April 2019 – Fall of 5mb
- 11th April 2019 – Rise of 5mb
- 17th April 2019 – Rise of 4mb
- 24th April 2019 – Fall of 7mb
- 29th April 2019 – Rise of 10mb

The highest peak flow rate recorded in WS1 (15.9 litres / hour) occurred after the atmospheric pressure rose by 5mb in the 24 hour period prior to monitoring on 11th April 2019. The monitoring visit carried out after the highest fall in atmospheric pressure in the 24 hours prior to monitoring on 24th April 2019 corresponded with a flow rate of 11.0 litres / hour which fell to 0.0 litres / hour in less than 30 seconds.

The highest recorded methane and carbon dioxide concentrations of 84.1% and 14.7% by volume respectively were detected when the atmospheric pressure rose by 4mb on 17th April 2019 in the 24 hours prior to monitoring. The monitoring visit carried out after the highest fall in atmospheric pressure in the 24 hours prior to monitoring on 24th April 2019 corresponded with respective methane and carbon dioxide concentrations of 80.9% and 13.7% by volume.

In light of the above, it would appear that there was no consistent correlation / relationship between the noted falls / rise in atmospheric pressure and the ground gas emissions.

5.4 Laboratory Gas Analysis

Due to the high methane values recorded within one of the borehole installations (WS1) during the programme of monitoring, a Tedlar bag gas sample was recovered from WS1 during the third return visit and submitted for laboratory analysis. Gas chromatography analysis was undertaken for a suite of parameters including methane, carbon dioxide, carbon monoxide, nitrogen, hydrogen and ethane.

The laboratory results indicate the sample to contain 78.02% by volume of methane and 12.39% by volume of carbon dioxide, compared to 83.2% and 14.2% by volume respectively recorded by the portable gas analyser on site, therefore essentially confirming the high readings recorded in the field. Furthermore, the laboratory has commented that the gas profile would suggest that the *'gas source is the result of decomposition or organic matter (biogenic) and not the result of deep radiological processes (petroleum gas / thermogenic gases)'*.

A copy of both the laboratory test certificate and laboratory comments are included with the soil test results in Appendix VIII.

5.5 Appropriate Guidance

5.5.1 British Standard & CIRIA

The results of the gas monitoring require reviewing with reference to the following documentation:

- British Standard BS 8485 *'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*' (2015+A1:2019).
- CIRIA Report C665 '*Assessing risks posed by hazardous ground gases to buildings*' (2007).

BS 8485 and CIRIA Report C665 recommend a risk-based methodology to ground gas assessment, which includes the calculation of a site-specific Gas Screening Value (GSV). The GSV of a particular ground gas regime equates to:

- GSV (L/h) = (maximum borehole flow rate (L/h) x maximum gas concentration)/100.

The GSV should be calculated for both methane and carbon dioxide to determine a site-specific Characteristic Situation for each gas. The higher the calculated GSV, the greater the risk posed by the presence of ground gas. The CIRIA guidance document notes that '*…the GSV is a guideline value and not an absolute threshold*'.

Table 2 of BS 8485 (reproduced below) presents a total of six Characteristic Situations (CS) to assist in classification of the site, based on the calculated GSVs for methane and carbon dioxide.

Table 2 **CS by site characteristic GSV**

CS	Hazard potential	Site characteristic GSV [A] L/h	Additional factors
CS1	Very low	<0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	0.07 to <0.7	Typical measured flow rate <70 L/h (otherwise consider an increase to CS3)
CS3	Moderate	0.7 to <3.5	–
CS4	Moderate to high	3.5 to <15	–
CS5	High	15 to <70	–
CS6	Very high	>70	–

[A] The figures used in this column are empirical.

NOTE The CS is equivalent to the characteristic GSV in CIRIA C665 [6].

In accordance with BS 8485, the CS classification for the site should be considered in conjunction with the proposed Building Type to determine the appropriate level of ground gas protection measures that should be installed to mitigate the risk posed by ground gases, based on the gas protection score for the site.

BS 8485 notes *'The construction and use of the building, together with the control of future structural changes to the building and its maintenance (the building's management) should be assessed, since potential risks posed by ground gases are strongly influenced by these factors'*. Subject to the development proposals, each building may be categorised as a whole, or for each different part of the building.

The Building Types are presented in Table 3 of BS 8485, reproduced below.

Table 3 **Building types**

	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial/ public, possible multiple	Commercial/ public	Commercial/ industrial
Control (change of use, structural alterations, ventilation)	None	Some but not all	Full	Full
Room sizes	Small	Small/ medium	Small to large	Large industrial/ retail park style

Summary of Building Types (taken from BS 8485)

Type A Buildings Examples include private housing and some retail premises.

Type B Buildings Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels.

Type C Buildings Examples include offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).

Type D Buildings Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorized as Type B or Type C).

Table 4 of BS 8485, reproduced below, should be used to derive the minimum level of gas protection applicable to the Building Type, based on the CS determined from the calculated GSV.

Table 4 — *Gas protection score by CS and type of building*

CS	Minimum gas protection score (points)			
	High risk		Medium risk	Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5 A)	5.5 A)	4.5	3.5
5	— B)	[A1] 6 ⟨A1⟩ A)	5.5	4.5
6	— B)	— B)	[A1] — B) ⟨A1⟩	[A1] 6 ⟨A1⟩

A) Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.

B) The gas hazard is too high for this empirical method to be used to define the gas protection measures.

The appropriate level of precautions, to be designed in accordance with the point scoring system of BS 8485 should therefore be applied for the proposed development. These should include a combination of the following three types of protection measures, which should be used to achieve the required score:

- The structural barrier of the floor slab, or of the basement slab and walls if a basement is present;
- Ventilation measures; and
- Gas resistant membrane.

The points achieved for each element of the ground gas precautions are summarised in Tables 5, 6 and 7 of the British Standard. These tables are reproduced below.

Table 5 — *Gas protection scores for the structural barrier*

Floor and substructure design (see Annex A)	Score A)
Precast suspended segmental subfloor (i.e. beam and block)	0
Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)	0.5
Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	1 or 1.5 B)
Basement floor and walls conforming to BS 8102:2009, Grade 2 waterproofing C) [A1] D) ⟨A1⟩	2
Basement floor and walls conforming to BS 8102:2009, Grade 3 waterproofing C) [A1] D) ⟨A1⟩	2.5

A) The scores are conditional on breaches of floor slabs, etc., being effectively sealed.

B) To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast in (see **A.2.2.2**).

C) The score is conditional on the waterproofing [A1] being provided by a suitable structural barrier with the design and detailing of the walls and floor meeting the requirements for Type B protection. The score cannot be assigned for Type A (waterproof membrane) or Type C (drained cavity wall). ⟨A1⟩

D) [A1] If a membrane is installed beneath and around the basement to provide Type A waterproofing (BS 8102:2009), it can be assigned a gas protection score in accordance with Table 7, if it meets all the criteria for a gas resistant membrane in that table. ⟨A1⟩

Table 6 — *Gas protection scores for ventilation protection measures*

Protection element/system	Score	Comments
(a) Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building)	0.5	Whenever possible a pressure relief pathway (as a minimum) should be installed in all gas protection measures systems. If the layer has a low permeability and/ or is not terminated in a venting trench (or similar), then the score is zero.

Table 6 *(continued)*

Protection element/system	Score	Comments
(b) Passive sub floor dispersal layer: Very good performance: Good performance: Media used to provide the dispersal layer are: • Clear void • Polystyrene void former blanket • Geocomposite void former blanket • No-fines gravel layer with gas drains • No-fines gravel layer	2.5 1.5	Performance criteria for methane and carbon dioxide are shown in Figure B.6 and Figure B.7, respectively. The ventilation effectiveness of different media depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing and type and the thickness of the layer. The selected score should be assigned taking into account the recommendations in Annex B. Passive ventilation should be designed to meet at least "good performance", see Annex B.
(c) Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may comprise a clear void or be formed of geocomposite or polystyrene void formers	1.5 to 2.5	This system relies on continued serviceability of the pumps, therefore alarm and response systems should be in place. There should be robust management systems in place to ensure the continued maintenance of the system, including pumps and vents. Active ventilation should always be designed to meet at least "good performance", as described in Annex B.
(d) Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket	1.5 to 2.5	This system relies on continued operation of the pumps, therefore alarm and response systems should be in place. The score assigned should be based on the efficient "coverage" of the building footprint and the redundancy of the system. Active ventilation should always be designed to meet at least "good performance".
(e) Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park)	4	Assumes that the car park is vented to deal with car exhaust fumes, designed to *Buildings Regulations 2000, Approved Document F* [9].

Table 7 — *Gas protection score for the gas resistant membrane*

Protection element/system	Score	Comments
Gas resistant membrane meeting all of the following criteria: • sufficiently impervious 〈A1〉 , both in the sheet material [A)] and in the sealing of sheets and sealing around sheet penetrations, to prevent any significant passage of methane and/or carbon dioxide through the membrane; 〈A1〉 • sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; • 〈A1〉 *Text deleted* 〈A1〉 • sufficiently strong 〈A1〉 [B)] 〈A1〉 to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); 〈A1〉 and to withstand in-service stresses (e.g. settlement if placed below a floor slab); 〈A1〉 • capable, after installation, of providing a complete barrier to the entry of the relevant gas; and • verified in accordance with CIRIA C735 [N1].	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints. 〈A1〉 *Text deleted* 〈A1〉 If a membrane is installed that does not meet all the criteria in column 1 then the score is zero.

[A)] 〈A1〉 A membrane with a methane gas transmission rate <40.0 ml/day/m²/atm (average) for sheets and joints (tested in accordance with BS ISO 15105-1:2007 manometric method) is regarded as sufficiently impervious.

[B)] For example, reinforced LDPE (virgin polymer) membranes having a minimum mass per unit area of 370 g/m² and not significantly less than 0.4 mm thickness between the reinforcement scrim (tested in accordance with Procedure D (2 mm diameter tip) of BS EN ISO 9863-1:2016) installed above floor slabs are considered sufficiently strong to meet the performance criteria (see also **C.3**). Thicker and more robust membranes or an additional membrane protection layer should be installed directly beneath cast-in-situ floor slabs. 〈A1〉

5.6 Comments

The results of the initial gas monitoring have indicated elevated ground gas concentrations and flow rates in only one of the monitoring standpipes (WS1), with low ground gas concentrations and flow rates recorded elsewhere at the site. It was noted, however, that similar ground conditions were encountered in WS1 including the presence of Peat, compared to other monitoring standpipes installed at the site where Peat was also encountered.

In view of this, it is considered that further characterisation of the site is required from a ground gas risk assessment perspective, in order to determine the requirement for gas protection measures at the site. Further characterisation of the site is likely to involve the installation of further monitoring points and an extended period of ground gas monitoring and potentially detailed risk assessment works.

6.0 LABORATORY TESTING & CONTAMINATION ASSESSMENT

6.1 Introduction

The following environmental soil testing was carried out on visually representative samples recovered from the exploratory holes:

- 20No. Standard contamination suites (including metals, speciated PAH and TOC).
- 15No. Organochlorine and organophosphorous pesticides (OCP).
- 10No. Asbestos screens.

Geotechnical soil testing comprised the following:

- 12No. Water soluble sulphate tests.
- 20No. pH tests.
- 10No. Plasticity Index (PI) tests.
- 6No. Loss on Ignition tests.

All laboratory test results are included in Appendix VIII of this report.

6.2 Geotechnical Soil Test Results

Water Soluble Sulphate/pH

Water soluble sulphate testing was undertaken on 12No. soil samples obtained during the site works (3No. from the Made Ground and 9No. from the Natural Strata). The results revealed water soluble sulphate concentrations of between <10mg/l SO_4 and 610mg/l SO_4. The pH values of the soil samples analysed (8No. within the Made Ground and 6No. from within the Natural Strata) were between 7.59 and 8.59.

In accordance with the Building Research Establishment publication Special Digest 1 *'Concrete in Aggressive Ground'* (2005) the mean of the highest two sulphate concentrations should be used to indicate the Design Sulphate Class (i.e. 530mg/l SO_4), together with the mean of the lowest two pH results (7.59).

Therefore, in accordance with Special Digest 1:2005 the site falls into Design Sulfate Class DS-2 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-2.

This classification has been made based on the assumption of a brownfield location and the presence of potentially mobile groundwater conditions beneath the site.

Plasticity Index (PI) Testing

A total of 10No. Plasticity Index tests have been undertaken on selected samples of the near surface Natural Strata obtained during the site works from across the site. In accordance with NHBC standards Chapter 4.2 '*Building Near Trees*' the reported PI values may be modified based on the portion of the sample passing the 425μm sieve.

The results of the PI analysis is summarised in Table 3.

TABLE 3 – SUMMARY OF PLASTICITY INDEX (PI) DATA				
Sample Reference & Location	Reported PI Value (%)	Portion Passing 425μm Sieve (%)	Modified PI Value (%)	Volume Change Potential
WS1, 2.50m to 3.00m (CLAY)	24	96	23	Medium
WS2, 1.50m to 2.00m (SILT)	-	-	-	Non-plastic
WS4, 1.00m to 1.50m (SILT)	-	-	-	Non-plastic
WS5, 2.00m to 2.50m (CLAY)	31	100	31	Medium
WS7, 1.75m to 2.25m (CLAY)	52	100	52	High
WS8, 2.25m to 2.75m (CLAY)	29	100	29	Medium
WS9, 1.90m to 2.40m (CLAY)	48	100	48	High
WS11, 1.30m to 1.80m (CLAY)	47	100	47	High
WS13, 0.60m to 1.10m (SILT)	-	-	-	Non-plastic
WS14, 1.10m to 1.60m (SILT)	-	-	-	Non-plastic

In accordance with NHBC Guidance, Table 3 reveals that the cohesive soils analysed (i.e. Clay) may be regarded as being of medium to high volume change potential. The samples of the less prevalent Silt soils analysed were found to have no significant volume change potential (i.e. the results indicate the Silt soils tested were non-plastic).

Loss on Ignition Testing

A total of 6No. Loss on Ignition tests have been undertaken on selected samples of the Natural Strata in which organic material was encountered, typically as small pockets of fibrous Peat. Loss on ignition percentages (referenced against total sample volumes) were recorded between 3.9% and 8.8%, indicative of what would be anticipated based on the visual description of these soils recorded on the borehole logs.

Although the results of the loss on ignition testing indicate the fibrous Peat within the Natural Strata has the potential to be compressible and subject to peat wastage (i.e. biodegradation), it is considered that this is unlikely to have a significant impact in terms of potential settlement due to the Peat being recorded within small pockets and localised, apparently discontinuous, narrow / thin horizons.

6.3 Contamination Assessment Rationale

We understand that it is proposed to develop the site for a low-rise residential end-use incorporating private gardens.

Based on the development proposals, we have adopted a residential with plant uptake end-use scenario for the purposes of the contamination assessment.

6.4 Appropriate Guidance

Reference has been made to documents reflecting current good practice, including (but not limited to) the following:

- Environment Agency Contaminated Land Report 11 '*Model Procedures for the Management of Land Contamination*', September 2004, ISBN: 1844322955.
- British Standard BS10175:2011+A1:2013, '*Investigation of potentially contaminated sites. Code of practice*', March 2011.

- Nathanail, C.P., McCaffrey, C. Gillett, A.G. Ogden, R.C. and Nathanail, J.F 2015. '*The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. "Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved.*"'
- DEFRA publication '*SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*', Final Project Report (Revision 2), dated 24th September 2014 and Erratum dated December 2014.
- DEFRA publication '*SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*' – Policy Companion Document, dated December 2014.
- EIC/AGS/CL:AIRE publication '*Soil Generic Assessment Criteria for Human Health Risk Assessment*', January 2010, ISBN 978-1-905046-20-1.
- Department of Environment, Food and Rural Affairs (DEFRA) and the Environment Agency publication – '*Contaminated Land Exposure Assessment (CLEA) model*' (March 2002).
- Environment Agency Science Report, '*Using Soil Guideline Values*', SC050021/SGV, March 2009.
- R & D Draft Technical Report P5-079/TR1 '*Review of the Fate and Transport of Selected Contaminants in the Soil Environment*' dated 2003.
- CL:AIRE/CIEH '*Guidance on Comparing Soil Contamination Data with a Critical Concentration*' (May 2008).
- Environment Agency Science Report SC050021/SR7 '*Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values*', dated November 2008, ISBN 978-84432-964-9.
- Environment Agency Science Report Final SC050021/SR2 '*Human health toxicological assessment of contaminants in soil*', dated January 2009, ISBN 978-84432-858-1.
- Environment Agency Science Report SC050021/SR3 '*Updated technical background to the CLEA model*', dated January 2009, ISBN 978-84432-856-7.
- Environment Agency Science Report SC050021/SR4 '*CLEA Software (Version 1.05) Handbook*', dated September 2009, ISBN 978-1-84911-105-8.

6.4.1 Selection of Appropriate Tier 1 Screening Values

Generic Assessment Criteria (GAC)

The assessment of contaminated land in the UK was historically undertaken with reference to ICRCL Guidance Note 59/83 together with successive versions of the CLEA model (inc. CLEA2002 (2002), CLEA UK (2005), CLEA V1.03 beta (2008), CLEA V1.04 (January 2009), CLEA V1.05 (September 2009) and CLEA V1.06 (October 2009)).

The CLEA V1.06 model is a deterministic quantitative risk assessment (QRA) model, which has historically been utilised by the Environment Agency to produce Soil Guideline Values (SGVs) for several contaminants, and has been used and modified by the authors of the LQM/CIEH S4UL publication and the authors of the DEFRA SP1010 series of documents in the derivation of their respective human health screening values.

Of key importance is the basis on which these two differing sets of commercially available screening criteria have been created, with the SP1010 values reflective of a '*Low Level of Toxicological Concern*' (LLTC) and the Suitable 4 Use Level (S4UL) values based on a '*Minimal Risk Level*' (MRL).

Based on our understanding of current good practice within the contaminated land field, we have adopted the S4UL values (representing a compatible approach to risk assessments undertaken since the initial derivation of the CLEA model, and based on an established and fully justifiable methodology) as our initial Generic Assessment Criteria (GAC) values for human health.

In the absence of a suitable S4UL value (such as lead), reference has been made to the relevant C4SL, and these have been adopted where considered justifiable and as appropriate (further consideration of their use is provided below).

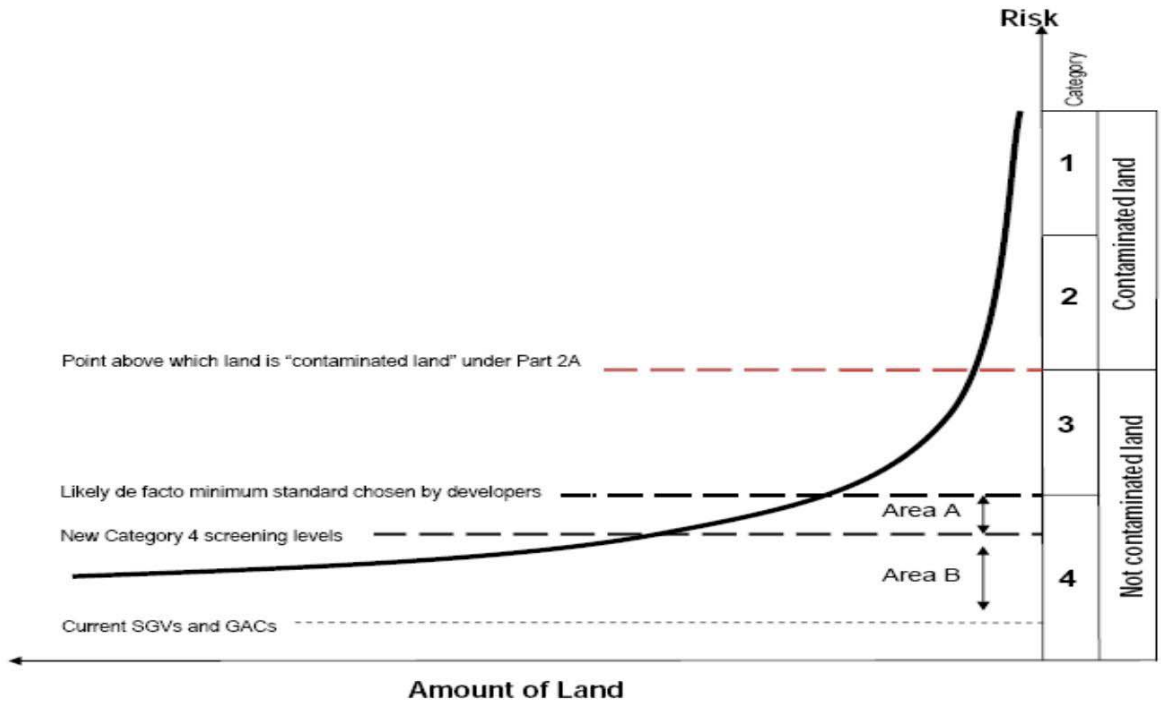
We would additionally note that other GAC values are commercially available, such as the Atkins ATRISKSOIL values (to which GeoDyne subscribe) and the EIC/AGS/CL:AIRE values for organic substances; and these have been referred to where relevant to the site.

Category 4 Screening Levels

Revised Statutory guidance for the assessment of land under Part 2A of the Environmental Protection Act 1990 was published by the Department for Environment, Food and Rural Affairs (Defra) in April 2012. The guidance introduced a four-part category system for classifying land under Part 2A; Section 4.17 of the Guidance states:

'*In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health, the local authority should use the categorisations described in paragraphs 4.19 – 4.30...Categories 1 and 2 would encompass land which is capable of being determined as contaminated land on the grounds of significant possibility of harm to human health. Categories 3 and 4 would encompass land which is not capable of being determined on such grounds*'.

The foregoing categories are depicted in diagrammatical form in the following graph (taken from Defra publication SP1010):



Defra has subsequently commissioned the production of Category 4 Screening Levels (C4SLs) for a total of six substances (cadmium, benzo(a)pyrene, benzene, arsenic, lead and chromium VI), which are detailed within the SP1010 document titled '*Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document*', dated March 2014. The C4SL values represent a level below which a contaminant concentration is considered to have a 'Low' risk to human health. The C4SL values are stated within the SP1010 document (page 7) as still remaining '*strongly precautionary*' and represent a more pragmatic approach to contaminated land risk assessment than the minimal risk values represented by the SGV/GAC levels.

In addition to the use of C4SLs in contaminated land risk assessment, the SP1010 document states the following with respect to background levels of contaminants:

'The outputs of Defra-funded research to determine 'normal' background concentrations of various contaminants in England and Wales and the outputs of this research project to develop new screening levels for contaminants in soil, are both designed as tools to be used by contaminated land risk assessors to inform decisions about whether or not it is necessary to proceed to a Detailed Quantitative Risk Assessment (DQRA) on a particular site taking into account the broad aims of the regime as set out in Section 1 of the Statutory Guidance. Questions have been raised about how these tools relate and interact.

41. Ultimately, it is up to individual risk assessors to make the most appropriate decisions on a site-by-site basis and to use the most appropriate tools in each case. However, with reference to the Part 2A Statutory Guidance, which states that 'normal' background concentrations should not be considered to cause a site to be determined as contaminated under Part 2A unless there is a reason to consider otherwise, it is envisaged that, where available, Category 4 Screening Levels should be the initial value against which site concentrations can be compared. Where a value on a particular site exceeds the Category 4 Screening Level for that substance, reference can then be made to the normal background concentration for that contaminant in that area.

If concentrations are higher than the relevant Category 4 Screening Level but within 'normal' background concentrations for that area, it is not envisaged that a site would be determined as contaminated under Part 2A (unless there was a reason to consider otherwise).

42. The British Geological Survey has derived 'normal' background concentrations for lead for England and Wales. In England, the 'normal' background concentrations of lead are 180 mg/kg for the 'principal' domain, 2,400 mg/kg for the 'mineralisation' domain and 820 mg/kg for the 'urban' domain (Defra, 2012) (see table below). In Wales the 'normal' background concentrations are 230 mg/kg for the 'principal' domain, 280 mg/kg for the 'mineralisation' domain and 890 - 1300 mg/kg for the 'urban' domain (Defra, 2013). Current advances in our understanding of the toxicology of lead have resulted in Category 4 Screening Levels for Residential, Allotments and Public Open Space 1 that are lower than the 'normal' background concentration of lead in ***urban*** *areas. This was also the case for the (now withdrawn) Soil Guideline Value for lead of 450 mg/kg.*

43. The report identifies other relevant considerations that may have a bearing on the final choice of Category 4 Screening Levels and the background level in soil is one of these. A pragmatic approach for lead would be to recommend the use of the 'normal' background concentration when the land use and domain permit (for example, providing other site and contaminant specific characteristics such as chemical form, bioavailability, soil depth, site use, etc. are comparable between the background and the site under investigation) so as not to disproportionately target land where there is widespread diffuse pollution of lead.

Normal background concentrations of contaminants in England

Substance	Principal domain	Urban domain	Mineralisation domain 1	Mineralisation domain 2	Ironstone	Chalk South
Arsenic	32 mg/kg		290 mg/kg		220 mg/kg	
Benzo-a-pyrene	0.5 mg/kg	3.6 mg/kg				
Cadmium	1.0 mg/kg	2.1 mg/kg	17 mg/kg	2.9 mg/kg		2.5 mg/kg
Lead	180 mg/kg	820 mg/kg	2400 mg/kg			

Where a valid Soil Guideline Value exists for a contaminant where a Category 4 Screening Level has also been derived, it is anticipated that risk assessors will use the Category 4 Screening Level in line with the Part 2A Statutory Guidance. In the absence of a suitable C4SL, risk assessors should identify and select appropriate generic assessment criteria in accordance with established good practice....'

The general approach indicated in the SP1010 document has been adopted in this report (as appropriate), although the C4SL values have been used as a second tier of risk assessment, due to the difference in the level of 'acceptable' risk between the various GACs (which we will adopt as the first tier of risk assessment) and the C4SLs.

National Planning Policy Framework (NPPF)

In relation to the requirements of a contaminated land risk assessment, the Department for Communities and Local Government publication titled '*National Planning Policy Framework*' (NPPF), dated March 2012, provides the following commentary:

'121. Planning policies and decisions should also ensure that:

- *the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
- *adequate site investigation information, prepared by a competent person, is presented.'*

The Defra SP1010 document states: '***The Part 2A Statutory Guidance and accompanying Impact Assessment were developed on the basis that Category 4 Screening Levels could be used under the planning regime, as they would be in Part 2A investigations directly***' [GeoDyne emphasis added].

Summary

Taking account of the foregoing, we consider that industry good practice is currently best represented by GAC (variously LQM/CIEH, Atkins ATRISKSOIL or EIC/AGS/CL:AIRE) that adopt a MRL as the foundation for its derivation. In the case of Lead (which is modelled on blood lead concentrations rather than typical exposure scenarios applicable to other contaminants), the relevant C4SL value has been adopted, as this incorporates the most up-to-date toxicological information in the derivation of the various end-use specific screening criteria.

In relation to the remaining C4SL values, these have been adopted as a second tier of generic assessment criteria, and will be utilised where the GAC has been exceeded at a Tier 1 generic level and where justified in a site-specific context. Whilst representing a LLTC, the C4SL values are considered to represent a suitably conservative assessment tool, given that they fall comfortably within Category 4.

In the following sections, screening criteria have collectively been referred to as Generic Assessment Criteria (GAC). The C4SL values have been referenced as such. The GAC/C4SL adopted herein, i.e. residential with plant uptake, are included in the tables in Section 6.8.

6.4.2 Selection of Soil Organic Matter (SOM) Content

The SOM content and soil type are used to provide an assessment of the applicability of the Tier 1 GAC adopted (the GAC are typically based upon SOM of 1%, 2.5% and 6%, as applicable, with Defra C4SL based on the default assumption of a UK Sandy Loam soil with 6% SOM).

Determinands have in the first instance, been compared to GAC adopting a conservative SOM of 1%, or, in the absence of one of the former, a relevant C4SL value. Where the determinand exceeds the relevant GAC at 1% SOM, a site specific SOM may be adopted as appropriate to derive new GAC and the dataset reassessed.

6.4.3 Assessment Methodology

Taking account of the foregoing, an initial qualitative Tier 1 Soil Assessment has been undertaken to assess the soils at the site. We have adopted a policy whereby determinands within the dataset are individually compared to the relevant screening values.

Where determinands within the dataset are less than the appropriate Tier 1 GAC value the determinand is considered to be present at an acceptable concentration and no further assessment is required. However, where a determinand exceeds the relevant Tier 1 GAC value on at least one occasion further assessment is required and will be undertaken in accordance with CL:AIRE/CIEH '*Guidance on Comparing Soil Contamination Data with a Critical Concentration*'.

Further assessment will comprise a quantitative Tier 1 assessment to examine the contamination data set in more detail. The methodology for undertaking the statistical assessment is provided in Section 6.5 below.

6.5 Statistical Considerations

Statistical tests relating to contaminated land, typically referred to as a Mean and Maximum Value Tests, were detailed in Department for Environment, Food and Rural Affairs and The Environment Agency publication CLR 7 '*Assessment of Risks to Human Health From Land Contamination: An Overview of the Development of Soil Guideline Values and Related Research*', dated 2002, ISBN 1-857-05732-5.

This guidance was superseded by publication of CL:AIRE/CIEH '*Guidance on Comparing Soil Contamination Data with a Critical Concentration*' dated May 2008.

6.5.1 Null and Alternative Hypothesis

In consideration of statistical guidance jointly published by CL:AIRE/CIEH *'Guidance on Comparing Soil Contamination Data with a Critical Concentration'*, statistical convention requires consideration of the Null Hypothesis (expressed as H_o) or an Alternative Hypothesis (expressed as H_1). Appropriate statistical tests are then applied to the data to assess whether the strength of evidence favours the Null or the Alternative Hypothesis.

For the purpose of the following contamination assessments and in accordance with the CL:AIRE/CIEH guidance the key question for the site is as follows.

Question - '*Is there sufficient evidence that the true mean concentration of a contaminant in soil (μ) is less than some critical concentration (Cc)?*'

The Null and Alternative hypotheses are therefore defined as follows.

The Null Hypothesis (H_o)

$\mu \geq Cc$ (i.e. Tier 1 or 2 Assessment Criteria).

The Alternative Hypothesis (H_1) (the question the selected statistical test is designed to answer)

$\mu < Cc$ (i.e. Tier 1 or 2 Assessment Criteria).

6.5.2 95th Percentile Upper Confidence Level Mean Values

The selected relevant statistical assessment undertaken to evaluate the Null and Alternative Hypotheses requires consideration of the 95th Percentile Upper Confidence Level Mean value (this is abbreviated as the UCL).

The UCL value takes account the number of samples tested, the data set mean and the standard deviation of the data set and applies a correction factor to take account of the uncertainty of the data set.

CL:AIRE/CIEH guidance states that *'…since the 95% UCL is at most times greater than the true population mean, it follows that if the 95% UCL is less than Cc, the assessor will know (with a defined high level of confidence) that the true population mean (μ, the value which is not known) is also likely to be less than Cc'*.

6.5.3 Considerations for Appropriate Dataset(s)

The CL:AIRE/CIEH statistical guidance requires consideration of the appropriateness of the dataset being subjected to the statistical testing and notes the following three key elements to be considered.

- Consideration of any non-detects within the dataset.
- Consideration of potential outliers within the dataset.
- Consideration of the statistical distribution of the data (i.e. normality/non normality).

6.5.4 Consideration of Normality of Dataset

CL:AIRE/CIEH statistical guidance notes that the choice of statistical test to be applied to the dataset will depend on the assumptions about the distribution of the data being tested. The assumptions of the statistical test adopted therefore must be appropriate to the distribution assumptions of the data being considered.

The CL:AIRE/CIEH statistical guidance details the following two key statistical tests.

- **The one-sample t test** - assumes the data being assessed is approximately normally distributed.
- **The one-sided Chebychev Theorem** - assumes the data being assessed does not demonstrate normality (method makes no assumption about the shape of the distribution).

CL:AIRE/CIEH statistical guidance, however notes '*…with large datasets, minor deviations from normality may be flagged as statistically significant even though small deviations from a normal distribution will not affect the reliability of the one sample t-test'*. The guidance goes on to note '*Conversely, datasets with a small sample size more easily pass normality tests.* ***Failing, however to detect non-normality in a small dataset is unlikely to compromise the validity of the one sample t-test*****'** [GeoDyne emphasis added].

CL:AIRE/CIEH statistical guidance further notes '*When considering which of the two tests to use, however, assessors should bear in mind that, in general, the one-sample t-test is more powerful that the method based on the Chebychev Theorem…****Given that the one sample t-test is also not sensitive to moderate departures from normality, it is recommended that assessors use the t-test unless there is good evidence that the dataset departs significantly from normality*****'** [GeoDyne emphasis added]**.**

On the basis of the above, an assumption of data normality has been made and the one-sample t-test adopted accordingly.

6.5.5 Consideration of Non-Detects within the Dataset

The dataset may reveal the presence of non-detects for a number of the determinands tested. Where this occurs, we have adopted the LOD (i.e. 1.0LOD) as the chemical concentration, which provides a suitably conservative approach. However, please note that GACs have only been used for determinands where they are present at concentrations in excess of the LOD on at least one occasion.

6.5.6 Consideration of Outliers

The CL:AIRE/CIEH statistical guidance advises that '*…if outliers are identified, assessors have to decide whether they represent genuine soil concentrations or are the result of an error'*. The guidance further notes that outliers should only be excluded from a dataset where they '*…are obviously and demonstrably the result of an error that can be identified and explained'* or *'…clearly indicate that more than one soil population exists within the dataset and this can be justified by (or informs the further development of) the conceptual model- in which case the different population expressed by the outlier(s) should be explored in more detail*'.

Taking account of the foregoing, we have adopted a policy of interrogating the relevant dataset to calculate the UCL and to ascertain the possible presence of statistical outliers (where relevant). At this point the possible relevance of statistical outliers to the interpretation of the data is considered, in accordance with the following matrix.

TABLE 5 – OUTLIER DECISION MATRIX		
	UCL < GAC	UCL > GAC
Outlier Test reveals No Hotspot(s)	Determinand present at acceptable concentrations.	Pervasive contamination present in soil at unacceptable concentrations.
Outlier Test reveals Hotspot(s)	Determinand present at acceptable concentrations. Possible second population identified. Only of potential concern where outlier is at an individual concentration in excess of the Tier 1 GAC.	Pervasive contamination present in soil at unacceptable concentrations with possible hotspots of contamination identified.

6.5.7 CLEA Averaging Area

The CLEA Model requires consideration of an averaging area, i.e. an area within which the UCL is calculated and compared to the Tier 1 GAC. Within our assessments (where appropriate) the entire site has been adopted as the averaging area, in the first instance.

6.6 Sampling Strategy

The sampling strategy was based on a review of the historical, geological and environmental information obtained as part of the Desk Study investigation, together with the current and proposed site setting and the ground conditions encountered during our Phase II exploratory works.

Several areas of potential contamination were identified in the Phase I Desk Study and site walkover. Boreholes therefore targeted the suspected underground fuel storage tank (UST), the former above ground tanks, the former boiler house and the glasshouses, where access permitted. In addition, it was considered appropriate to position the boreholes to provide general site coverage taking account of the presence of known buried services.

Table 6 summarises the reasoning behind the exploratory hole positions.

TABLE 6 – REASONING FOR EXPLORATORY HOLE LOCATION	
Borehole Reference	Reasoning Behind Location
WS1	Targeted to possible infilled ditch to immediate north of the site, together to other potential off-site sources of ground gas (including the former marshy land and ponds at 'Brick Field' to the north). (Ground gas and water monitoring standpipe installed).
WS2 to WS9, WS23 & HAH2	Targeted to inside the glasshouse buildings where access permitted. (Ground gas and water monitoring standpipes installed in WS3, WS7 and WS9).
WS10 to WS12	Targeted to existing above ground fuel storage tank and the suspected underground fuel storage tank. (Ground gas and water monitoring standpipe installed in WS10).
WS15, WS16, WS19 to WS22	Targeted to anticipated former fuel storage tanks, based on desk study information. (Ground gas and water monitoring standpipe installed in WS21).
HAH5 & HAH6	Targeted to possible former boiler house.
WS10, WS12 to WS14	Targeted adjacent to the commercial building in southwest of the site.
WS14, WS17, WS18, HAH1, HAH3, HAH4, HAH7, HAH8 & BH1 to BH3	General site coverage avoiding known utilities. (Ground gas and water monitoring standpipes installed in WS14, WS17 and WS18).
Key WS – Window Sample Borehole BH – Cable Percussive Borehole HAH – Hand Auger Hole	

The ground conditions encountered during our Phase II works generally revealed the presence of three distinct types of material i) topsoil, ii) Made Ground (including Made Ground topsoil), and iii) the underlying Natural Strata.

Representative samples were obtained during our Phase II works and subjected to chemical analysis for a suite of contaminants deemed appropriate based on the findings of the Desk Study enquiries. It is noted that the suite of contaminants detailed in Section 3.8.1 were considered to remain applicable as an initial chemical screen of the encountered soils following completion of the site investigation works.

6.7 Contamination Analysis

A total of 20No. standard chemical contamination tests (including metals, speciated PAH and TOC) were carried out on selected soil samples obtained during the site works, which comprised 2No. tests of the localised natural topsoil, 12No. tests of the Made Ground (including Made Ground topsoil) and 6No. tests of the underlying Natural Strata.

A total of 15No. speciated TPH tests were carried out on selected soil samples, which comprised 6No. tests of the Made Ground and 9No. tests of the underlying Natural Strata. 8No. asbestos tests / identifications were carried out on selected samples of the Made Ground and Made Ground topsoil. Pesticide screening was also undertaken on 15No. samples of the various shallow soils recovered from locations around the site.

6.8 Contamination Soil Test Results

Topsoil

The contamination assessment for the samples of topsoil (including Made Ground topsoil) analysed is summarised in Table 7.

TABLE 7 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – TOPSOIL)

Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals						
Arsenic	12	<1 – 7	37 $_{S4UL}$	37	NA	No
Cadmium	12	<0.5 – 0.6	11 $_{S4UL}$	22	NA	No
Chromium III	12	10 – 18	910 $_{S4UL}$	-	NA	No
Copper	12	1 – 19	2400 $_{S4UL}$	-	NA	No
Lead	12	5 – 128	200 $_{C4SL}$	200	NA	No
Nickel	12	10 – 15	130 $_{S4UL}$	-	NA	No
Zinc	12	23 – 99	3700 $_{S4UL}$	-	NA	No

Table 7 continued on next page.

TABLE 7 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – TOPSOIL)						
Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Speciated PAHs						
Benzo(a)anthracene	12	<0.1 – 0.2	7.2 S4UL	-	NA	No
Benzo(a)pyrene	12	<0.1 – 0.2	2.2 S4UL	5	NA	No
Benzo(b)fluoranthene	12	<0.1 – 0.2	2.6 S4UL	-	NA	No
Benzo(ghi)perylene	12	<0.1 – 0.1	320 S4UL	-	NA	No
Chrysene	12	<0.1 – 0.2	15 S4UL	-	NA	No
Fluoranthene	12	<0.1 – 0.4	280 S4UL	-	NA	No
Indeno(123-cd)pyrene	12	<0.1 – 0.1	27 S4UL	-	NA	No
Phenanthrene	12	<0.1 – 0.2	95 S4UL	-	NA	No
Pyrene	12	<0.1 – 0.4	620 S4UL	-	NA	No

Key

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C4SL – values for Arsenic, Cadmium, Lead and Benzo(a)pyrene taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use.
NA – UCL not applicable as all individual concentrations are present at concentrations individually below the GAC.

All of the determinands assessed were present either at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

Made Ground

The contamination assessment for the samples of Made Ground analysed is summarised in Table 8.

TABLE 8 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – MADE GROUND)						
Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals						
Arsenic	2	<1 & 7	37 S4UL	37	NA	No
Cadmium	2	<0.5 & 1.1	11 S4UL	22	NA	No
Chromium III	2	10 & 17	910 S4UL	-	NA	No
Copper	2	1 & 20	2400 S4UL	-	NA	No
Lead	2	4 & 22	200 C4SL	200	NA	No
Nickel	2	9 & 14	130 S4UL	-	NA	No
Selenium	2	<1 & 1	250 S4UL	-	NA	No
Zinc	2	24 & 68	3700 S4UL	-	NA	No

Table 8 continued on next page.

TABLE 8 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – MADE GROUND)						
Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Speciated TPHs						
C8-C10 aliphatic	6	<0.01 – 0.06	27 S4UL	-	NA	No
C10-C12 aliphatic	6	<0.1 – 86.7	130 S4UL	-	NA	No
C12-C16 aliphatic	6	<0.1 – 266	1100 S4UL	-	NA	No
C16-C35 aliphatic	6	<0.2 – 546	65000 S4UL	-	NA	No
C8-C10 aromatic	6	<0.01 – 0.03	34 S4UL	-	NA	No
C10-C12 aromatic	6	<0.1 – 89.9	74 S4UL	-	NA	Yes#
C12-C16 aromatic	6	<0.1 – 373	140 S4UL	-	NA	Yes#
C16-C21 aromatic	6	<0.1 – 463	260 S4UL	-	NA	Yes#
C21-C35 aromatic	6	<0.1 – 520	1100 S4UL	-	NA	No

Key

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C4SL – values for Arsenic, Cadmium and Lead taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use.
– See comments below table (where relevant).
NA – UCL not applicable as all individual concentrations are present at concentrations individually below the GAC.

Speciated TPH

The contamination assessment has revealed individual concentrations for the following TPH carbon fractions to exceed their respective Tier 1 GAC.

- Aromatics >C10 – C12
- Aromatics >C12 – C16
- Aromatics >C16 – C21

The Made Ground (clayey silt with gravel pockets and concrete fragments) in window sample borehole WS10 (at 0.30m begl) revealed TPH Aromatic carbon fractions C10-C12, C12-C16 and C16-C21 of 89.9mg/kg, 373mg/kg and 463mg/kg respectively. These values are in excess of the respective Tier 1 GAC of 74mg/kg, 140mg/kg and 260mg/kg for a residential with plant uptake end-use scenario. WS10 was situated adjacent to the above ground oil heating tank, the former fuel pump and the suspected underground petrol storage tank in the south-west portion of the site, although no visual or olfactory evidence of hydrocarbon impaction was noted in the soils in the field.

All of the remaining determinands assessed were present either at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

Natural Strata

The contamination assessment for the samples of Natural Strata analysed is summarised in Table 9.

TABLE 9 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – NATURAL STRATA)

Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals						
Arsenic	6	<1 – 10	37 S4UL	37	NA	No
Cadmium	6	<0.5 – 1.0	11 S4UL	22	NA	No
Chromium III	6	9 – 38	910 S4UL	-	NA	No
Copper	6	2 – 24	2400 S4UL	-	NA	No
Lead	6	4 – 24	200 C4SL	200	NA	No
Nickel	6	8 – 38	130 S4UL	-	NA	No
Zinc	6	20 – 78	3700 S4UL	-	NA	No
Speciated TPHs						
C6-C8 aliphatic	9	<0.01 – 0.40	100 S4UL	-	NA	No
C8-C10 aliphatic	9	<0.01 – 1.40	27 S4UL	-	NA	No
C10-C12 aliphatic	9	<0.1 – 28.0	130 S4UL	-	NA	No
C12-C16 aliphatic	9	<0.1 – 86.9	1100 S4UL	-	NA	No
C16-C35 aliphatic	9	<0.2 – 194.7	65000 S4UL	-	NA	No
C8-C10 aromatic	9	<0.01 – 5.99	34 S4UL	-	NA	No
C10-C12 aromatic	9	<0.1 – 41.4	74 S4UL	-	NA	No
C12-C16 aromatic	9	<0.1 – 158	140 S4UL	-	NA	Yes#
C16-C21 aromatic	9	<0.1 – 192	260 S4UL	-	NA	No
C21-C35 aromatic	9	<0.1 – 227	1100 S4UL	-	NA	No
Ethyl Benzene	9	<0.01 – 0.18	47 S4UL	-	NA	No
m & p Xylene	9	<0.01 – 0.30	115 S4UL	-	NA	No

Key

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C4SL – values for Arsenic, Cadmium and Lead taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use.
NA – UCL not applicable as all individual concentrations are present at concentrations individually below the GAC.

The data in Table 9 may be summarised as follows.

Speciated TPH

The contamination assessment has revealed only the TPH carbon fraction Aromatics >C12 – C16 to exceed the respective Tier 1 GAC in one location at the site. The Natural Silt in window sample borehole WS15 (at 2.80m begl) revealed TPH Aromatic carbon fraction C12-C16 of 158mg/kg which exceeded the Tier 1 GAC of 140mg/kg for a residential with plant uptake end-use scenario. WS15 was situated adjacent to the above ground oil heating tank(s) in the central western portion of the site where visual and olfactory evidence of hydrocarbon impaction of the soils was noted.

All of the remaining determinands assessed were present either at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

6.8.1 Pesticide and Herbicide Screening

Pesticide and herbicide screening was undertaken on samples of the topsoil (both Made Ground and Natural), and other shallow strata from 15No. locations across the site as part of a contamination screening assessment. The pesticide and herbicide determinands assessed were present at individual concentrations below the limits of detection of the method of analysis adopted by the laboratory, with the exception of the following pesticides:

- Endosulphan II (Beta), detected in one sample at a concentration of 0.02 mg/kg (WS3).
- DDD (dichlorodiphenyldichloroethane), detected in two samples at concentrations of 0.01mg/kg (WS3) and 0.04mg/kg (WS9).
- DDE (dichlorodiphenyldichloroethylene), detected in two samples at concentrations of 0.02mg/kg (WS3) and 0.06mg/kg (WS9).

A Suitable 4 Use Level (S4UL) value has been published for Endosulphan II (Beta) (7.0mg/kg) for a residential with plant uptake end use, which is not exceeded by the concentrations detected at the site.

The other determinands encountered (i.e. DDE and DDD) have been historically and ubiquitously used as agricultural pesticides and are known to be extremely persistent in the environment. DDE is also a breakdown product of DDT (although DDT has not been recorded above laboratory detection limits at this site). These compounds are known to be bioaccumulators in fatty tissues of organisms. Reported toxic effects to humans include carcinogenicity, reproductive and developmental toxicity and acute toxicity.

The UK regulatory standard for the concentration of total pesticides within drinking water (i.e. for human consumption at the consumers tap) is set as 0.5 µg/l. An individual statutory value for DDT has not been set, however a value of 0.1µg/l is given by the UK Drinking Water Standards for 'other pesticides'.

We would note that there are presently no publicly available generic screening criteria for DDT, DDE or DDD specific to the UK setting. We have therefore reviewed other sources of screening criteria for comparison purposes.

Guidance published by the Dutch Ministry of Infrastructure and the Environment '*Soil Remediation Circular*' (1 July 2013) provided Dutch Intervention Values (DIV) for many chemical determinands, including common pesticides. The DIVs are 2.3mg/kg for DDE and 34mg/kg for DDD.

Guidance published by The Canadian Council of Ministers of the Environment, '*Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health*' (Update 7.0 dated September 2007), which includes DDT, provides a residential screening value of 0.7mg/kg. The residential screening value for DDT refers to the sum of the concentrations of DDT, DDD and DDE.

A review of the Pesticide Action Network UK website information for DDT suggests that human studies showed no ill-effects following a 0.5mg/kg daily intake for eighteen months.

USEPA (United States Environmental Protection Agency) have co-operated to prepare Screening Levels (SLs) *'Regional Screening Level (RSL) Summary Table April 2019*' for *'Resident Soil'* for use within Superfund sites (i.e. contaminated land). A screening level of 2.0mg/kg for DDE and 1.9mg/kg for DDD.

The contamination assessment for the soils analysed for pesticides at the site is summarised in Table 10.

TABLE 8 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT FOR PESTICIDES (RESIDENTIAL WITH PLANT UPTAKE END-USE)

Pesticide	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)				Tier 1 GAC Exceeded (Yes/No)
			S4UL	DIV	CCME	USEPA	
Endosulphan II (Beta)	15	<0.01 – 0.02	7.0	4.0*	-	470	No
DDE	15	<0.01 – 0.01	-	2.3	0.7**	2.0	No
DDD	15	<0.01 – 0.06	-	34	0.7**	1.9	No

Key

S4UL – CIEH/LQM Suitable 4 Use Levels (2015) based on 1% SOM. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved.

DIV – Dutch Intervention Values, taken from Dutch Ministry of Infrastructure and the Environment '*Soil Remediation Circular*' (dated 1st July 2013)

CCME – Canadian Council of Ministers of the Environment Residential Screening Values, taken from '*Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health*' (Update 7.0 dated September 2007).

USEPA – April 2019 values; taken from Regional Screening Level Summary Table for Residential end-use.

* – DIV for Endosulphan (Alpha), however, this has been used for comparison to the recorded concentration of Endosulphan II (Beta).

** - CCME Value relates to a sum of DDT, DDE and DDD concentrations.

All of the determinands assessed were present either at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

6.8.2 Asbestos Screens

A total of eight soil samples were assessed for the presence of asbestos by the laboratory, comprising samples of the Made Ground. None of the samples analysed by the laboratory revealed the presence of asbestos.

6.9 Contamination Assessment Summary

Contamination testing was carried out on selected samples of the topsoil, Made Ground and the underlying Natural Strata.

Risks to Human Health

On the basis of current works, the results of the contamination assessment have indicated that the topsoil, general Made Ground and the Natural Strata across the wider site area may be considered to be uncontaminated, based on a proposed residential with plant uptake end-use. However, localised hydrocarbon impacted soils have been identified in the immediate vicinity of the anticipated former above ground fuel storage tanks (ASTs), from a visual / olfactory perspective (WS15; 1.20m to 2.70m begl, WS20; 1.00m to 2.30m begl and WS21; 2.60m to 3.00m). The results of the laboratory testing have revealed an elevated concentration of one of the TPH carbon fractions above Tier 1 human health generic assessment criteria (GAC) (in WS15), based on a proposed residential with plant uptake end-use.

In addition, the results of the contamination assessment have also indicated elevated concentrations of certain TPH carbon fractions above Tier 1 human health GAC in one of the other exploratory hole locations (WS10) situated adjacent to another above ground heating oil tank, which is next to the former fuel pump and the suspected underground petrol storage tank in the south-west portion of the site. These soils are considered in more detail in Sections 8.15 and 8.16.

Risks to Controlled Waters

The contamination assessment has revealed TPH contamination in the area of the existing ASTs, within WS10 in the Made Ground and WS15 in the Natural Strata. Whilst we note that there remains the potential for the hydrocarbon contamination in these areas to pose a risk to Controlled Waters, particularly with respect to the shallow water encountered during the intrusive works and subsequent programme of monitoring, we would further comment that the site is underlain by Unproductive Strata (as designated by the Environment Agency).

It is also noted that there are drains (open watercourses) on / close to the boundaries of the site and the River Welland is situated approximate 70m to the east of the site. The areas where notable hydrocarbon concentrations have been recorded on site are situated at least 100m from the nearest drains. On this basis, the risk of significant impaction of the Controlled Waters in the vicinity of the site is considered to be relatively low based on the contaminant concentrations recorded to date.

It should be noted, however, that given that it was only possible to advance exploratory holes in the vicinity of the tanks (and not directly beneath these features), the presence of higher concentrations of hydrocarbons cannot be discounted given the presence of visual and olfactory impacted soils and the soil concentrations recorded in the exploratory holes advanced to date. The presence of these hydrocarbon impacted soils suggests that the tanks and / or the associated pipework may have been prone to historical leakage and / or spillages of fuel may have occurred. Areas of potentially more significant contamination, not encountered by these initial exploratory works, may therefore be present at the site.

Further investigation works will therefore be required following removal of the tanks and their associated structures, together with risk assessment works to derive clean-up targets that are protective of Controlled Waters and also human health.

7.0 CONCEPTUAL SITE MODEL

7.1 General

The DEFRA publication '*Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance*' (dated April 2012) states the following with regards to the production of a Conceptual Site Model (CSM) for a site:

'*The process of risk assessment involves understanding the risks presented by land, and the associated uncertainties. In practice, this understanding is usually developed and communicated in the form of a "conceptual model"*'. The development of a CSM is typically undertaken in an iterative process, reflecting the changes in understanding as more detailed site information becomes available.

In developing a CSM, and specifically in the context of land contamination, consideration needs to be given to three essential elements; which form the basis of any risk present. The statutory guidance sections 3.8 and 3.9 (April 2012) states the following with respect to Part 2A.

'Under Part 2A, for a relevant risk to exist there needs to be one or more contaminant-pathway-receptor [CPR] *linkages – "contaminant linkage" – by which a relevant receptor might be affected by the contaminants in question. In other words, for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters. For the purposes of this guidance:*

(a) A "contaminant" is a substance which is in, on or under the land and which has the potential to cause significant harm to a relevant receptor, or to cause significant pollution of controlled waters.
(b) A "receptor" is something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property, or controlled waters. The various types of receptors that are relevant under the Part 2A regime are explained in later sections.
(c) A "pathway" is a route by which a receptor is or might be affected by a contaminant.

The term "contaminant linkage" means the relationship between a contaminant, a pathway and a receptor. All three elements of a contaminant linkage must exist in relation to a particular land before the land can be considered potentially to be contaminated land under Part 2A, including evidence of the actual presence of contaminants. The term "significant contaminant linkage", as used in this Guidance, means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land. The term "significant contaminant" means the contaminant which forms part of a significant contaminant linkage.'

With respect to the presence of background levels of contaminants, section 3.21 to 3.23 states '*The Part 2A regime was introduced to help identify and deal with land which poses unacceptable levels of risk. It was not intended to apply to land with levels of contaminants in soil that are commonplace and widespread throughout England or parts of it, and for which in the very large majority of cases there is no reason to consider that there is an unacceptable risk.*

Normal levels of contaminants in soil should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise. Therefore, if it is established that land is at or close to normal levels of particular contaminants, it should usually not be considered further in relation to the Part 2A regime...

For the purpose of this Guidance, "normal" levels of contaminants in soil may result from:

(a) The natural presence of contaminants (e.g. caused by soil formation processes and underlying geology) at levels that might reasonably be considered typical in a given area and have not been shown to pose an unacceptable risk to health or the environment.
(b) The presence of contaminants caused by low level diffuse pollution, and common human activity other than specific industrial processes. For example, this would include diffuse pollution caused by historic use of leaded petrol and the presence of benzo(a)pyrene from vehicle exhausts, and the spreading of domestic ash in gardens at levels that might reasonably be considered typical.'

In selecting appropriate generic assessment criteria Section 3.27 of the Guidance states:

'It is common practice in contaminated land risk assessment to use "generic assessment criteria" (GACs) as screening tools in generic quantitative human health risk assessment to help assessors decide when land can be excluded from the need for further inspection and assessment, or when further work would be warranted'.

With respect to assessing contaminated land, section 4.17 of the Guidance states:

'In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health, the local authority should use the categorisations described in paragraphs 4.19 – 4.30 below. Categories 1 and 2 would encompass land which is capable of being determined as contaminated land on the grounds of significant possibility of harm to human health. Categories 3 and 4 would encompass land which is not capable of being determined on such grounds.'

In relation to the use of GAC values in the assessment of contaminated land, section 3.29 of the Guidance states:

'GACs relating to human health risk assessment represent cautious estimates of levels of contaminants in soil at which there is considered to be no risk to health or, at most, a minimal risk to health. With regards to such GACs:

(a) They may be used to indicate when land is very unlikely to pose a significant possibility of significant harm to human health. This is on the basis that they are designed to estimate levels of contamination at which risks are likely to be negligible or minimal and far from posing a significant possibility of significant harm to human health.
(b) They should not be used as direct indicators of whether a significant possibility of significant harm to human health may exist. Also, the local authority should not view the degree by which the GACs are exceeded (in itself) as being particularly relevant to this consideration, given that the degree of risk posed by land would normally depend on many factors other than simply the amount of contaminants in soil.
(c) They should not be seen as screening levels which describe the boundary between Categories 3 and 4 in terms of Section 4 (i.e. the two Categories in which land would not be contaminated land on grounds of risk to human health). In the very large majority of cases, these SGVs/GACs describe levels of contamination from which risks should be considered to be comfortably within Category 4.

(d) They should not be viewed as indicators of levels of contamination above which detailed risk assessment would automatically be required under Part 2A.
(e) They should not be used as generic remediation targets under the Part 2A regime. Nor should they be used in this way under the planning system, for example in relation to ensuring that land affected by contamination does not meet the Part 2A definition of contaminated land after it has been developed.'

In undertaking a risk assessment and deriving a CSM for the purposes of the redevelopment of a site (i.e. planning and development control) reference has been made to both the Model Procedures for the Management of Land Contamination, as well as the National Planning Policy Framework (NPPF, dated March 2012). Reference has also been made to the Contaminated Land Statutory Guidance (referenced above), although this is primarily concerned with Local Government determinations of Statutory '*Contaminated Land*', which is separate to planning framework requirements.

7.2 Contaminant-Pathway-Receptor [CPR] Considerations

The following CPR assessment has been undertaken based on the assumption of a residential with plant uptake end-use for the proposed development.

7.3 Consideration of Potential Sources of Contamination [C]

Based on the findings of our works, the potential key sources of contamination at the site are considered to be the following:

- Metals associated with any Made Ground beneath the site.
- Polycyclic Aromatic Hydrocarbons (PAHs) derived from any ashy or carbonaceous inclusions in the near surface soils, as well as within oils / fuels.
- Petroleum hydrocarbons associated with any spillages or leakages from the underground and above ground fuel storage tanks, associated pipe work, and spillages during delivery and / or operation. Potential contaminants include TPH, BTEX compounds and potentially MTBE and organic lead.
- Asbestos Containing Materials (ACMs) associated with the current (and historical) structures on the site.
- Pesticides associated with the sites former and current use as a garden nursery.
- Potentially hazardous ground gases (i.e. methane and carbon dioxide) associated with any natural peat / organic deposits beneath the site.

In addition, consideration has also been given to the following:

- Sulphate / Acid conditions (mainly for constructional reasons).
- Radon

7.4 Consideration of Potential Pathways [P]

The potential pathways at the site are primarily:

- Direct ingestion of soil.
- Inhalation of dust and vapours.
- Direct skin contact with the ground.
- Direct ground contact with building materials.
- Direct ingestion of home-grown produce.
- Vertical and lateral migration of contamination.

- Vertical and lateral migration of potentially hazardous ground gases/vapours.

7.5 Consideration of Potential Receptors [R]

The potential receptors at the site are:

- The construction personnel (i.e. site workers) involved with the development of the site (typically short term (acute) exposure).
- The final end users (i.e. residents – typically long term (chronic) exposure) or site visitors (typically acute exposure).
- Controlled Waters (i.e. underlying groundwater, open drainage ditches).
- Neighbouring properties (off-site receptors).
- Buildings / construction materials (including buried utilities).

7.6 Summary

GeoDyne Limited's conceptual site model of possible CPR pollutant linkages, applicable to the proposed site usage and based on the information currently available, is summarised in Table 11. Please note that the following table is based on the results of the chemical analysis undertaken and that further consideration should be given to the hydrocarbon impacted soils which could potentially be an issue, certainly from an olfactory perspective, and possibly from a human health perspective subject to further works (see Section 8.16).

TABLE 11 – SUMMARY OF CPR ASSESSMENT

Contaminant	Pathway	Receptor	Comments	Plausible Pollutant Linkage	Possible Mitigation	Possible Statutory 'Contaminated Land' following mitigation
Existing and former tanks and pipelines	*Leakages and spillages*	*Soil and groundwater*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted.	*Yes*	Decommission and remove tanks etc. in accordance with a Remediation Strategy / Remediation Method Statement, including validation testing following removal.	No
Contaminated Soils	*Direct Ingestion / Direct Contact*	*Site Workers*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted.	*Yes*	Site works to wear appropriate PPE for health and safety reasons.	No
Contaminated Soils	*Inhalation of Dust and Vapours*	*Site Workers*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted.	*Yes*	Site works to wear appropriate PPE for health and safety reasons.	No

TABLE 11 – SUMMARY OF CPR ASSESSMENT						
Contaminant	Pathway	Receptor	Comments	Plausible Pollutant Linkage	Possible Mitigation	Possible Statutory 'Contaminated Land' following mitigation
Contaminated Soils	*Direct Ingestion / Direct Contact*	*End Users (Residents & Site Visitors)*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted.	*Yes*	Further investigation works (during/post – demo) required in the area of the existing and former ASTs and UST. Source removal works may be required. Remedial capping should be provided in some areas of private gardens and soft landscape; to be delineated following foregoing further works.	No
Contaminated Soils	*Inhalation of Dust and Vapours*	*End Users (Residents & Site Visitors)*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted. Following site development, generation of significant levels of dust on a chronic basis unlikely.	*Yes*	Further investigation works (during/post – demo) required in the area of the existing and former ASTs and UST. Source removal works may be required. Remedial capping should be provided in some areas of private gardens and soft landscape, and potentially gas protection measures; area to be delineated following foregoing further works.	No
Contaminated Soils	*Vertical and Lateral Migration*	*Neighbouring properties (off site receptors)*	Elevated concentrations of TPH have been detected in vicinity of the ASTs, including where visual and olfactory evidence of hydrocarbon impaction of the soils has been noted.	*Yes* (?)	Tank(s) to be removed and validated as part of remedial works. Source removal works may be required. Further investigation and delineation of contaminant concentrations in the vicinity of the existing and former ASTs and UST.	No
Contaminated Soils	*Vertical and Lateral Migration*	*Controlled Waters*	The site is underlain by Unproductive Strata. The site does not lie within a Source Protection Zone (SPZ). Drains (open watercourses) situated on / close to the site boundary and the River Welland is situated approximately 70m to the east. Further works are required in the area of the anticipated former fuel storage tanks to assess the potential risks to Controlled Waters and human health.	?	ASTs / UST and associated pipelines to be removed and validated as part of remedial works. Further investigation, delineation and risk assessment of contaminant concentrations in the vicinity of the existing and former ASTs and UST. This may lead onto DQRA works.	No

TABLE 11 – SUMMARY OF CPR ASSESSMENT						
Contaminant	Pathway	Receptor	Comments	Plausible Pollutant Linkage	Possible Mitigation	Possible Statutory 'Contaminated Land' following mitigation
Asbestos Containing Materials	*Site Worker & End Users – Residents*	*Inhalation of Dust*	Asbestos analysis of Made Ground did not identify the presence of any asbestos fibres. Possible asbestos containing materials in existing building materials/fabric.	?	Undertake a Pre-demolition asbestos survey and confirmatory post demolition asbestos testing.	No
Water Soluble Sulphate/Acid Contaminated Soils	*Direct Contact*	*Building Materials*	Design Class DS-2/ACEC Class AC-2. (BRE Spec. Digest 1:2005).	Yes	Adopt appropriate concrete mix for all concrete in contact with the ground.	No
Radon	*Vertical and Lateral Migration*	*Site Users & Building Envelope*	Based on the Desk Study works, the site does not lie within an area affected by radon.	No	No specific precautions required in proposed dwellings.	No
Ground Gases	*Vertical and Lateral Migration*	*Site Users & Building Envelope*	Based on the gas monitoring carried out to date, elevated methane and carbon dioxide concentrations and flow rates have been recorded in one location (WS1).	?	Further gas monitoring is required in order to determine the ground gas regime and the requirements for gas protection.	?

KEY

Where text is in ***Bold Italic*** item is potentially present. Where normal text is used item is not present/plausible.

No - Pollutant linkage not plausible.
Yes - Pollutant linkage plausible, mitigation required.
? - Insufficient information, further work necessary.
The requirement for mitigation is subject to review and confirmation by the appropriate regulatory authority.

In the foregoing CPR assessment, determinands identified by chemical analysis are only considered to be contaminated with respect to generic guidance where the determinand is present at concentrations above the respective screening criteria.

8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 Site Summary

At the time of our works the site generally comprised an operational garden nursery.

Historically, the site comprised open farmland prior to being progressively developed as a nursery from circa the 1960s to present day. A commercial premises building (of various usage) has been present in the southwest of the site from circa the 1970s. A residential property is shown to have been present in the southeast of the site from the 1960s and now includes a horse paddock to its west. Fuel storage tanks are indicated to have been present in the central western and southwestern areas of the site from around the 1970s.

8.2 Site Geology

The site is shown to be underlain by Tidal Flat Deposits (Barroway Drove and Terrington Beds). The Tidal Flat Deposits are indicated to be sequentially underlain by strata comprising the Abbey Sand and Gravel, and at depth by the Oxford Clay Formation.

8.3 Ground Conditions

Natural silty clayey topsoil was only encountered in localised areas of the site, with an average thickness of 0.30m. The remaining topsoil, which was generally encountered beneath geotextile membranes within the large glasshouses, was logged as Made Ground topsoil due to its disturbed nature (being utilised as a growing medium for plant cultivation) and the localised presence of anthropogenic materials including compost and rare brick fragments. Rare shards of glass were noted in the topsoil in one of the exploratory holes. Where encountered, the Made Ground topsoil was recorded to typical depths of up to 0.50m begl.

General Made Ground was encountered in 11 of the exploratory holes advanced at the site to depths recorded up to 0.85m begl. In general, the Made Ground comprised silt and clay, with gravel and anthropogenic materials (predominantly broken brick and concrete fragments). The general Made Ground was mainly encountered in the exploratory holes advanced in the vicinity of the fuel tanks and adjacent to the buildings, where the Made Ground was typically surfaced with concrete and / or macadam hardstanding. Elsewhere silt and clay rich materials were encountered at surface mixed with pockets of topsoil.

The Natural Strata typically comprised soft (locally very soft or firm) silty CLAY and / or clayey SILT to the base of the exploratory holes. These soils were noted to be water bearing from depths of approximately 1m begl. The strength of these strata was noted to be inconsistent, both vertically and laterally, across the site. Within three of the exploratory holes bands of running silt were encountered at depths of between 1.00m and 2.25m begl.

The Silt/Clay was only fully penetrated in the three deeper cable percussive boreholes, at depths of either 10.10m or 10.80m begl. Where fully penetrated the Silt / Clay was underlain by medium dense (locally very dense) gravelly SAND with thicknesses of up to 2.80m.

In the majority of the exploratory holes fibrous PEAT was encountered within the Silt / Clay strata from various depths in excess of 1.60m begl. The Peat was typically observed within small pockets, although a discrete band of amorphous Peat was encountered at the base of the Silt / Clay between 10.10m and 10.40m begl in BH3.

The bedrock geology was only encountered in the three deeper cable percussive boreholes where the drift deposits were fully penetrated at depths of between 12.40m and 13.30m begl. The bedrock generally comprised very stiff (locally slightly gravelly) CLAY. The Clay generally became more stiff towards the base of the boreholes which were terminated, due to SPT refusals, at depths of between 18.70m and 19.00m begl.

8.4 Foundation Design

Highly variable ground conditions within the superficial drift deposits across the site, including soils of poor geotechnical competency, shallow water, organic materials (including Peat) and unstable soils, are likely to preclude a traditional shallow foundation solution.

Therefore, the use of a deeper founding solution (i.e. piles for example) should be considered within the more competent strata of the underlying bedrock. Furthermore, we would note the presence of high water demand trees bordering much of the site, and anticipated significant depths of Made Ground associated with the existing buildings and associated buried infrastructure. The presence of trees and Made Ground would require the deepening of foundations. A piled foundation solution would negate the requirement for deepening of foundations into geotechnically unsuitable very soft strata encountered across much of the site, particularly below depths of circa 2m to 3m begl.

We would recommend advice from a specialist piling contractor to confirm the depths of the piles and the most feasible and cost-efficient type of pile to be used.

8.5 Floor Slabs

Assuming a piled foundation solution is implemented, a Structural Engineer designed suspended slab may be adopted for the proposed dwellings. This may be either reinforced cast in-situ, or a pre-cast suspended floor with a clear ventilated void (i.e. beam and block).

8.6 Ground Gas Precautions

The results of the preliminary gas monitoring carried out at the site have indicated elevated ground gas concentrations and flow rates in one of the monitoring standpipes (WS1), with low ground gas concentrations and flow rates recorded elsewhere at the site. It is considered that the ground gas concentrations recorded at the site are likely to be due to the presence and degradation of Peat in the underlying Natural soils in WS1. However, it is noted that Peat has been encountered in a number of the other borehole locations where gas monitoring standpipes have been installed and monitored, yet only relatively low gas concentrations and flow rates have been recorded during the monitoring carried out elsewhere at the site.

Given the noted variability of the ground gas readings recorded at the site, despite generally similar ground conditions being encountered across the site (including the presence of Peat in numerous locations), it is recommended that further characterisation of the site is undertaken from a ground gas risk assessment perspective, in order to determine the requirement for gas protection measures at the site. Further characterisation of the site is likely to involve the installation of further monitoring points and an extended period of ground gas monitoring and potentially detailed risk assessment works.

8.7 Radon

The site does not lie in an area requiring radon precautions.

8.8 Building Near Trees

Foundation designs may require locally adjusting in accordance with NHBC Standards Chapter 4.2 *'Building Near Trees'* when building near existing, proposed or recently removed trees / hedgerows. This includes heave to ground beams assuming that a piled foundation solution is to be adopted at the site. The cohesive soils underlying the site should be assumed to be of high volume change potential (as confirmed by laboratory testing).

Whilst we would note that in areas of the site some natural sandy Silt soils were found to have no significant volume change potential, we would recommend that cohesive soils are assumed across the entire site area in the first instance based on the propensity for these strata to be both localised and typically underlain by cohesive soils.

We would recommend that an arborist survey is undertaken to identify the species and heights of the existing trees and hedgerows at, and within influencing distance of the site, if not already completed.

8.9 Water

Water was encountered in all of the window sample and cable percussive boreholes advanced across the site, from a typical depth of approximately 1.00m begl. In two of the exploratory holes, shallower water seepages were encountered from approximately 0.50m begl. Shallower water levels (from immediately below ground level) were also recorded during the monitoring programme.

Dewatering should be anticipated for excavations advanced to depths greater than approximately 1.0m begl at the site (e.g. for services etc.) and locally shallower.

Excavations may be susceptible to standing water following periods of wet weather. It should be noted that groundwater levels may vary due to seasonal or other effects. Excavations undertaken in the typically wetter winter months may result in different conditions than those encountered during our works.

8.10 Excavations / Stability

Each of the window sample boreholes was cased to variable depths of up to 4.00m begl, as a precautionary measure to prevent collapse of borehole sides, during their advancement. The cable percussive boreholes required casing, to prevent collapse, during their advancement through the drift deposits.

On this basis, all excavations are likely to require trench support for stability and health and safety reasons. The assessment of excavations and provision of support will be the responsibility of the contractor on site.

The natural soils may be subject to deterioration and softening if excavations are left open and exposed to wet weather. Any softened soils should be removed from excavations prior to the pouring of concrete.

8.11 Sulphate Classification

In accordance with BRE Special Digest 1:2005 the site falls into Design Sulfate Class DS-2 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-2. Therefore, an appropriate concrete mix should be adopted in accordance with BRE Special Digest 1 for all buried concrete in contact with the ground.

8.12 Coal Mining

No specific investigation or mitigation measures in relation to coal mining issues are considered to be necessary at the site.

8.13 California Bearing Ratios (CBRs)

A CBR value of less than 2% can be anticipated within the Made Ground and a CBR value of between 2% and 4% can be anticipated within the shallow Natural Strata, subject to confirmation by in-situ testing.

8.14 Surface Water Drainage

Based on the presence of highly variable ground conditions across the site, including anticipated low permeability natural cohesive strata and shallow water levels, it is considered that soakaways are unlikely to be feasible. We would recommend that alternative forms of surface water drainage are explored in the first instance. It is understood that it is the intention of the Client to incorporate a balancing pond within the proposed scheme.

8.15 Contamination Assessment

Contamination testing was carried out on selected samples of the topsoil, Made Ground and the underlying Natural Strata.

Risks to Human Health

Based on the findings of the exploratory holes advanced at the site and the results of the contamination assessment works, the topsoil, general Made Ground and the Natural Strata across the wider site area may be considered to be uncontaminated, based on a proposed residential with plant uptake end-use. However, localised hydrocarbon impacted soils from a visual / olfactory perspective have been identified in the immediate vicinity of the former above ground fuel storage tanks (ASTs) in the central western portion of the site (WS15, WS20 and WS21). The results of the laboratory testing carried out in this area have revealed an elevated concentration of one of the TPH carbon fractions above Tier 1 human health generic assessment criteria (GAC) (in WS15), based on a proposed residential with plant uptake end-use.

In addition, the results of the laboratory contamination testing have also indicated elevated concentrations of certain TPH carbon fractions above Tier 1 human health GAC in one of the exploratory hole locations (WS10) situated adjacent to another above ground oil heating tank, which is also adjacent to the former fuel pump and the suspected underground petrol storage tank in the south-west portion of the site. These soils are considered in more detail in Sections 8.15 and 8.16.

Given the findings of the laboratory testing carried out from the exploratory hole locations where access permitted around these features, the presence of higher concentrations of hydrocarbons in these areas of the ASTs and anticipated former underground fuel storage tank (UST) cannot be discounted, particularly given the presence of visual and olfactory impacted soils (in the central western portion) and the soil concentrations recorded in the exploratory holes advanced to date around the tanks. The presence of these impacted soils suggests that the tanks and / or the associated pipework may have been prone to historical leakage and / or spillages of fuel may have occurred. Areas of potentially more significant contamination, not encountered by these initial exploratory works, may therefore be present at the site.

Further investigation and assessment / delineation works are required beneath / surrounding the areas of the existing and former tanks, including the routes of any associated pipelines, following demolition and removal of tank infrastructure.

Risks to Controlled Waters

The contamination assessment has revealed the presence of TPH contamination in the area of the existing / former ASTs (within WS10 and WS15). Whilst we note that there remains the potential for the hydrocarbon contamination in this area to pose a risk to Controlled Waters, particularly with respect to the shallow water encountered during the intrusive works and subsequent programme of monitoring, we would further comment that the site is underlain by Unproductive Strata (as designated by the Environment Agency). The noted contamination source areas are located at least 100m from the nearest drains (open watercourses) situated on or close to the boundaries of the site, and the River Welland is situated a further 70m to the east of the site.

On this basis, the risk of significant impaction of the Controlled Waters in the vicinity of the site is considered to be relatively low based on the contaminant concentrations recorded to date. However, given the potential that higher hydrocarbon concentrations may be present immediately beneath / surround the former tanks, it is recommended that further investigation and risk assessment works are required during / following removal of the tanks and demolition of the associated structures. It is anticipated at this stage that source removal works may be required in these localised areas of the site.

Depending upon the findings of the further works, there may be a requirement to carry out detailed quantitative risk assessment (DQRA) works to derive clean-up targets that are protective of Controlled Waters and also human health.

8.16 Remediation Proposals

8.16.1 Introduction

At this stage and subject to the outcome of the further works, including consultation with the Environment Agency, the following soil remediation proposals are considered necessary at the site assuming a residential with plant uptake end-use:

a) Inspections of the ground and validation sampling during removal of the ASTs, the suspected UST and other tank infrastructure, including remaining pipework.
b) Provision of a remedial capping layer (comprising subsoil and topsoil) to proposed gardens/soft landscaping.

Details of the remediation works would be presented within a Remediation Strategy/ Remediation Method Statement which should be prepared in order to detail what combination of remediation options will be adopted. The remediation strategy would include a programme of validation to demonstrate how the successful implementation of the remediation strategy will be monitored and verified. Following the completion of the remediation works, a Verification / Validation Report will be required.

A summary of the soil remediation works is provided below.

8.16.2 Removal of Fuel Storage Tanks & Other Structures

Remediation should predominantly comprise the following works:

- Appropriate decommissioning and removal of the tanks and the associated fuel pipelines prior to redevelopment.
- The removal of the tanks etc. should be undertaken with care by experienced contractors.
- The tanks should be emptied and degassed in accordance with the appropriate legislation and guidelines, in consultation with the Petroleum Officer.
- During the removal of these features (including the former boiler house), the surrounding soil should be inspected and tested by a suitably experienced Engineer, together with further investigation and delineation of contaminant concentrations in the southwestern and central western portions of the site in the vicinity of these features.
- Potential excavation / removal of hydrocarbon impacted soils (and possibly groundwater) from around and beneath tank infrastructure and fuel pipelines.
- Validation testing of the excavations to ensure that all unacceptable / contaminated soils have been removed to below agreed remedial / clean-up targets. Validation should be undertaken to an agreed methodology detailed within a Remediation Strategy / Remediation Method Statement agreed by the Local Authority and Environment Agency.

The presence of one underground storage tank at the site is anticipated based on the information obtained. Should any further underground storage tanks be discovered during the site demolition and clearance works and subsequent development, the works should be suspended until the tanks and surrounding soils / groundwater can be inspected and assessed by a suitably experienced Engineer.

In addition, to date no investigation has been undertaken in certain areas of the site due to access restrictions, such as beneath the footprint of the commercial building in the southwest of the site, or beneath some storage buildings. It is therefore recommended that a careful watch is carried out during removal of the surface hardstanding and the structures in the areas of potentially contaminating activities. The soils surrounding such areas should be inspected for visual and olfactory evidence of hydrocarbon contamination to assess whether the underlying soils have been significantly impacted. Should any visual or olfactory evidence of contamination be discovered during the site demolition and clearance works, the works should be suspended until the surrounding soils can be inspected and assessed by a suitably experienced Engineer.

8.16.3 Remedial Capping

Given the presence of hydrocarbon impaction of the soils in the vicinity of the existing / former fuel tanks, we would recommend the provision of a remedial capping to proposed gardens to plots and areas of soft landscape situated in the relatively localised affected areas. Remedial capping thicknesses are to be confirmed following the results of further sampling works following removal of tanks and potential source removal works. However, if capping is ultimately deemed to be required, the recommended remedial capping thicknesses are detailed in Table 12 and are subject to Local Authority Approval.

TABLE 12 – REMEDIAL CAPPING PROPOSALS (WHERE REQUIRED LOCALLY)			
Land Use	Subsoil (m)	Topsoil (m)	Total (m)
Rear Gardens	0.45	0.15	0.60
Front Gardens / Public Open Space	0.30	0.15	0.45

*Note: * increased thicknesses of topsoil / growing medium likely to be required around tree roots, subject to confirmation by an arborist.*

We would also note that, prior to placement of any remedial capping, it is recommended that the formation level is visually inspected and any deleterious materials (i.e. oversized fragments of brick and concrete etc.) are substantially removed by hand picking.

Subject to finished levels at the site, it may be necessary to locally reduce levels within gardens/soft landscape (i.e. remove some of the existing Made Ground) to accommodate an appropriate thickness of remedial capping.

8.16.4 Capping Materials

Topsoil / Subsoil

The existing topsoil at the site is considered chemically suitable for re-use within the proposed development based on the laboratory testing undertaken. We would note that anthropogenic materials were encountered locally within the Made Ground topsoil (e.g. shards of glass locally, brick fragments etc.). It is therefore considered that where the Made Ground topsoil is intended for re-use, it will need to be appropriately screened prior to placement within gardens and any areas of soft landscape. The physical suitability of the soils will therefore be assessed and determined on site by the developer.

Should there be a requirement to import topsoil to the site, it will be necessary to test the topsoil at source to ensure it is suitably clean (prior to importation) in accordance with CLEA/generic guidance. The topsoil should also conform to BS3882: 2015 *'Specification for topsoil'*, with respect to the presence of foreign objects, and ideally nutrient levels etc. The results of the chemical analysis on topsoil proposed for importation should be forwarded to the Local Authority (Environmental Health Officer) for approval (prior to importation).

Natural Strata

Based on the laboratory analysis undertaken to date, the Natural Strata at the site is considered to be chemically uncontaminated with respect to a residential end-use. Therefore, the Natural Strata may be re-used at the site as subsoil within the remedial capping (excluding the localised hydrocarbon impacted soils).

8.17 Off Site Disposal & Waste Acceptance Criteria Testing

If off-site disposal is required the chemical testing regime can be different to the chemical testing required to assess the suitability of the soils for retention on site and the risks to human health. Therefore, a separate contamination assessment may be required to include bespoke leachate analysis (i.e. Waste Acceptance Criteria [WAC] testing) to classify the soils for off-site disposal with testing criteria to assess whether the soil is hazardous, non-hazardous or inert waste. However, the existing chemical test data will assist this process.

If disposal is necessary then the environmental laboratory test results (included within Appendix VIII) should be provided to several landfill operators for consideration and cost provision in the first instance, prior to the material being removed from the site.

8.18 Flood Risk

The Landmark Envirocheck report has revealed the site to lie within an area identified as being at risk of extreme flooding. It is recommended that advice be sought from a Drainage Consultant with respect to this matter.

8.19 Unforeseen Circumstances

Should any areas of potentially contaminated soil be encountered during site construction works we would recommend consultation with GeoDyne Limited to ensure that our recommendations continue to apply. Any potentially contaminated soils should be left in-situ and subjected to further assessment, to potentially include further chemical testing and risk assessment.

The following procedure should be adhered to if any areas of previously unidentified suspected contamination are encountered during the development of the site:

i. Suspected contaminated material will remain in-situ.

ii. GeoDyne Limited to be notified. We will then undertake a visual assessment of the possible contamination, followed by appropriate sampling/testing (as necessary).

iii. If necessary, an appropriate strategy to remove/remediate the contamination will be submitted to the Local Authority.

8.20 Asbestos Survey

We recommend that a pre-demolition asbestos survey is undertaken of the existing site buildings prior to demolition. All asbestos containing material (ACM) should be removed and disposed off site by appropriately qualified contractors, prior to demolition.

8.21 Construction Workers

It is recommended that construction personnel involved with direct contact with the soils at the site use appropriate PPE equipment (i.e. boots, gloves and overalls) together with hygiene facilities in accordance with general health and safety guidelines.

A copy of this report should be included in the site health and safety file, and site workers should be made fully aware of the sites setting.

8.22 Utilities

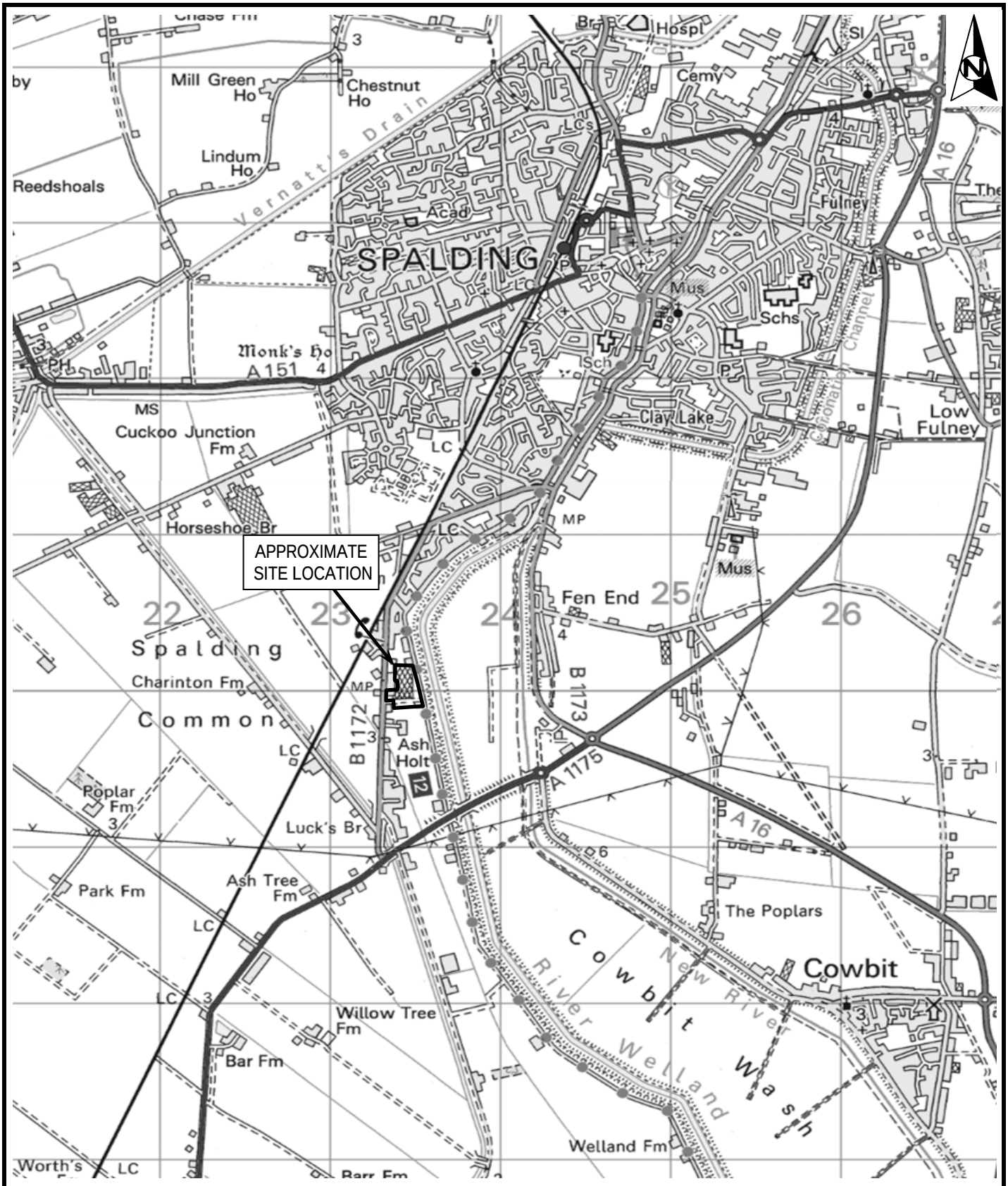
Prior to development of the site, we would recommend that a copy of this report is supplied to the appropriate utility companies, and that their recommendations relating to appropriate supply pipes are adhered to. Due to the presence of hydrocarbon impacted soils in the vicinity of the tanks, protection of water supply pipes may be required locally (subject to detailed consideration and assessment).

8.23 Licences, Permits, Registrations, Plans & Approvals

The Contractor/Developer is responsible for, and must ensure that, all necessary licenses, permits, plans, registrations and approvals are in place prior to commencing with the earthworks at the site. These will include any Mobile Treatment Licenses (MTLs), Materials Management Plans (MMPs), Site Waste Management Plans (SWMPs) and/or Environmental Permits as necessary to enable the completion of the proposed works.

APPENDIX I

Site Location Plan
(Figure No. D38185/01)



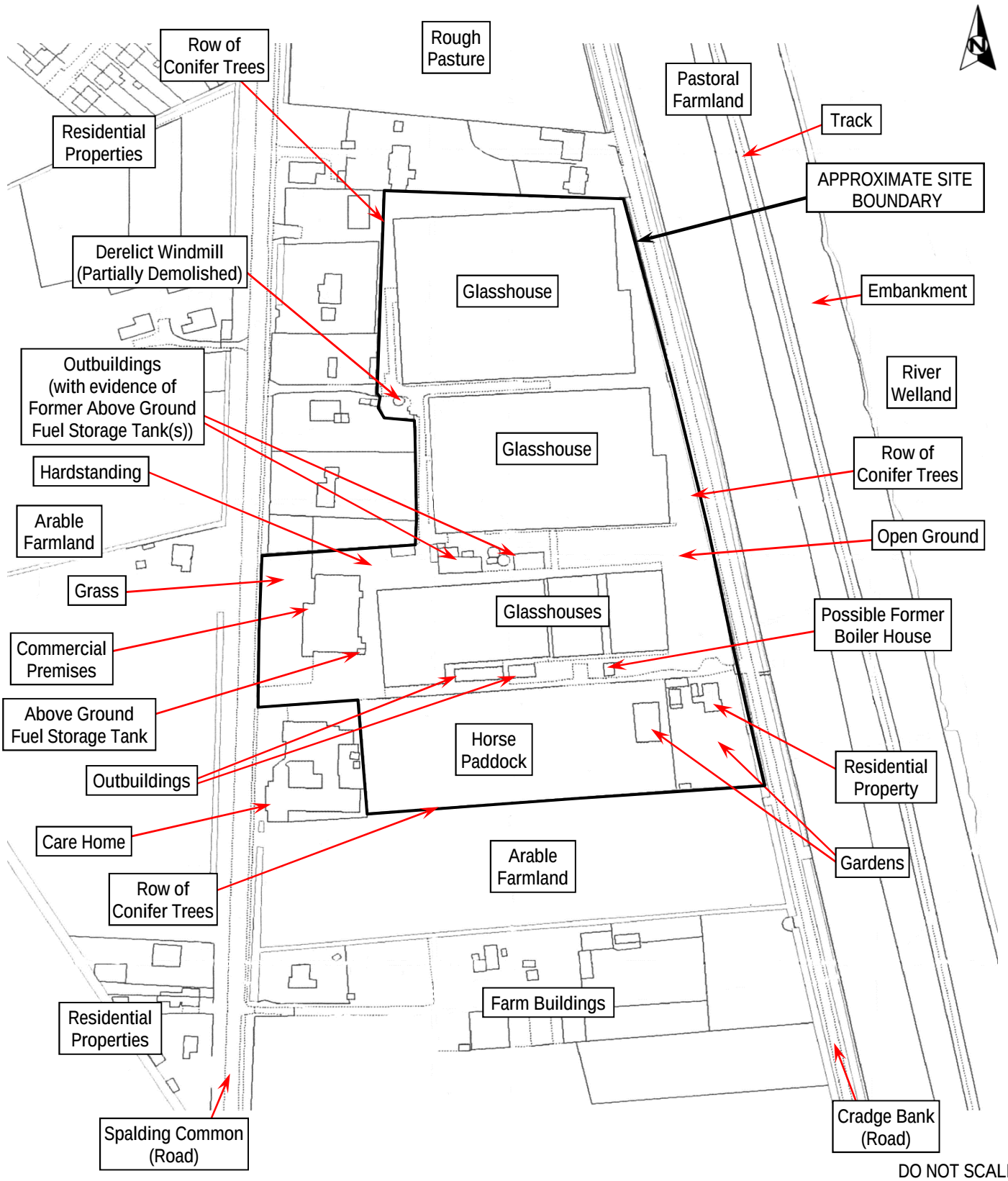
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Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	SS
Project	Millfield Nursery, Spalding	Approved	PK
		Scale	NTS
		Date Drawn	11/04/2019
Title	Site Location Plan	Rev.	
		Figure No.	D38185/01

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APPENDIX II

Annotated Site Plan
(Figure No. D38185/02)



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Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
		Rev.	
Title	Annotated Site Plan	Figure No.	D38185/02

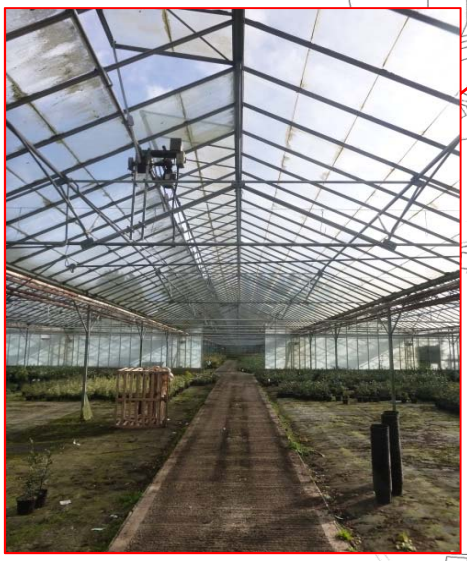
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APPENDIX III

Site Plan Showing General Site Views
(Figure No. D38185/03)















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Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
		Rev.	
Title	Site Plan Showing General Site Views	Figure No.	D38185/03

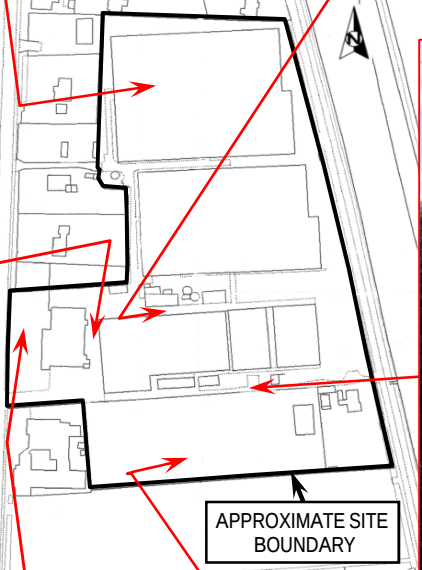
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Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
		Rev.	
Title	Site Plan Showing General Site Views	Figure No.	D38185/03A

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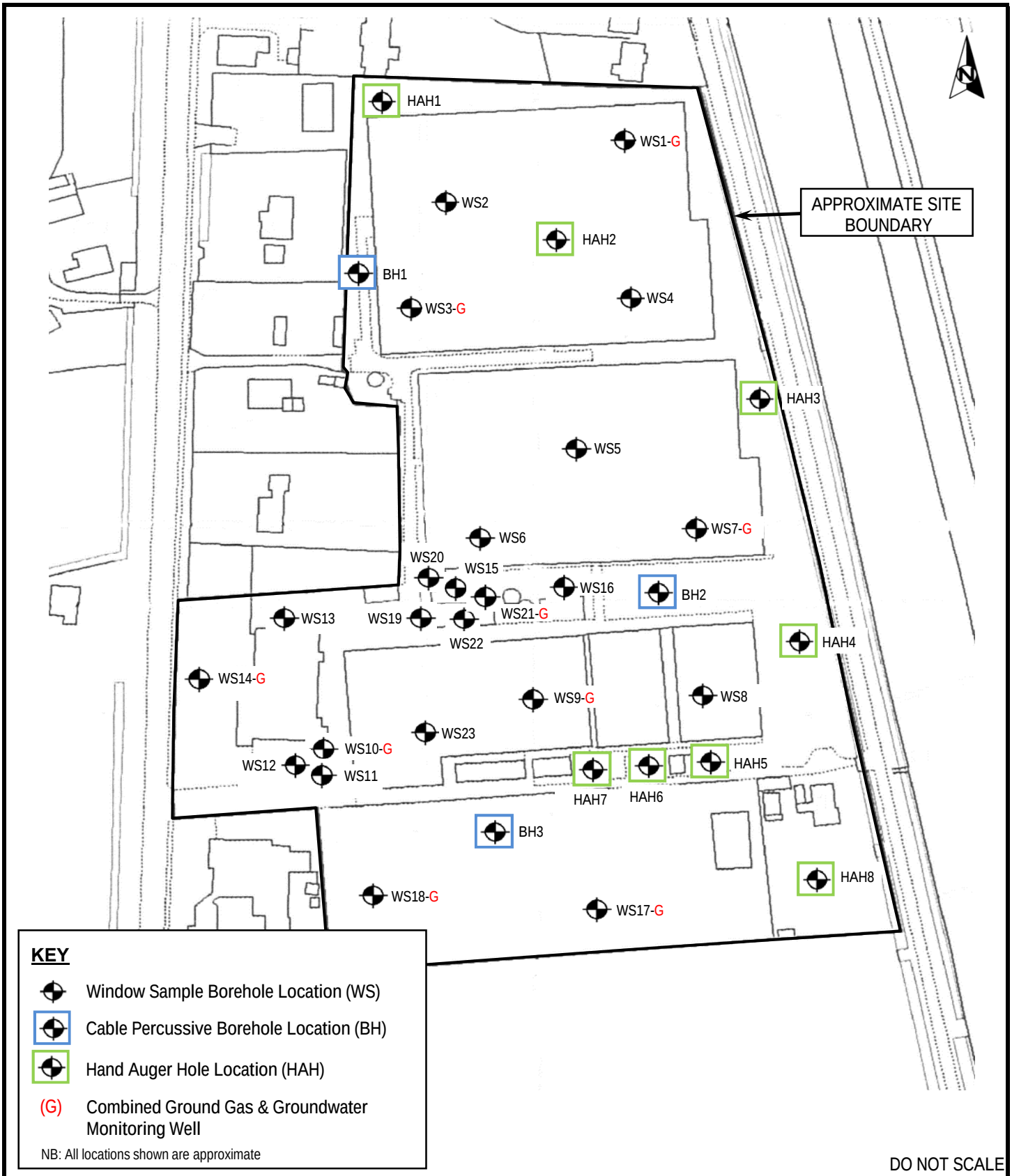
Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
		Rev.	
Title	Site Plan Showing General Site Views	Figure No.	D38185/03B

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APPENDIX IV

Exploratory Hole Location Plan
(Figure No. D38185/04)



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Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
		Rev.	
Title	Exploratory Hole Location Plan	Figure No.	D38185/04

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APPENDIX V

Exploratory Hole Logs
(WS1 to WS23, BH1 to BH3 & HAH1 to HAH8)

GeoDyne
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WS1

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.10	D	T1		Geotextile membrane overlying grey-brown very silty topsoil (MADE GROUND - TOPSOIL)		(0.30)			
				Soft to firm grey-brown SILT (TIDAL FLAT DEPOSITS)		0.30			
0.50	D	T2		...becoming clayey and mottled orange-brown with increasing depth		(0.65)			
1.00 - 1.45	C		1	Soft brown silty CLAY (TIDAL FLAT DEPOSITS)		0.95		▼	
				...becoming less silty and with small pockets of fibrous peat below 1.60m		(1.05)			
2.00 - 2.45	C		0	Very soft grey CLAY with some small pockets of fibrous peat and a slight organic odour (TIDAL FLAT DEPOSITS)		2.00			
2.50 - 3.00	B	B1							
3.00 - 3.45	C		0			(3.00)			
4.00 - 4.45	C		0				4.00		
5.00 - 5.45	C		0	End of Borehole at 5.00m		5.00			

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 27kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 1.00m in bentonite surround. Slotted pipe installed from 1.00m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS1

GeoDyne
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WS2

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.15	D	T3		Firm dark grey-brown silt with small pockets of topsoil (MADE GROUND)		(0.40)			
0.45	D	T4		Soft brown slightly clayey sandy SILT (TIDAL FLAT DEPOSITS)		0.40			
				...becoming more sandy with increasing depth			1.00	▼	
1.50 - 2.00	B	B2				(1.80)			
				Soft grey slightly sandy SILT with occasional strands of fibrous reed-type vegetation (TIDAL FLAT DEPOSITS)		2.20			
						(0.80)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 22kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS2

GeoDyne
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WS3

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Geotextile membrane overlying firm grey-brown silt and topsoil with occasional brick fragments (MADE GROUND)		(0.45)			
0.30	D	T5				0.45			
0.50 - 1.00	B	B3		Firm dark brown sandy SILT (TIDAL FLAT DEPOSITS)					
				...becoming soft and lighter in colour with increasing depth		(0.95)		▼	
1.00 - 1.45	C		5						
1.10	D	T6				1.40			
				Soft brown sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)					
2.00 - 2.45	C		3	...running silt between 1.95m and 2.25m					
				...grey below 2.20m		(2.60)			
3.00 - 3.45	C		4	...with pockets of very soft clay between 3.00m and 3.65m					
				...firm below 4.00m					
4.00 - 4.45	C		5	End of Borehole at 4.00m		4.00	4.00		

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 23kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 1.00m in bentonite surround. Slotted pipe installed from 1.00m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS3

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WS4

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.25	D	T7		Geotextile membrane overlying grey-brown very silty topsoil (MADE GROUND - TOPSOIL)		(0.50)			
						0.50			
				Firm grey-brown sandy SILT (TIDAL FLAT DEPOSITS)					
1.00 - 1.50	B	B4		...brown below 0.95m			1.00	▼	
						(2.00)			
				...becoming more sandy and soft to firm below 1.70m					
2.15	D	T8							
						2.50			
				Soft grey sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)		(0.50)			
						3.00			
				End of Borehole at 3.00m					

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 25kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS4

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

WS5

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Firm grey silt with some topsoil (MADE GROUND)		(0.45)			
0.40	D	T9		Soft grey-brown slightly clayey SILT (TIDAL FLAT DEPOSITS)		0.45			
				...becoming orange-brown and slightly sandy below 0.80m					
1.00 - 1.45	C		4	...running sandy silt between 1.00m and 1.25m		(1.20)		▼	
				Soft grey-brown silty CLAY (TIDAL FLAT DEPOSITS)		1.65			
2.00 - 2.45	C		0	...becoming very soft and dark grey below 1.95m					
2.00 - 2.50	B	B5				(1.35)			
				...soft to firm below 2.80m					
2.95	D	T10							
3.00 - 3.45	C		4	End of Borehole at 3.00m		3.00	3.00		

Remarks

1.Borehole cased to 3.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 15kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS5

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

WS6

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.25	D	T11		Geotextile membrane overlying grey silt with some topsoil (MADE GROUND)		(0.45)			
0.55	D	T12		Firm brown sandy SILT (TIDAL FLAT DEPOSITS)		0.45			
				...becoming less sandy and soft below 0.90m			1.00	▼	
1.25 - 1.50	B	B6				(1.80)			
				Soft to firm grey very sandy SILT with occasional strands of poorly decomposed reed-type vegetation (TIDAL FLAT DEPOSITS)		2.25 (0.75)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 18kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS6

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WS7

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Geotextile membrane overlying dark grey-brown silty clayey topsoil with occasional shards of glass (MADE GROUND - TOPSOIL)		(0.35)			
0.30	D	T13				0.35			
				Firm brown sandy SILT (TIDAL FLAT DEPOSITS)					
0.60	D	T14				(0.45)			
				Very soft grey-brown silty CLAY (TIDAL FLAT DEPOSITS)		0.80			
1.00 - 1.45	C		0					▼	
1.75 - 2.25	B	B7							
2.00 - 2.45	C		3	...becoming soft and more silty below 2.00m		(2.35)			
3.00 - 3.45	C		4						
				Soft grey very clayey SILT (TIDAL FLAT DEPOSITS)		3.15			
						(0.85)			
4.00 - 4.45	C		3			4.00	4.00		
				End of Borehole at 4.00m					

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 22kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 1.00m in bentonite surround. Slotted pipe installed from 1.00m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS7

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WS8

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.35	D	T15		Geotextile membrane overlying soft grey silty clay with occasional small pockets of compost and rare brick fragments (MADE GROUND)		(0.55)			
						0.55			
0.80	D	T16		Firm grey-brown sandy SILT (TIDAL FLAT DEPOSITS) ...becoming light brown with increasing depth		(0.50)			
						1.05	1.00	▼	
				Soft brown very silty CLAY (TIDAL FLAT DEPOSITS)		(0.95)			
						2.00			
2.25 - 2.75	B	B8		Very soft to soft grey silty CLAY with occasional small pockets of fibrous peat and a slight organic odour (TIDAL FLAT DEPOSITS)		(1.00)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 29kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS8

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WS9

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.15	D	T17		Geotextile membrane overlying firm dark grey-brown silt and topsoil (MADE GROUND)		(0.35)			
0.40	D	T18		Soft grey-brown slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.35 (0.60)			
1.00 - 1.45	C		0	Very soft grey-brown very silty CLAY (TIDAL FLAT DEPOSITS)		0.95		▼	
				...becoming less silty with increasing depth		(0.65)			
				Very soft grey CLAY with occasional small pockets of fibrous peat and a slight organic odour (TIDAL FLAT DEPOSITS)		1.60			
1.90 - 2.40	B	B9							
2.00 - 2.45	C		0						
				...silty between 2.60m and 3.10m		(2.40)			
3.00 - 3.45	C		0						
				...soft below 3.70m					
4.00 - 4.45	C		3	End of Borehole at 4.00m		4.00	4.00		

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 17kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 1.00m in bentonite surround. Slotted pipe installed from 1.00m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	07/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS9

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WS10

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Macadam hardstanding (MADE GROUND)		0.05			
				Concrete slab (MADE GROUND)		0.25			
0.30	J	J1		Firm grey clayey silt with pockets of fine to coarse subangular gravel with concrete fragments (MADE GROUND)		(0.45)		▼	
				Firm brown mottled grey clayey SILT (TIDAL FLAT DEPOSITS)		0.70			
						(0.35)			
				Soft grey-brown CLAY (TIDAL FLAT DEPOSITS)		1.05	1.00		
1.30	J	J2		...becoming grey and with occasional small pockets of fibrous peat below 1.80m		(1.95)			
2.30	J	J3							
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 0.50m.
3.In-situ shear vane value of 33kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS10

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WS11

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Macadam hardstanding (MADE GROUND)		0.05			
				Loose grey-brown fine to coarse subrounded to subangular gravel with occasional macadam fragments (MADE GROUND)		0.30			
0.50	J	J4		Firm grey silt with occasional concrete fragments (MADE GROUND)		0.55		▼	
				Firm grey-brown silty CLAY (TIDAL FLAT DEPOSITS)					
				...becoming soft below 1.00m			1.00		
1.30 - 1.80	B	B10							
1.50	J	J5		...becoming grey with increasing depth		(2.45)			
				...with occasional strands of poorly decomposed reed-type vegetation below 2.30m					
2.50	J	J6							
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 0.50m.
3.In-situ shear vane value of 30kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS11

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WS12

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Macadam hardstanding (MADE GROUND)		0.05			
				Concrete slab (MADE GROUND)		0.10			
0.40	J	J7		Firm dark grey silty clay with occasional fine to medium subrounded gravel between 0.10m and 0.30m (MADE GROUND)		(0.40)			
				Soft to firm grey-brown very silty CLAY (TIDAL FLAT DEPOSITS)		0.50			
				...becoming firm at approximately 1.00m and 1.20m			1.00	▼	
1.40	J	J8		...becoming soft to very soft and less silty with increasing depth		(1.40)			
				Soft grey CLAY with occasional small pockets of fibrous peat (TIDAL FLAT DEPOSITS)		1.90			
				...peat pockets becoming less prevalent with increasing depth		(1.10)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 40kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS12

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WS13

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Concrete hardstanding (MADE GROUND)		0.15			
				Firm brown gravelly silt with occasional concrete fragments. Gravel is fine to medium and subrounded to angular (MADE GROUND)		(0.35)			
0.45	D	T19		...becoming less gravelly with increasing depth		0.50			
0.55	D	T20		Firm brown locally grey-brown sandy SILT (TIDAL FLAT DEPOSITS)					
0.60 - 1.10	B	B11							
				...becoming more sandy and soft to firm with increasing depth			1.00	▼	
						(1.85)			
				...clayey below 2.00m					
				with a band of running sandy silt at 2.15m					
				Soft to very soft grey CLAY with small pockets of fibrous peat and a slight organic odour (TIDAL FLAT DEPOSITS)		2.35			
						(0.65)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 23kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS13

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WS14

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.10	D	T21		Dark grey-brown very silty topsoil with rare brick fragments (MADE GROUND - TOPSOIL)		0.25			
				Firm grey-brown slightly clayey SILT (TIDAL FLAT DEPOSITS)					
0.50	D	T22				(0.65)			
						0.90			
1.00 - 1.45	C		7	Firm brown locally grey or orange brown sandy SILT (TIDAL FLAT DEPOSITS)				▼	
1.10 - 1.60	B	B12							
2.00 - 2.45	C		9						
				...very sandy below 2.10m					
						(3.10)			
				...becoming very soft and grey below 2.80m					
3.00 - 3.45	C		0						
4.00 - 4.45	C		0	End of Borehole at 4.00m		4.00	4.00		

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 31kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 1.00m in bentonite surround. Slotted pipe installed from 1.00m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS14

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WS15

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Soft grey clayey silt with occasional brick fragments (MADE GROUND)					
				...with a pocket of topsoil at 0.40m		(0.85)			
				...becoming firm with increasing depth					
0.80	J	J9		Firm grey clayey locally slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.85			
				...soft and more clayey below 1.05m			1.00	▼	
				...with a hydrocarbon sheen and a strong odour between 1.20m and 2.70m					
1.80	J	J10		...PID reading in sample at 1.80m = 28.8ppm		(2.15)			
				...hydrocarbon odour becoming moderate to slight with increasing depth					
2.80	J	J11							
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 34kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample

S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS15

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WS16

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.25	J	J12		Geotextile membrane overlying firm grey-brown clayey silt with occasional brick fragments (MADE GROUND)		(0.65)			
				...with a piece of geotextile at 0.50m		0.65			
				Soft to firm grey-brown clayey slightly sandy SILT (TIDAL FLAT DEPOSITS)		(0.65)	1.00	▼	
1.25	J	J13				1.30			
				Soft grey-brown silty CLAY (TIDAL FLAT DEPOSITS)					
2.25	J	J14		...becoming grey and with rare small pockets of fibrous peat below 2.25m		(1.70)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 16kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	08/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS16

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WS17

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Dark grey-brown silty clayey TOPSOIL (TOPSOIL)		(0.30)			
0.25	D	T23				0.30			
0.45	D	T24		Firm brown SILT (TIDAL FLAT DEPOSITS)		(0.60)			
				...becoming grey-brown and with occasional shell fragments below 0.70m		0.90			
1.00 - 1.45	C		0	Very soft grey-brown very silty CLAY (TIDAL FLAT DEPOSITS)				▼	
2.00 - 2.45	C		0	...becoming less silty with increasing depth					
2.40 - 2.90	B	B13				(3.10)			
3.00 - 3.45	C		0						
				...with occasional small pockets of fibrous peat below 3.30m					
4.00 - 4.45	C		0	End of Borehole at 4.00m		4.00	4.00		

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 27kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 0.50m in bentonite surround. Slotted pipe installed from 0.50m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS17

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WS18

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.20	D	T25		Dark grey very silty clayey TOPSOIL (TOPSOIL)		(0.35) 0.35			
				Firm brown sandy SILT (TIDAL FLAT DEPOSITS)					
				...becoming grey-brown and less sandy with increasing depth		(0.55) 0.90			
1.00 - 1.45	C		0	Very soft grey-brown silty CLAY (TIDAL FLAT DEPOSITS)				▼	
1.40 - 1.90	B	B14		with occasional strands of poorly decomposed reed-type vegetation below 1.40m		(1.90)			
2.00 - 2.45	C		0						
				...becoming grey with increasing depth					
2.30	D	T26							
				Very soft grey CLAY with occasional small pockets of fibrous peat (TIDAL FLAT DEPOSITS)		2.80			
3.00 - 3.45	C		0			(1.20)			
4.00 - 4.45	C		0	End of Borehole at 4.00m		4.00	4.00		

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 14kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 0.50m in bentonite surround. Slotted pipe installed from 0.50m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS18

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WS19

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Concrete hardstanding (MADE GROUND)		0.20			
0.50	J	J15		Firm grey and grey-brown sandy silt with occasional brick fragments (MADE GROUND) ...with a band of sandy fine to coarse subangular gravel between 0.35m and 0.40m ...with a brick at 0.55m		(0.45) 0.65			
1.00	J	J16		Firm grey sandy SILT (TIDAL FLAT DEPOSITS) ...becoming soft to firm and brown below 0.95m ...very sandy between 1.35m and 1.85m		(1.60)	1.00	▼	
				Soft grey CLAY with occasional strands of poorly decomposed reed-type vegetation (TIDAL FLAT DEPOSITS)		2.25 (0.75)			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 21kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS19

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WS20

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Concrete hardstanding		0.10			
				(MADE GROUND)					
				Firm dark grey-brown slightly gravelly silt with rare concrete fragments		(0.40)			
				(MADE GROUND)					
0.45	J	J17				0.50			
				Firm grey-brown SILT					
				(TIDAL FLAT DEPOSITS)					
				...becoming soft to firm and sandy below 0.80m					
				...with a hydrocarbon sheen and a strong hydrocarbon odour between 1.00m and 2.30m			1.00	▼	
1.45	J	J18		...PID reading in sample at 1.45m = 14.6ppm		(2.50)			
2.45	J	J19		...grey and less sandy below 2.75m					
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 20kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS20

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WS21

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Firm grey-brown slightly gravelly silt with occasional brick and concrete fragments (MADE GROUND)		(0.60)			
0.55	J	J20				0.60			
				Firm grey-brown sandy SILT (TIDAL FLAT DEPOSITS)					
1.00 - 1.45	C		6	...very soft below approximately 1.00m				▼	
						(2.00)			
				...very sandy below 1.80m					
2.00 - 2.45	C		1						
						2.60			
2.70	J	J21		Very soft grey silty slightly sandy CLAY with a slight hydrocarbon odour (TIDAL FLAT DEPOSITS)					
3.00 - 3.45	C		0	...no hydrocarbon odour below 3.00m					
3.05	J	J22							
						(1.40)			
				...with occasional small pockets of fibrous peat below 3.80m					
4.00 - 4.45	C		0			4.00	4.00		
				End of Borehole at 4.00m					

Remarks

1.Borehole cased to 4.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 18kN/m2 obtained at 1.00m.
4.Plain pipe installed from ground level to 0.50m in bentonite surround. Slotted pipe installed from 0.50m to 4.00m in a gravel surround.
5.Bung, valve and lockable cover installed.
6.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS21

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WS22

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Concrete hardstanding (MADE GROUND)		0.20			
				Loose grey-brown fine to coarse rounded to subrounded gravel (MADE GROUND)		0.30			
0.45	J	J23		Firm grey clayey silt with occasional brick fragments (MADE GROUND)		0.55			
0.70	J	J24		Firm locally soft to firm grey slightly sandy SILT (TIDAL FLAT DEPOSITS)					
				...brown and more sandy below 1.05m			1.00	▼	
				...clayey between 1.80m and 2.00m		(2.20)			
				Soft grey silty CLAY with occasional small pockets of fibrous peat (TIDAL FLAT DEPOSITS)		2.75			
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 27kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS22

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WS23

Project No. D38185

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Geotextile membrane overlying firm grey silt with small pockets of topsoil (MADE GROUND)		(0.35)			
0.30	D	T27				0.35			
				Soft to firm grey-brown silty CLAY (TIDAL FLAT DEPOSITS)					
0.60	D	T28							
				...becoming less silty and locally very soft with increasing depth			1.00	▼	
						(1.95)			
				Soft grey CLAY (TIDAL FLAT DEPOSITS)		2.30			
						(0.70)			
				...with occasional small pockets of fibrous peat below 2.85m					
				End of Borehole at 3.00m		3.00			

Remarks

1.Borehole cased to 1.00m as a precautionary measure.
2.Water noted at approximately 1.00m.
3.In-situ shear vane value of 41kN/m2 obtained at 1.00m.
4.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	15/03/2019	**Approved:**	PK	SS/14	**Scale:**	1:25	WS23

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BH1

Project No. D38185

Sheet 1 of 2

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Brown slightly silty slightly clayey TOPSOIL (TOPSOIL)		(0.50)			
				Firm light brown mottled orange slightly sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)		0.50		▼	
1.20 - 1.65	C		5						
				...becoming soft below approximately 1.50m		(2.80)			
2.00 - 2.45	C		4						
3.00 - 3.45	C		4						
				Soft grey very silty CLAY (TIDAL FLAT DEPOSITS)		3.30			
4.00 - 4.45	C		4						
4.50 - 5.00	B	B		...very soft below 4.50m					
5.00 - 5.45	C		2	...narrow bands of fibrous peat between 5.50m to 6.00m					
6.50 - 6.95	C		1						
7.00	D	T				(7.50)			
8.00 - 8.45	C		5	...firm below 8.00m					
9.50 - 9.95	C		6						
10.00	D	T				10.80			
11.00 - 11.45	C		15	Medium dense grey-brown gravelly medium to coarse grained SAND. Gravel is fine to medium and subrounded to angular (ABBEY SAND AND GRAVEL)		(2.50)			
				...sand becoming fine grained with increasing depth					

Remarks

1.Borehole cased to 14.00m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	11/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH1

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BH1

Project No. D38185

Sheet 2 of 2

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
12.50 - 12.95	C		17	Medium dense grey-brown gravelly medium to coarse grained SAND. Gravel is fine to medium and subrounded to angular (ABBEY SAND AND GRAVEL)					
				Very stiff dark grey locally slightly gravelly CLAY. Gravel is fine to medium and subangular (OXFORD CLAY)		13.30			
14.00 - 14.45	C		27				14.00		
15.50 - 15.95	C		31			(5.50)			
17.00 - 17.45	C		39						
17.50	D	T							
18.00	B	B							
18.00 - 18.45	C		50/270mm						
18.80 - 19.25	C		50/275mm	End of Borehole at 18.80m		18.80			

Remarks

1.Borehole cased to 14.00m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
= Water Strike (m)
= Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	11/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH1

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BH2

Project No. D38185

Sheet 1 of 2

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Geotextile membrane overlying brown slightly silty slightly clayey topsoil (MADE GROUND - TOPSOIL)		(0.85)			
						0.85		▼	
1.20 - 1.65	C		3	Soft light brown mottled orange very silty slightly sandy CLAY (TIDAL FLAT DEPOSITS)					
2.00 - 2.45	C		1	...becoming very soft below 2.00m		(2.25)			
3.00 - 3.45	C		0						
				Very soft dark grey very silty CLAY with small pockets of fibrous peat and a slight organic odour (TIDAL FLAT DEPOSITS)		3.10			
4.00 - 4.45	C		0						
5.00 - 5.45	C		1						
6.50 - 6.95	C		1			(7.30)			
8.00 - 8.45	C		5						
9.50 - 9.95	C		5						
				Soft slightly sandy slightly silty CLAY (TIDAL FLAT DEPOSITS)		10.40 (0.40)			
11.00 - 11.45	C		18	Medium dense grey-brown gravelly medium to coarse grained SAND. Gravel is fine to medium and subrounded to angular (ABBEY SAND AND GRAVEL)		10.80 (1.60)			

Remarks

1.Borehole cased to 12.50m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	13/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH2

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BH2

Project No. D38185

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
12.50 - 12.95	C		27	Medium dense grey-brown gravelly medium to coarse grained SAND. Gravel is fine to medium and subrounded to angular (ABBEY SAND AND GRAVEL)		12.40	12.50		
13.50	D	T		Very stiff dark grey locally slightly gravelly CLAY. Gravel is fine to medium and subangular (OXFORD CLAY)					
14.00	B	B							
14.00 - 14.45	C		36						
15.50 - 15.95	C		43			(6.30)			
17.00 - 17.45	C		50/245mm						
18.00 - 18.45	C		50/275mm						
18.70 - 19.15	C		50/265mm	End of Borehole at 18.70m		18.70			

Remarks

1.Borehole cased to 12.50m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
= Water Strike (m)
= Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	13/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH2

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BH3

Project No. D38185

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Grass over brown slightly clayey slightly sandy silty TOPSOIL (TOPSOIL)		(0.50)			
				Firm light brown mottled orange slightly sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)		0.50			
1.20 - 1.65	C		9			(2.10)			
2.00	D	T							
2.00 - 2.45	C		9						
				Very soft dark grey very silty CLAY (TIDAL FLAT DEPOSITS)		2.60			
3.00 - 3.45	C		0						
4.00 - 4.45	C		0						
5.00 - 5.45	C		0						
6.00	D	T							
6.50 - 6.95	C		0			(7.50)			
8.00 - 8.45	C		0						
				...becoming soft below 8.40m					
9.50 - 9.95	C		3						
10.20	D	T		Firm dark grey clayey amorphous PEAT (TIDAL FLAT DEPOSITS)		10.10 (0.30) 10.40			
				Medium dense grey silty fine to medium grained SAND (ABBEY SAND AND GRAVEL)					
11.00	D	T							
11.00 - 11.45	C		11	...becoming very gravelly below 11.20m		(2.80)			

Remarks

1.Borehole cased to 14.00m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
= Water Strike (m)
= Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	14/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH3

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BH3

Project No. D38185

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
12.50 - 12.95	C		50/275mm	Medium dense grey silty fine to medium grained SAND (ABBEY SAND AND GRAVEL) ...very dense below 12.50m					
				Very stiff dark grey locally slightly gravelly CLAY. Gravel is fine to medium and subangular (OXFORD CLAY)		13.20			
14.00 - 14.45	C		30				14.00		
15.00 15.00	B D	B T							
15.50 - 15.95	C		29			(5.80)			
17.00 - 17.45	C		50/280mm						
18.00 - 18.45	C		50/235mm						
19.00 - 19.45	C		50/235mm	End of Borehole at 19.00m		19.00			

Remarks

1.Borehole cased to 14.00m.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
= Water Strike (m)
= Steady Water Level (m)

Project:	Millfield Nursery, Spalding			**Client:**	Seagate Homes		
Logged:	GH	**Checked:**	SS	**Field Book Ref:**	**Plant:**	Dando 150	**Drawing Ref:**
Date:	14/03/2019	**Approved:**	PK	GH19/01	**Scale:**	1:60	BH3

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HAH1

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Dark brown slightly sandy slightly clayey silty TOPSOIL (TOPSOIL)							
Soft light brown mottled orange slightly sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)		0.40 - 0.60 0.40	T	D			
End of Trial Pit at 1.00m		1.00					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH1
Date: 11/03/2019	**Approved:** PK		**Scale:** 1:25	

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HAH2

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Geotextile membrane overlying brown slightly clayey slightly sandy silty topsoil (MADE GROUND - TOPSOIL)		0.30 - 0.50	T	D			
Soft light brown mottled orange SILT (TIDAL FLAT DEPOSITS)		0.50					
Soft brown slightly sandy silty CLAY (TIDAL FLAT DEPOSITS)		0.60					
Soft grey-brown mottled orange slightly sandy SILT (TIDAL FLAT DEPOSITS)		1.00					
End of Trial Pit at 1.20m		1.20					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH2
Date: 11/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

HAH3

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Brown slightly clayey slightly sandy silty TOPSOIL (TOPSOIL)		0.20					
Soft brown slightly sandy slightly clayey SILT (TIDAL FLAT DEPOSITS)		0.30 - 0.50	T	D			
End of Trial Pit at 0.80m		0.80					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH3
Date: 11/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
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HAH4

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Dark brown slightly silty clayey TOPSOIL (TOPSOIL)		0.10 - 0.30	T	D			
Firm brown slightly sandy slightly silty friable CLAY (TIDAL FLAT DEPOSITS)		0.10					
Firm brown mottled orange slightly silty CLAY (TIDAL FLAT DEPOSITS)		0.60					
...with pockets of orange fine to medium grained sand below 0.80m							
End of Trial Pit at 1.00m		1.00					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH4
Date: 11/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
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email: info@geodyne.co.uk

HAH5

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Geotextile membrane overlying dark brown slightly sandy silty clayey topsoil (MADE GROUND - TOPSOIL)		0.20 - 0.40	T	D			
Soft brown slightly clayey slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.20					
Firm light brown mottled orange slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.50					
Soft brown silty CLAY with pockets of orange sand (TIDAL FLAT DEPOSITS)		0.60					
...firm from 1.00m							
End of Trial Pit at 1.10m		1.10					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH5
Date: 14/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
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HAH6

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Geotextile membrane overlying dark brown slightly sandy silty clayey topsoil (MADE GROUND - TOPSOIL)		0.10					
Soft brown slightly clayey slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.30 - 0.50	T	D			
Firm light brown mottled orange slightly sandy SILT (TIDAL FLAT DEPOSITS)		0.60					
End of Trial Pit at 1.00m		1.00					

Remarks:

1.Sides generally stable.
2.No water encountered.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH6
Date: 14/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

HAH7

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm brown slightly sandy slightly gravelly clay with rare brick fragments (MADE GROUND)							
Soft brown silty CLAY with pockets of orange sand (TIDAL FLAT DEPOSITS)		0.60 - 0.80 0.60	T	D			▼
End of Trial Pit at 1.05m		1.05					

Remarks:

1.Sides generally stable.
2.Water noted at approximately 1.00m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH7
Date: 14/03/2019	**Approved:** PK		**Scale:** 1:25	

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

HAH8

Project No: D38185

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Dark brown slightly sandy clayey TOPSOIL (TOPSOIL)		0.15					
Soft dark brown slightly sandy slightly silty friable CLAY (TIDAL FLAT DEPOSITS)		0.45 - 0.65	T	B/D			
Firm brown slightly sandy slightly silty CLAY (TIDAL FLAT DEPOSITS)		0.45					▼
End of Trial Pit at 1.00m		1.00					

Remarks:

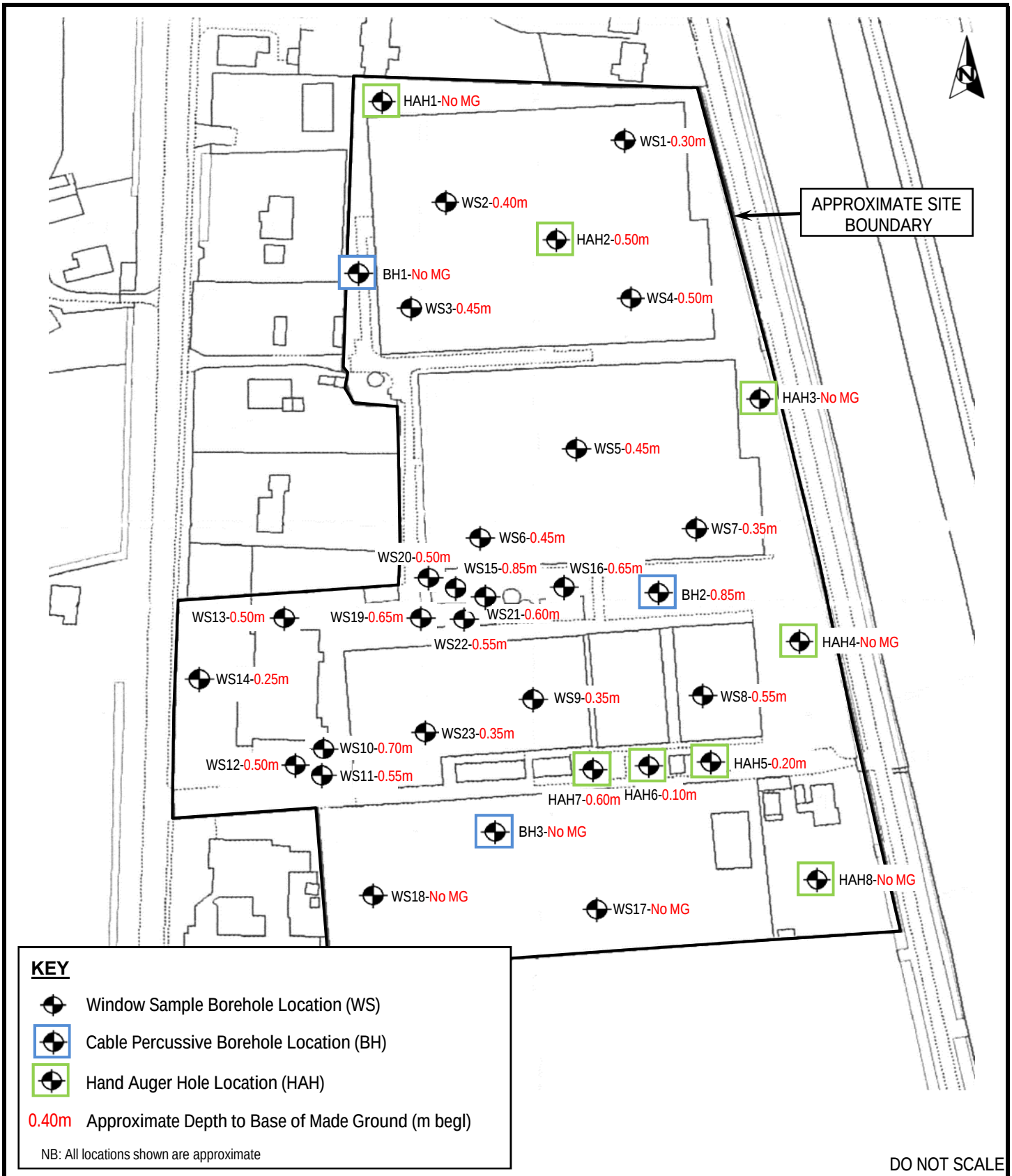
1.Sides generally stable.
2.Water noted at approximately 0.80m.
3.VOC headspace testing was undertaken on soil samples recovered using a PID. All readings were <1ppm, unless recorded on log.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Millfield Nursery, Spalding			**Client:** Seagate Homes	
Logged: GH	**Checked:** SS	**Field Book Ref:** GH19/01	**Plant:** Hand Auger Hole	**Drawing No.** HAH8
Date: 14/03/2019	**Approved:** PK		**Scale:** 1:25	

APPENDIX VI

Plan Showing Depth to Base of Made Ground
(Figure No. D38185/05)



KEY

- Window Sample Borehole Location (WS)
- Cable Percussive Borehole Location (BH)
- Hand Auger Hole Location (HAH)
- 0.40m Approximate Depth to Base of Made Ground (m begl)

NB: All locations shown are approximate

DO NOT SCALE

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. CROWN COPYRIGHT RESERVED. LICENCE NO. LAN 1001274

Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	24/04/2019
Title	Plan Showing Depth to Base of Made Ground	Rev.	
		Figure No.	D38185/05

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APPENDIX VII

Ground Gas & Water Monitoring Results

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	27/03/2019
Weather	Sunny
Atmospheric Pressure Trend	Rise of 3mb in 24 hour period prior to monitoring from 1031mb to 1034mb
Equipment	GA2000 (GEO 11 = Derby) & Interface Probe
Operator	BP

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	11:20	1034	Peak	51.2	11.3	7.4	235	235	1.7	0.67	Monitoring terminated after 235 seconds due to water uptake. No hydrocarbon product recorded
			Steady	51.2	11.3	7.4			0.0		
WS3	11:40	1034	Peak	0.0	0.4	20.1	70	300	0.0	0.92	No hydrocarbon product recorded.
			Steady	0.0	0.1	20.3			0.0		
WS7	12:30	1034	Peak	0.0	1.6	19.1	40	70	0.0	0.67	Headworks flooded. No hydrocarbon product recorded
			Steady	0.0	1.6	19.1			0.0		
WS9	NA	1034	Peak	NA	NA	NA	NA	NA	NA	0.02	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	12:57	1034	Peak	0.0	0.0	20.1	20	300	0.0	0.74	No hydrocarbon product recorded
			Steady	0.0	0.0	20.1			0.0		
WS14	13:10	1034	Peak	0.0	0.0	20.0	10	300	0.3	0.83	No hydrocarbon product recorded
			Steady	0.0	0.0	20.0			0.0		
WS17	13:23	1034	Peak	0.0	0.2	20.6	70	300	0.0	0.81	No hydrocarbon product recorded
			Steady	0.0	0.0	20.9			0.0		
WS18	13:34	1034	Peak	0.0	0.8	20.2	60	300	0.0	1.52	No hydrocarbon product recorded
			Steady	0.0	0.8	20.2			0.0		
WS21	12:42	1034	Peak	0.0	0.1	19.6	30	300	0.0	0.99	No hydrocarbon product recorded
			Steady	0.0	0.1	19.6			0.0		
Ambient				0.0	0.0	20.9					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	04/04/2019
Weather	Overcast
Atmospheric Pressure Trend	Fall of 5mb in 24 hour period prior to monitoring from 998mb to 993mb
Equipment	GA2000 (GEO 11 = Derby) & Dip Meter
Operator	BP

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	14:15	993	Peak	82.8	14.5	0.1	270	270	9.4	0.83	Monitoring terminated after 270 seconds due to water uptake
			Steady	82.8	14.5	0.1			0.0		
WS3	14:30	993	Peak	0.0	0.0	20.6	20	300	0.0	0.92	
			Steady	0.0	0.0	20.6			0.0		
WS7	14:50	993	Peak	0.0	0.5	20.4	30	98	0.0	0.70	Monitoring terminated after 98 seconds due to water uptake
			Steady	0.0	0.5	20.4			0.0		
WS9	NA	993	Peak	NA	NA	NA	NA	NA	NA	0.06	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	15:42	993	Peak	0.0	0.0	21.3	50	300	0.0	0.78	
			Steady	0.0	0.0	21.5			0.0		
WS14	15:36	993	Peak	0.0	0.7	21.1	40	300	0.0	0.74	
			Steady	0.0	0.6	21.1			0.0		
WS17	15:16	993	Peak	0.0	0.6	20.8	30	300	0.0	1.24	
			Steady	0.0	0.6	20.8			0.0		
WS18	15:24	993	Peak	0.0	0.0	21.4	5	300	0.0	0.67	
			Steady	0.0	0.0	21.4			0.0		
WS21	15:00	993	Peak	0.0	0.6	20.1	240	300	0.0	0.65	
			Steady	0.0	0.0	21.0			0.0		
Ambient				0.0	0.0	21.5					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	11/04/2019
Weather	Cloudy with sunny intervals
Atmospheric Pressure Trend	Rise of 5mb in 24 hour period prior to monitoring from 1022mb to 1027mb
Equipment	GA2000 (GEO 11 = Derby) & Dip Meter
Operator	BP

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	13:51	1027	Peak	83.2	14.2	0.1	90	300	15.9	0.93	
			Steady	83.2	14.2	0.1			0.0		
WS3	14:12	1027	Peak	0.0	0.4	20.0	30	300	0.0	0.93	
			Steady	0.0	0.0	20.5			0.0		
WS7	14:42	1027	Peak	0.0	0.3	20.3	40	73	0.0	0.53	Monitoring terminated after 73 seconds due to water uptake
			Steady	0.0	0.3	20.3			0.0		
WS9	NA	1027	Peak	NA	NA	NA	NA	NA	NA	0.06	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	14:53	1027	Peak	0.0	0.0	20.7	70	300	0.0	0.78	
			Steady	0.0	0.0	20.6			0.0		
WS14	15:03	1027	Peak	0.0	0.3	20.7	90	300	0.0	1.10	
			Steady	0.0	0.2	20.6			0.0		
WS17	15:15	1027	Peak	0.0	0.9	20.2	80	300	0.0	1.10	
			Steady	0.0	0.9	20.2			0.0		
WS18	15:24	1027	Peak	0.0	0.5	20.8	180	300	0.0	1.05	
			Steady	0.0	0.1	21.1			0.0		
WS21	14:27	1027	Peak	0.0	0.1	20.5	80	230	0.0	0.53	Monitoring terminated after 230 seconds due to water uptake
			Steady	0.0	0.0	20.7			0.0		
Ambient				0.0	0.0	21.2					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	17/04/2019
Weather	Sunny
Atmospheric Pressure Trend	Rise of 4mb in 24 hour period prior to monitoring from 1015mb to 1019mb
Equipment	GA2000 (GEO 11 = Derby) & Dip Meter
Operator	CB

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	15:01	1019	Peak	84.1	14.7	0.3	240	300	3.0	0.80	
			Steady	84.1	14.7	0.3			0.0		
WS3	15:10	1019	Peak	0.0	0.0	20.7	20	300	0.0	0.88	
			Steady	0.0	0.0	20.7			0.0		
WS7	NA	1019	Peak	NA	NA	NA	NA	NA	NA	0.02	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS9	NA	1019	Peak	NA	NA	NA	NA	NA	NA	0.02	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	15:30	1019	Peak	0.0	0.0	21.0	NA	300	0.0	0.76	
			Steady	0.0	0.0	21.0			0.0		
WS14	15:39	1019	Peak	0.0	0.3	20.6	45	300	0.0	0.78	
			Steady	0.0	0.2	20.6			0.0		
WS17	15:49	1019	Peak	0.0	0.2	20.8	30	300	0.0	0.83	
			Steady	0.0	0.2	20.8			0.0		
WS18	16:00	1019	Peak	0.0	0.4	20.3	60	300	0.0	1.21	
			Steady	0.0	0.4	20.3			0.0		
WS21	15:22	1019	Peak	0.0	0.1	20.1	80	300	0.0	0.96	
			Steady	0.0	0.0	20.1			0.0		
Ambient				0.0	0.0	21.0					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	24/04/2019
Weather	Cloudy & Windy
Atmospheric Pressure Trend	Fall of 7mb in 24 hour period prior to monitoring from 999mb to 992mb
Equipment	GA2000 (GEO 11 = Derby) & Dip Meter
Operator	BP

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	13:46	992	Peak	80.9	13.7	0.2	50	300	11.0	1.05	
			Steady	80.9	13.7	0.2			0.0		
WS3	13:55	992	Peak	0.0	0.0	20.2	40	300	0.0	0.89	
			Steady	0.0	0.0	20.2			0.0		
WS7	14:05	992	Peak	0.0	0.2	19.8	90	300	0.0	0.83	
			Steady	0.0	0.0	20.0			0.0		
WS9	NA	992	Peak	NA	NA	NA	NA	NA	NA	0.07	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	14:40	992	Peak	0.0	0.0	20.6	10	300	0.0	0.86	
			Steady	0.0	0.0	20.6			0.0		
WS14	14:50	992	Peak	0.0	0.1	20.6	20	300	0.0	1.05	
			Steady	0.0	0.0	20.7			0.0		
WS17	15:15	992	Peak	0.0	1.0	19.9	30	300	0.0	1.08	
			Steady	0.0	1.0	19.9			0.0		
WS18	15:00	992	Peak	0.0	1.1	19.4	50	300	0.0	1.04	
			Steady	0.0	1.1	19.4			0.0		
WS21	14:19	992	Peak	0.0	0.5	19.4	140	300	0.0	0.50	
			Steady	0.0	0.0	20.1			0.0		
Ambient				0.0	0.0	20.4					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

Project No.	D38185
Client	Seagate Homes
Site Location	Millfield Nursery, Spalding
Date	29/04/2019
Weather	Cloudy & Windy
Atmospheric Pressure Trend	Rise of 10mb in 24 hour period prior to monitoring from 1017mb to 1027mb
Equipment	GA2000 (GEO 11 = Derby) & Dip Meter
Operator	BP

MONITORING OF SOIL GASES AND GROUNDWATER - IN ACCORDANCE WITH CIRIA C665 / BS8485:2015											
Borehole No.	Time (00:00)	Ambient Pressure (mb)		Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Time to steady gas readings (secs)	Duration of gas monitoring (secs)	Gas Flow (l/hr)	Depth to groundwater (m begl)	Other Issues i.e. odour, condition of installation, etc
WS1	11:40	1027	Peak	83.4	14.0	0.2	50	300	11.5	1.04	
			Steady	83.3	14.0	0.2			0.0		
WS3	11:51	1027	Peak	0.0	0.3	20.6	90	300	0.0	1.02	
			Steady	0.0	0.0	20.8			0.0		
WS7	12:02	1027	Peak	0.0	0.1	20.4	60	300	0.0	0.90	
			Steady	0.0	0.1	20.4			0.0		
WS9	NA	1027	Peak	NA	NA	NA	NA	NA	NA	0.08	Borehole flooded. Could not monitor
			Steady	NA	NA	NA			NA		
WS10	12:35	1027	Peak	0.0	0.0	20.7	30	300	0.0	0.92	
			Steady	0.0	0.0	20.8			0.0		
WS14	12:43	1027	Peak	0.0	0.0	20.7	60	300	0.0	1.02	
			Steady	0.0	0.0	20.8			0.0		
WS17	13:02	1027	Peak	0.0	1.5	19.2	40	300	0.0	1.00	
			Steady	0.0	1.4	19.2			0.0		
WS18	12:53	1027	Peak	0.0	1.3	19.4	50	300	0.0	1.04	
			Steady	0.0	1.3	19.4			0.0		
WS21	12:24	1027	Peak	0.0	1.6	18.8	30	300	0.0	0.92	
			Steady	0.0	1.6	18.8			0.0		
Ambient				0.0	0.0	20.9					

Notes

Cell is highlighted in the following conditions

1. Where Methane exceeds 1% v/v (after BR212)

2. Where Carbon Dioxide exceeds 5% v/v (after BR212)

Where cell is highlighted further consideration of the recorded value is required in accordance with the specified guidance documents

NA - Not Applicable/ Not Available

BOH - Bottom of Hole

ND - Not Determined

NGW - No groundwater encountered

NR - None Recorded

GeoDyne

APPENDIX VIII

Laboratory Test Results

GeoDyne

Soil Analysis

LABORATORY REPORT

4043

Contract Number: PSL19/1751

Report Date: 22 March 2019

Client's Reference: D38185

Client Name: Geodyne Derby
9 Brunel Parkway
Pride Park
Derby
DE24 8HR

For the attention of: Steve Sellers

Contract Title: Millfield Nursery, Spalding

Date Received: 19/3/2019
Date Commenced: 19/3/2019
Date Completed: 22/3/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)	A Watkins (Director)	R Berriman (Quality Manager)
		S. Biddleston
L Knight (Senior Technician)	L Pavey (Senior/Quality Technician)	S Biddleston (Senior Technician)

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Doncaster DN4 0AR
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fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS1	1	B	2.50	3.00	Grey slightly gravelly very sandy CLAY with some organic material.
WS2	2	B	1.50	2.00	Brown very sandy slightly clayey SILT.
WS4	4	B	1.00	1.50	Brown very sandy SILT.
WS5	5	B	2.00	2.50	Brown slightly sandy CLAY.
WS7	7	B	1.75	2.25	Brown CLAY.
WS8	8	B	2.25	2.75	Brown sandy CLAY with some organic material.
WS9	9	B	1.90	5.40	Grey organic CLAY.
WS11	10	B	1.30	1.80	Brown organic CLAY.
WS13	11	B	0.60	1.10	Brown very sandy SILT.
WS14	12	B	1.10	1.60	Brown very sandy SILT.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS1	1	B	2.50	3.00	41			47	23	24	96	Intermediate plasticity CI.
WS2	2	B	1.50	2.00	33				NP			
WS4	4	B	1.00	1.50	28				NP			
WS5	5	B	2.00	2.50	35			56	25	31	100	High plasticity CH.
WS7	7	B	1.75	2.25	39			81	29	52	100	Very high plasticity CV.
WS8	8	B	2.25	2.75	51			55	26	29	100	High plasticity CH.
WS9	9	B	1.90	5.40	77			85	37	48	100	Very high plasticity CV.
WS11	10	B	1.30	1.80	73			83	36	47	100	Very high plasticity CV.
WS13	11	B	0.60	1.10	25				NP			
WS14	12	B	1.10	1.60	31				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Millfield Nursery, Spalding

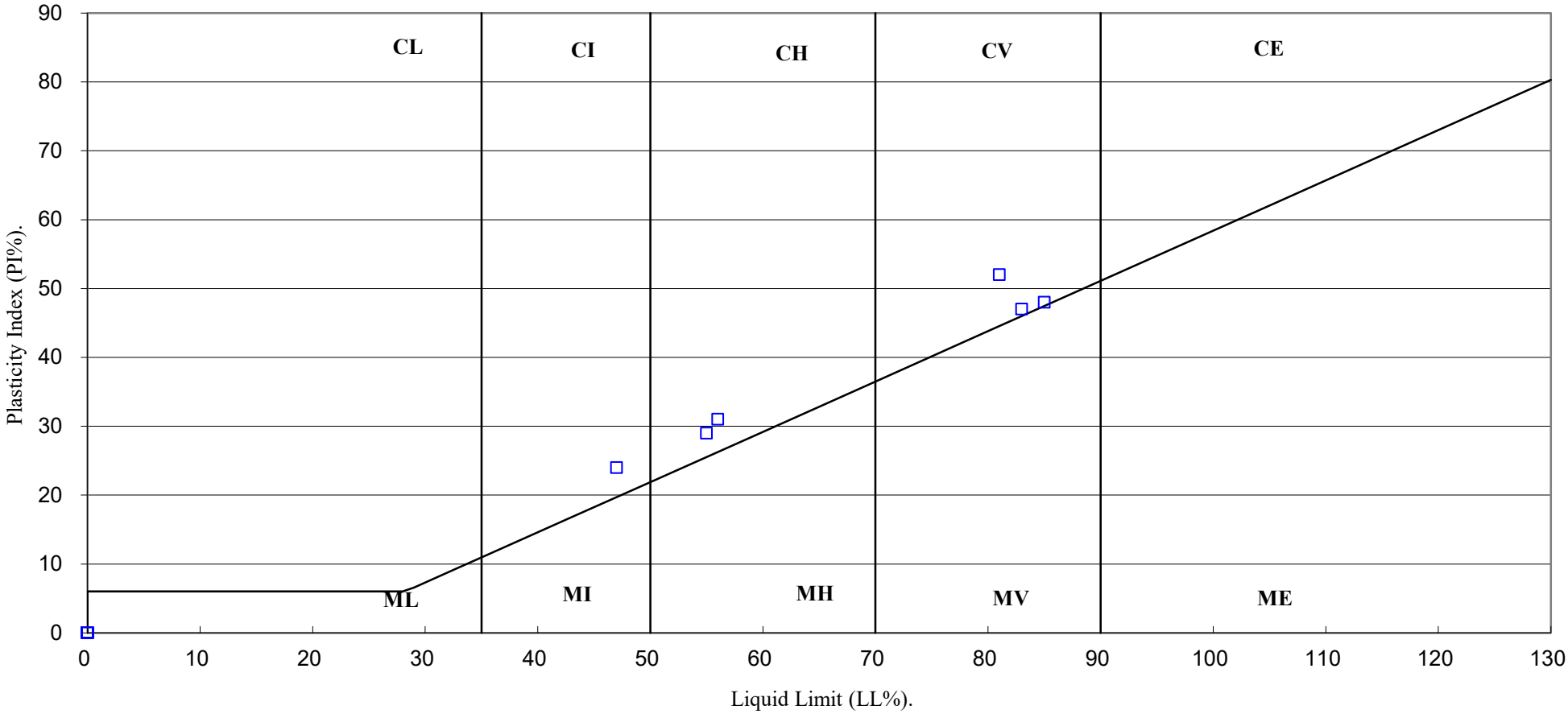
Contract No:

PSL19/1751

Client Ref:

D38185

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Millfield Nursery, Spalding	Contract No: PSL19/1751
			Client Ref: D38185

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/02683
Issue Number: 1 **Date:** 08 April, 2019

Client:
GeoDyne (Derby)
9 Brunel Parkway
Pride Park
Derby
Derbyshire
UK
DE24 8HR

Project Manager: Steve Sellers
Project Name: Millfield Nursery, Spalding
Project Ref: D38185
Order No: D38185
Date Samples Received: 18/03/19
Date Instructions Received: 20/03/19
Date Analysis Completed: 08/04/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Danielle Brierley
Client Manager

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/1	19/02683/2	19/02683/3	19/02683/4	19/02683/5	19/02683/7	19/02683/8	Units	Limit of Detection	Method ref
Client Sample No	T1	T2	T3	T4	T5	T7	T8			
Client Sample ID	WS1	WS1	WS2	WS2	WS3	WS4	WS4			
Depth to Top	0.10	0.50	0.15	0.45	0.30	0.25	2.15			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4A	4A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	1.9	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.92	8.18	7.93	8.38	7.59	7.91	-	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	-	0.09	-	-	0.15	-	-	g/l	0.01	A-T-026s
Loss on ignition (550degC)$_D$$^{M\#}$	-	-	-	-	-	-	4.2	% w/w	0.6	A-T-030s
Total Organic Carbon$_D$$^{M\#}$	1.70	0.55	2.96	0.34	2.84	1.63	-	% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	6	<1	4	<1	7	3	-	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.5	<0.5	0.6	<0.5	0.6	0.5	-	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	13	5	11	2	19	5	-	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	18	19	14	9	14	17	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	-	mg/kg	1	A-T-040s
Chromium (trivalent)	18	19	14	9	14	17	-	mg/kg	1	Calc
Lead$_D$$^{M\#}$	35	8	39	4	128	11	-	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	-	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	15	13	12	8	12	13	-	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	-	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	56	35	59	20	99	34	-	mg/kg	5	A-T-024s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/1	19/02683/2	19/02683/3	19/02683/4	19/02683/5	19/02683/7	19/02683/8	Units	Limit of Detection	Method ref
Client Sample No	T1	T2	T3	T4	T5	T7	T8			
Client Sample ID	WS1	WS1	WS2	WS2	WS3	WS4	WS4			
Depth to Top	0.10	0.50	0.15	0.45	0.30	0.25	2.15			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{A}^{\#}$	NAD	-	NAD	-	NAD	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	-	N/A	-	-			
OCP+OPP Combined Pest Suite (incl. Atrazine and Simazine)										
Dichlobenil$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Tecnazene$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Trifluralin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
alpha-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Hexachlorobenzene (HCB)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Simazine$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Atrazine$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
beta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Quintozene (PCNB)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
gamma-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Chlorothalonil$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
delta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Triallate$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Heptachlor$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Aldrin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Triadimefon$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Telodrin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Isodrin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Pendimethalin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Heptachlor epoxide$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
trans-Chlordane (Gamma)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
o,p-DDE (2,4)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Endosulphan I (Alpha)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
cis-Chlordane (Alpha)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
p,p-DDE (4,4)$_{A}$	<0.01	-	<0.01	<0.01	0.02	<0.01	-	mg/kg	0.01	A-T-056
Dieldrin$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
o,p-DDD (2,4)$_{A}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056

Lab Sample ID	19/02683/1	19/02683/2	19/02683/3	19/02683/4	19/02683/5	19/02683/7	19/02683/8	Units	Limit of Detection	Method ref
Client Sample No	T1	T2	T3	T4	T5	T7	T8			
Client Sample ID	WS1	WS1	WS2	WS2	WS3	WS4	WS4			
Depth to Top	0.10	0.50	0.15	0.45	0.30	0.25	2.15			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4A	4A			
Endrin$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Endosulphan II (Beta)$_A$	<0.01	-	<0.01	<0.01	0.02	<0.01	-	mg/kg	0.01	A-T-056
p,p-DDD (4,4)$_A$	<0.01	-	<0.01	<0.01	0.01	<0.01	-	mg/kg	0.01	A-T-056
o,p-DDT (2,4)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Endrin Aldehyde$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Endrin Ketone$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Endosulphan Sulphate$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
p,p-DDT (4,4)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
o,p-Methoxychlor$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
p,p-Methoxychlor$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Permethrin I (cis)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Permethrin II (trans)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Dichlorvos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Mevinphos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Demeton-S$_A$	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	mg/kg	0.5	A-T-056
Demeton-O$_A$	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	mg/kg	0.5	A-T-056
Phorate$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Dimethoate$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Propetamphos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Diazinon (Dimpylate)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Disulfoton$_A$	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	mg/kg	0.1	A-T-056
Etrimphos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Chlorpyrifos-methyl$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Parathion (Ethyl Parathion)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Methyl Parathion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Pirimiphos-methyl$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Fenitrothion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Fensulphothion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Fenthion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Malathion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Chlorfenvinphos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Chlorpyrifos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Trichloronate$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Prothiofos (Tokuthion)$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/1	19/02683/2	19/02683/3	19/02683/4	19/02683/5	19/02683/7	19/02683/8	Units	Limit of Detection	Method ref
Client Sample No	T1	T2	T3	T4	T5	T7	T8			
Client Sample ID	WS1	WS1	WS2	WS2	WS3	WS4	WS4			
Depth to Top	0.10	0.50	0.15	0.45	0.30	0.25	2.15			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4A	4A			
Ethion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Triazophos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Sulprofos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Carbophenothion$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Phosalone$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Azinphos-methyl$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Azinphos-ethyl$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056
Coumaphos$_A$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/1	19/02683/2	19/02683/3	19/02683/4	19/02683/5	19/02683/7	19/02683/8	Units	Limit of Detection	Method ref
Client Sample No	T1	T2	T3	T4	T5	T7	T8			
Client Sample ID	WS1	WS1	WS2	WS2	WS3	WS4	WS4			
Depth to Top	0.10	0.50	0.15	0.45	0.30	0.25	2.15			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4A	4A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	-	mg/kg	0.1	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	-	mg/kg	0.1	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	-	mg/kg	0.1	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	-	mg/kg	0.1	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Chrysene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	-	mg/kg	0.1	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Fluoranthene$_A^{M\#}$	0.1	<0.1	<0.1	<0.1	0.4	<0.1	-	mg/kg	0.1	A-T-019s
Fluorene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	-	mg/kg	0.1	A-T-019s
Naphthalene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	0.1	A-T-019s
Phenanthrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	-	mg/kg	0.1	A-T-019s
Pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	-	mg/kg	0.1	A-T-019s
Total PAH-16MS$_A^{M\#}$	0.1	<0.1	<0.1	<0.1	2.0	<0.1	-	mg/kg	0.1	A-T-019s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/9	19/02683/10	19/02683/11	19/02683/12	19/02683/13	19/02683/14	19/02683/15	Units	Limit of Detection	Method ref
Client Sample No	T9	T10	T11	T12	T13	T14	T15			
Client Sample ID	WS5	WS5	WS6	WS6	WS7	WS7	WS8			
Depth to Top	0.40	2.95	0.25	0.55	0.30	0.60	0.35			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4A	6A	6A	4A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D^{M\#}$	7.80	-	7.93	8.26	7.93	-	7.97	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	0.34	-	-	-	0.05	-	g/l	0.01	A-T-026s
Loss on ignition (550degC)$_D^{M\#}$	-	3.9	-	-	-	-	-	% w/w	0.6	A-T-030s
Total Organic Carbon$_D^{M\#}$	2.03	-	1.21	0.39	0.46	-	3.56	% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	5	-	5	1	1	-	7	mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	<0.5	-	0.5	<0.5	<0.5	-	1.1	mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	9	-	13	3	4	-	20	mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	11	-	15	11	11	-	17	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	<1	-	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	11	-	15	11	11	-	17	mg/kg	1	Calc
Lead$_D^{M\#}$	18	-	30	6	9	-	22	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	-	<0.17	<0.17	<0.17	-	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	10	-	13	10	10	-	14	mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	-	<1	<1	<1	-	1	mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	49	-	50	25	31	-	68	mg/kg	5	A-T-024s

Lab Sample ID	19/02683/9	19/02683/10	19/02683/11	19/02683/12	19/02683/13	19/02683/14	19/02683/15	Units	Limit of Detection	Method ref
Client Sample No	T9	T10	T11	T12	T13	T14	T15			
Client Sample ID	WS5	WS5	WS6	WS6	WS7	WS7	WS8			
Depth to Top	0.40	2.95	0.25	0.55	0.30	0.60	0.35			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4A	6A	6A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{A}^{\#}$	NAD	-	NAD	-	-	-	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	-	-	-	N/A			
OCP+OPP Combined Pest Suite (incl. Atrazine and Simazine)										
Dichlobenil$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Tecnazene$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Trifluralin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
alpha-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Hexachlorobenzene (HCB)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Simazine$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Atrazine$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
beta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Quintozene (PCNB)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
gamma-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorothalonil$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
delta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triallate$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Heptachlor$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Aldrin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triadimefon$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Telodrin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Isodrin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Pendimethalin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Heptachlor epoxide$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
trans-Chlordane (Gamma)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDE (2,4)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan I (Alpha)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
cis-Chlordane (Alpha)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDE (4,4)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dieldrin$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDD (2,4)$_{A}$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Lab Sample ID	19/02683/9	19/02683/10	19/02683/11	19/02683/12	19/02683/13	19/02683/14	19/02683/15	Units	Limit of Detection	Method ref
Client Sample No	T9	T10	T11	T12	T13	T14	T15			
Client Sample ID	WS5	WS5	WS6	WS6	WS7	WS7	WS8			
Depth to Top	0.40	2.95	0.25	0.55	0.30	0.60	0.35			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4A	6A	6A	4A			
Endrin$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan II (Beta)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDD (4,4)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDT (2,4)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endrin Aldehyde$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endrin Ketone$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan Sulphate$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDT (4,4)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-Methoxychlor$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-Methoxychlor$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Permethrin I (cis)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Permethrin II (trans)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dichlorvos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Mevinphos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Demeton-S$_A$	<0.50	-	<0.50	-	<0.50	-	<0.50	mg/kg	0.5	A-T-056
Demeton-O$_A$	<0.50	-	<0.50	-	<0.50	-	<0.50	mg/kg	0.5	A-T-056
Phorate$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dimethoate$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Propetamphos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Diazinon (Dimpylate)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Disulfoton$_A$	<0.10	-	<0.10	-	<0.10	-	<0.10	mg/kg	0.1	A-T-056
Etrimphos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorpyrifos-methyl$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Parathion (Ethyl Parathion)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Methyl Parathion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Pirimiphos-methyl$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fenitrothion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fensulphothion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fenthion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Malathion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorfenvinphos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorpyrifos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Trichloronate$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Prothiofos (Tokuthion)$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/9	19/02683/10	19/02683/11	19/02683/12	19/02683/13	19/02683/14	19/02683/15	Units	Limit of Detection	Method ref
Client Sample No	T9	T10	T11	T12	T13	T14	T15			
Client Sample ID	WS5	WS5	WS6	WS6	WS7	WS7	WS8			
Depth to Top	0.40	2.95	0.25	0.55	0.30	0.60	0.35			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4A	6A	6A	4A			
Ethion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triazophos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Sulprofos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Carbophenothion$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Phosalone$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Azinphos-methyl$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Azinphos-ethyl$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Coumaphos$_A$	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/9	19/02683/10	19/02683/11	19/02683/12	19/02683/13	19/02683/14	19/02683/15	Units	Limit of Detection	Method ref
Client Sample No	T9	T10	T11	T12	T13	T14	T15			
Client Sample ID	WS5	WS5	WS6	WS6	WS7	WS7	WS8			
Depth to Top	0.40	2.95	0.25	0.55	0.30	0.60	0.35			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19	07-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	4A	6A	6A	4A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Anthracene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Chrysene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Fluoranthene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Fluorene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Naphthalene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Phenanthrene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Pyrene$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	mg/kg	0.1	A-T-019s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/17	19/02683/18	19/02683/19	19/02683/21	19/02683/23	19/02683/24	19/02683/25	Units	Limit of Detection	Method ref
Client Sample No	T17	T18	T19	T21	T23	T24	T25			
Client Sample ID	WS9	WS9	WS13	WS14	WS17	WS17	WS18			
Depth to Top	0.15	0.40	0.45	0.10	0.25	0.45	0.20			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	08-Mar-19	08-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6AE	6A	6A	6AE	6AE	6AE	6AE			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	% w/w	0.1	A-T-044
pH$_D$ M#	8.09	7.59	8.25	8.31	8.05	8.11	8.05	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	-	-	0.02	-	-	-	-	g/l	0.01	A-T-026s
Total Organic Carbon$_D$ M#	0.33	2.47	0.22	0.33	1.10	0.77	1.42	% w/w	0.03	A-T-032s
Arsenic$_D$ M#	1	10	<1	<1	5	<1	4	mg/kg	1	A-T-024s
Cadmium$_D$ M#	<0.5	0.6	<0.5	<0.5	<0.5	1.0	<0.5	mg/kg	0.5	A-T-024s
Copper$_D$ M#	4	24	1	3	12	11	12	mg/kg	1	A-T-024s
Chromium$_D$ M#	16	14	10	10	18	38	16	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	16	14	10	10	18	38	16	mg/kg	1	Calc
Lead$_D$ M#	27	24	4	5	25	18	22	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$ M#	13	13	9	10	14	36	12	mg/kg	1	A-T-024s
Selenium$_D$ M#	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$ M#	34	78	24	23	55	78	53	mg/kg	5	A-T-024s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/17	19/02683/18	19/02683/19	19/02683/21	19/02683/23	19/02683/24	19/02683/25	Units	Limit of Detection	Method ref
Client Sample No	T17	T18	T19	T21	T23	T24	T25			
Client Sample ID	WS9	WS9	WS13	WS14	WS17	WS17	WS18			
Depth to Top	0.15	0.40	0.45	0.10	0.25	0.45	0.20			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	08-Mar-19	08-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6AE	6A	6A	6AE	6AE	6AE	6AE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{A}^{\#}$	NAD	-	NAD	NAD	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	N/A	-	-	-			
OCP+OPP Combined Pest Suite (incl. Atrazine and Simazine)										
Dichlobenil$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Tecnazene$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Trifluralin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
alpha-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Hexachlorobenzene (HCB)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Simazine$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Atrazine$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
beta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Quintozene (PCNB)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
gamma-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorothalonil$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
delta-Hexachlorocyclohexane (HCH)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triallate$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Heptachlor$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Aldrin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triadimefon$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Telodrin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Isodrin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Pendimethalin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Heptachlor epoxide$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
trans-Chlordane (Gamma)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDE (2,4)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan I (Alpha)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
cis-Chlordane (Alpha)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDE (4,4)$_{A}$	<0.01	0.06	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dieldrin$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDD (2,4)$_{A}$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Lab Sample ID	19/02683/17	19/02683/18	19/02683/19	19/02683/21	19/02683/23	19/02683/24	19/02683/25	Units	Limit of Detection	Method ref
Client Sample No	T17	T18	T19	T21	T23	T24	T25			
Client Sample ID	WS9	WS9	WS13	WS14	WS17	WS17	WS18			
Depth to Top	0.15	0.40	0.45	0.10	0.25	0.45	0.20			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	08-Mar-19	08-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6AE	6A	6A	6AE	6AE	6AE	6AE			
Endrin$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan II (Beta)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDD (4,4)$_A$	<0.01	0.04	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-DDT (2,4)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endrin Aldehyde$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endrin Ketone$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Endosulphan Sulphate$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-DDT (4,4)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
o,p-Methoxychlor$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
p,p-Methoxychlor$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Permethrin I (cis)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Permethrin II (trans)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dichlorvos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Mevinphos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Demeton-S$_A$	<0.50	<0.50	-	-	<0.50	-	<0.50	mg/kg	0.5	A-T-056
Demeton-O$_A$	<0.50	<0.50	-	-	<0.50	-	<0.50	mg/kg	0.5	A-T-056
Phorate$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Dimethoate$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Propetamphos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Diazinon (Dimpylate)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Disulfoton$_A$	<0.10	<0.10	-	-	<0.10	-	<0.10	mg/kg	0.1	A-T-056
Etrimphos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorpyrifos-methyl$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Parathion (Ethyl Parathion)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Methyl Parathion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Pirimiphos-methyl$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fenitrothion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fensulphothion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Fenthion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Malathion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorfenvinphos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Chlorpyrifos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Trichloronate$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Prothiofos (Tokuthion)$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/17	19/02683/18	19/02683/19	19/02683/21	19/02683/23	19/02683/24	19/02683/25	Units	Limit of Detection	Method ref
Client Sample No	T17	T18	T19	T21	T23	T24	T25			
Client Sample ID	WS9	WS9	WS13	WS14	WS17	WS17	WS18			
Depth to Top	0.15	0.40	0.45	0.10	0.25	0.45	0.20			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	08-Mar-19	08-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6AE	6A	6A	6AE	6AE	6AE	6AE			
Ethion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Triazophos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Sulprofos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Carbophenothion$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Phosalone$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Azinphos-methyl$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Azinphos-ethyl$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056
Coumaphos$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/17	19/02683/18	19/02683/19	19/02683/21	19/02683/23	19/02683/24	19/02683/25	Units	Limit of Detection	Method ref
Client Sample No	T17	T18	T19	T21	T23	T24	T25			
Client Sample ID	WS9	WS9	WS13	WS14	WS17	WS17	WS18			
Depth to Top	0.15	0.40	0.45	0.10	0.25	0.45	0.20			
Depth To Bottom										
Date Sampled	07-Mar-19	07-Mar-19	08-Mar-19	08-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6AE	6A	6A	6AE	6AE	6AE	6AE			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Chrysene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Fluoranthene$_A^{M\#}$	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Fluorene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Naphthalene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Phenanthrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Pyrene$_A^{M\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-019s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D^{M\#}$	-	8.30	8.02	-	-	-	-	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.30	-	-	-	-	0.21	-	g/l	0.01	A-T-026s
Loss on ignition (550degC)$_D^{M\#}$	8.6	-	-	-	8.8	-	8.0	% w/w	0.6	A-T-030s
Total Organic Carbon$_D^{M\#}$	-	0.36	0.89	-	-	-	-	% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	-	4	2	-	-	-	-	mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	-	<0.5	0.7	-	-	-	-	mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	-	4	14	-	-	-	-	mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	-	17	38	-	-	-	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1	-	-	-	-	mg/kg	1	A-T-040s
Chromium (trivalent)	-	17	38	-	-	-	-	mg/kg	1	Calc
Lead$_D^{M\#}$	-	8	17	-	-	-	-	mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	<0.17	-	-	-	-	mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	-	15	36	-	-	-	-	mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	-	<1	<1	-	-	-	-	mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	-	34	78	-	-	-	-	mg/kg	5	A-T-024s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{A}^{\#}$	-	NAD	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	-	N/A	-	-	-	-	-			
OCP+OPP Combined Pest Suite (incl. Atrazine and Simazine)										
Dichlobenil$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Tecnazene$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Trifluralin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
alpha-Hexachlorocyclohexane (HCH)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Hexachlorobenzene (HCB)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Simazine$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Atrazine$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
beta-Hexachlorocyclohexane (HCH)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Quintozene (PCNB)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
gamma-Hexachlorocyclohexane (HCH)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Chlorothalonil$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
delta-Hexachlorocyclohexane (HCH)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Triallate$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Heptachlor$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Aldrin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Triadimefon$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Telodrin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Isodrin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Pendimethalin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Heptachlor epoxide$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
trans-Chlordane (Gamma)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
o,p-DDE (2,4)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Endosulphan I (Alpha)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
cis-Chlordane (Alpha)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
p,p-DDE (4,4)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Dieldrin$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
o,p-DDD (2,4)$_{A}$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
Endrin$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Endosulphan II (Beta)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
p,p-DDD (4,4)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
o,p-DDT (2,4)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Endrin Aldehyde$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Endrin Ketone$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Endosulphan Sulphate$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
p,p-DDT (4,4)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
o,p-Methoxychlor$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
p,p-Methoxychlor$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Permethrin I (cis)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Permethrin II (trans)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Dichlorvos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Mevinphos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Demeton-S$_A$	-	<0.50	-	-	-	-	-	mg/kg	0.5	A-T-056
Demeton-O$_A$	-	<0.50	-	-	-	-	-	mg/kg	0.5	A-T-056
Phorate$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Dimethoate$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Propetamphos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Diazinon (Dimpylate)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Disulfoton$_A$	-	<0.10	-	-	-	-	-	mg/kg	0.1	A-T-056
Etrimphos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Chlorpyrifos-methyl$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Parathion (Ethyl Parathion)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Methyl Parathion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Pirimiphos-methyl$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Fenitrothion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Fensulphothion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Fenthion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Malathion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Chlorfenvinphos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Chlorpyrifos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Trichloronate$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Prothiofos (Tokuthion)$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
Ethion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Triazophos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Sulprofos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Carbophenothion$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Phosalone$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Azinphos-methyl$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Azinphos-ethyl$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056
Coumaphos$_A$	-	<0.01	-	-	-	-	-	mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Anthracene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Chrysene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Fluorene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Pyrene$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	<0.1	<0.1	-	-	-	-	mg/kg	0.1	A-T-019s

Envirolab Job Number: 19/02683

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Client Project Ref: D38185

Lab Sample ID	19/02683/26	19/02683/27	19/02683/28	19/02683/29	19/02683/31	19/02683/33	19/02683/34	Units	Limit of Detection	Method ref
Client Sample No	T26	T27	T28	J1	J3	J5	J6			
Client Sample ID	WS18	WS23	WS23	WS10	WS10	WS11	WS11			
Depth to Top	2.30	0.30	0.60	0.30	2.30	1.50	2.50			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6A	6A	6	6	5A	6E	5A			
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	-	-	<0.01	-	0.02	-	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C10-C12$_A^{\#}$	-	-	-	86.7	-	<0.1	-	mg/kg	0.1	A-T-023s
Ali >C12-C16$_A^{\#}$	-	-	-	266	-	<0.1	-	mg/kg	0.1	A-T-023s
Ali >C16-C21$_A^{\#}$	-	-	-	283	-	<0.1	-	mg/kg	0.1	A-T-023s
Ali >C21-C35$_A^{\#}$	-	-	-	263	-	<0.1	-	mg/kg	0.1	A-T-023s
Total Aliphatics$_A$	-	-	-	898	-	<0.1	-	mg/kg	0.1	A-T-023s
Aro >C5-C7$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C10-C12$_A^{\#}$	-	-	-	89.9	-	<0.1	-	mg/kg	0.1	A-T-023s
Aro >C12-C16$_A^{\#}$	-	-	-	373	-	<0.1	-	mg/kg	0.1	A-T-023s
Aro >C16-C21$_A^{\#}$	-	-	-	463	-	<0.1	-	mg/kg	0.1	A-T-023s
Aro >C21-C35$_A^{\#}$	-	-	-	520	-	<0.1	-	mg/kg	0.1	A-T-023s
Total Aromatics$_A$	-	-	-	1450	-	<0.1	-	mg/kg	0.1	A-T-023s
TPH (Ali & Aro)$_A$	-	-	-	2340	-	<0.1	-	mg/kg	0.1	A-T-023s
BTEX - Benzene$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	-	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/35	19/02683/37	19/02683/38	19/02683/39	19/02683/40	19/02683/41	19/02683/42	Units	Limit of Detection	Method ref
Client Sample No	J7	J9	J10	J11	J12	J13	J14			
Client Sample ID	WS12	WS15	WS15	WS15	WS16	WS16	WS16			
Depth to Top	0.40	0.80	1.80	2.80	0.25	1.25	2.25			
Depth To Bottom										
Date Sampled	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6E	6E	6E	4AE	5A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
Sulphate (water sol 2:1)$_D^{M\#}$	-	-	-	-	-	<0.01	-	g/l	0.01	A-T-026s
Loss on ignition (550degC)$_D^{M\#}$	-	-	-	-	-	-	8.1	% w/w	0.6	A-T-030s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/35	19/02683/37	19/02683/38	19/02683/39	19/02683/40	19/02683/41	19/02683/42	Units	Limit of Detection	Method ref
Client Sample No	J7	J9	J10	J11	J12	J13	J14			
Client Sample ID	WS12	WS15	WS15	WS15	WS16	WS16	WS16			
Depth to Top	0.40	0.80	1.80	2.80	0.25	1.25	2.25			
Depth To Bottom										
Date Sampled	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6E	6E	6E	4AE	5A			
TPH CWG										
Ali >C5-C6$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^\#$	<0.01	<0.01	0.15	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A^\#$	<0.01	0.06	0.49	0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Ali >C10-C12$_A^\#$	<0.1	<0.1	<0.1	28.0	<0.1	-	-	mg/kg	0.1	A-T-023s
Ali >C12-C16$_A^\#$	<0.1	<0.1	<0.1	86.9	<0.1	-	-	mg/kg	0.1	A-T-023s
Ali >C16-C21$_A^\#$	<0.1	<0.1	<0.1	95.4	<0.1	-	-	mg/kg	0.1	A-T-023s
Ali >C21-C35$_A^\#$	<0.1	<0.1	<0.1	99.3	<0.1	-	-	mg/kg	0.1	A-T-023s
Total Aliphatics$_A$	<0.1	<0.1	0.7	310	<0.1	-	-	mg/kg	0.1	A-T-023s
Aro >C5-C7$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A^\#$	<0.01	0.03	3.23	0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
Aro >C10-C12$_A^\#$	<0.1	<0.1	<0.1	41.4	<0.1	-	-	mg/kg	0.1	A-T-023s
Aro >C12-C16$_A^\#$	<0.1	<0.1	<0.1	158	<0.1	-	-	mg/kg	0.1	A-T-023s
Aro >C16-C21$_A^\#$	<0.1	<0.1	<0.1	192	<0.1	-	-	mg/kg	0.1	A-T-023s
Aro >C21-C35$_A^\#$	<0.1	<0.1	<0.1	227	<0.1	-	-	mg/kg	0.1	A-T-023s
Total Aromatics$_A$	<0.1	<0.1	3.2	619	<0.1	-	-	mg/kg	0.1	A-T-023s
TPH (Ali & Aro)$_A$	<0.1	<0.1	3.8	929	<0.1	-	-	mg/kg	0.1	A-T-023s
BTEX - Benzene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^\#$	<0.01	<0.01	0.16	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^\#$	<0.01	<0.01	0.11	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s
MTBE$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	-	-	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/43	19/02683/45	19/02683/46	19/02683/47	19/02683/49	19/02683/50	19/02683/52	Units	Limit of Detection	Method ref
Client Sample No	J15	J17	J18	J19	J21	J22	J24			
Client Sample ID	WS19	WS20	WS20	WS20	WS21	WS21	WS22			
Depth to Top	0.50	0.45	1.45	2.45	2.70	3.05	0.70			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	6AE	4AE	6AE	6AE			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/43	19/02683/45	19/02683/46	19/02683/47	19/02683/49	19/02683/50	19/02683/52	Units	Limit of Detection	Method ref
Client Sample No	J15	J17	J18	J19	J21	J22	J24			
Client Sample ID	WS19	WS20	WS20	WS20	WS21	WS21	WS22			
Depth to Top	0.50	0.45	1.45	2.45	2.70	3.05	0.70			
Depth To Bottom										
Date Sampled	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19	15-Mar-19			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	4AE	4AE	4AE	6AE	4AE	6AE	6AE			
TPH CWG										
Ali >C5-C6$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^\#$	<0.01	<0.01	0.40	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A^\#$	<0.01	<0.01	1.40	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C10-C12$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Ali >C12-C16$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Ali >C16-C21$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Ali >C21-C35$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Total Aliphatics$_A$	<0.1	<0.1	1.8	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Aro >C5-C7$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A^\#$	<0.01	<0.01	5.99	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C10-C12$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Aro >C12-C16$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Aro >C16-C21$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Aro >C21-C35$_A^\#$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
Total Aromatics$_A$	<0.1	<0.1	6.0	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
TPH (Ali & Aro)$_A$	<0.1	<0.1	7.8	<0.1	<0.1	<0.1	<0.1	mg/kg	0.1	A-T-023s
BTEX - Benzene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^\#$	<0.01	<0.01	0.18	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^\#$	<0.01	<0.01	0.30	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^\#$	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/53	19/02683/54	19/02683/55	19/02683/56	19/02683/58	19/02683/59		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH1	HA2	HA6				
Depth to Top	17.50	13.50	6.00	10.00	0.30	0.30				
Depth To Bottom					0.50	0.50				
Date Sampled	13-Mar-19	13-Mar-19	14-Mar-19	11-Mar-19	13-Mar-19	14-Mar-19				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	6A	6A	6A	6	4A	4A				
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	1.5		% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.01	8.59	8.46	8.41	-	-		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.61	0.28	0.18	0.45	-	-		g/l	0.01	A-T-026s

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/53	19/02683/54	19/02683/55	19/02683/56	19/02683/58	19/02683/59		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH1	HA2	HA6				
Depth to Top	17.50	13.50	6.00	10.00	0.30	0.30				
Depth To Bottom					0.50	0.50				
Date Sampled	13-Mar-19	13-Mar-19	14-Mar-19	11-Mar-19	13-Mar-19	14-Mar-19				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	6A	6A	6A	6	4A	4A				
OCP+OPP Combined Pest Suite (incl. Atrazine and Simazine)										
Dichlobenil$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Tecnazene$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Trifluralin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
alpha-Hexachlorocyclohexane (HCH)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Hexachlorobenzene (HCB)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Simazine$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Atrazine$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
beta-Hexachlorocyclohexane (HCH)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Quintozene (PCNB)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
gamma-Hexachlorocyclohexane (HCH)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Chlorothalonil$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
delta-Hexachlorocyclohexane (HCH)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Triallate$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Heptachlor$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Aldrin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Triadimefon$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Telodrin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Isodrin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Pendimethalin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Heptachlor epoxide$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
trans-Chlordane (Gamma)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
o,p-DDE (2,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Endosulphan I (Alpha)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
cis-Chlordane (Alpha)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
p,p-DDE (4,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Dieldrin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
o,p-DDD (2,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Endrin$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Endosulphan II (Beta)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
p,p-DDD (4,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
o,p-DDT (2,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Endrin Aldehyde$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056

Lab Sample ID	19/02683/53	19/02683/54	19/02683/55	19/02683/56	19/02683/58	19/02683/59		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH1	HA2	HA6				
Depth to Top	17.50	13.50	6.00	10.00	0.30	0.30				
Depth To Bottom					0.50	0.50				
Date Sampled	13-Mar-19	13-Mar-19	14-Mar-19	11-Mar-19	13-Mar-19	14-Mar-19				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	6A	6A	6A	6	4A	4A				
Endrin Ketone$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Endosulphan Sulphate$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
p,p-DDT (4,4)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
o,p-Methoxychlor$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
p,p-Methoxychlor$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Permethrin I (cis)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Permethrin II (trans)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Dichlorvos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Mevinphos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Demeton-S$_A$	-	-	-	-	<0.50	-		mg/kg	0.5	A-T-056
Demeton-O$_A$	-	-	-	-	<0.50	-		mg/kg	0.5	A-T-056
Phorate$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Dimethoate$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Propetamphos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Diazinon (Dimpylate)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Disulfoton$_A$	-	-	-	-	<0.10	-		mg/kg	0.1	A-T-056
Etrimphos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Chlorpyrifos-methyl$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Parathion (Ethyl Parathion)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Methyl Parathion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Pirimiphos-methyl$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Fenitrothion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Fensulphothion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Fenthion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Malathion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Chlorfenvinphos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Chlorpyrifos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Trichloronate$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Prothiofos (Tokuthion)$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Ethion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Triazophos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Sulprofos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Carbophenothion$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Phosalone$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/53	19/02683/54	19/02683/55	19/02683/56	19/02683/58	19/02683/59		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH1	HA2	HA6				
Depth to Top	17.50	13.50	6.00	10.00	0.30	0.30				
Depth To Bottom					0.50	0.50				
Date Sampled	13-Mar-19	13-Mar-19	14-Mar-19	11-Mar-19	13-Mar-19	14-Mar-19				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	6A	6A	6A	6	4A	4A				
Azinphos-methyl$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Azinphos-ethyl$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056
Coumaphos$_A$	-	-	-	-	<0.01	-		mg/kg	0.01	A-T-056

Envirolab Job Number: 19/02683

Client Project Name: Millfield Nursery, Spalding

Client Project Ref: D38185

Lab Sample ID	19/02683/53	19/02683/54	19/02683/55	19/02683/56	19/02683/58	19/02683/59		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH1	HA2	HA6				
Depth to Top	17.50	13.50	6.00	10.00	0.30	0.30				
Depth To Bottom					0.50	0.50				
Date Sampled	13-Mar-19	13-Mar-19	14-Mar-19	11-Mar-19	13-Mar-19	14-Mar-19				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	6A	6A	6A	6	4A	4A				
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Ali >C10-C12$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Ali >C12-C16$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Ali >C16-C21$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Ali >C21-C35$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Total Aliphatics$_A$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Aro >C5-C7$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
Aro >C10-C12$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Aro >C12-C16$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Aro >C16-C21$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Aro >C21-C35$_A^{\#}$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
Total Aromatics$_A$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
TPH (Ali & Aro)$_A$	-	-	-	-	-	<0.1		mg/kg	0.1	A-T-023s
BTEX - Benzene$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	-	-	-	-	<0.01		mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

GeoDyne

Gas Analysis

Stacey Jervis

From: Daniel Bignell <Daniel.Bignell@socotec.com>
Sent: 29 April 2019 10:58
To: Steve Sellers
Cc: Phil Shead
Subject: RE: Emailing Results 52313 GA06673 (Millfield nursery gas ID.)

Hi Steve,

Just to follow up on the results we provided to you, it is our belief that the results indicate that the gas source is the result of decomposition of organic matter (biogenic) and not the result of deep radiological processes (petroleum gases/thermogenic gases).

If you have any more queries please do not hesitate to ask.

Kind Regards,

Daniel Bignell BSc
Senior Gas Analyst
01283 554461

Built Environment Services
Etwall House, Bretby Business Park
Ashby Road, Burton on Trent, DE15 0YZ

www.socotec.co.uk

SOCOTEC

From: Daniel Bignell
Sent: 29 April 2019 10:23
To: 'stevesellers@geodyne.co.uk' <stevesellers@geodyne.co.uk>
Cc: 'clarehoughton@geodyne.co.uk' <clarehoughton@geodyne.co.uk>
Subject: Emailing Results 52313 GA06673 (Millfield nursery gas ID.)

Good morning Mr Sellers,

Please find attached SOCOTEC Gas Analysis UKAS Test Report Number GA06673 detailing the results of the analysis carried out on the samples received for analysis on 15th April 2019.

The work was undertaken in accordance with SOCOTEC standard terms and conditions of contract (Feb 2014) for safety compliance / laboratory & analytical divisions.

The invoice for this work will be forwarded to you under separate cover.

Should you require any further information or clarification please contact the Gas Analysis Team (01283 554435) or email directly phil.shead@socotec.com

Thank you for choosing SOCOTEC for your environmental laboratory services. We hope our services have met your requirements and that you are fully satisfied with your experience of working with us. We really do value your custom, and would also welcome your feedback, both good and bad. We would appreciate it if you could take a moment to complete a short online questionnaire so that we can improve our operations and address any areas that have not met with your expectations, by clicking on the following link: http://www.surveymonkey.com/s/ESG_EnvSafetyCompliance_CustomerFeedback

Kind regards

Gas Laboratory Administration Team

W: www.socotec.com

SOCOTEC
Gas Laboratory
Etwall House
Bretby Business Park
Ashby Road
Burton upon Trent
DE15 0YZ

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1015

TEST REPORT

SOCOTEC

GAS ANALYSIS

Customer: **GeoDyne Ltd, 9 Brunel Parkway, Pride Park, Derby, DE248HR**

Date Received: 15 April 2019 Date Sampled: 11 April 2019 **Report N° GA06673**

Date Analysed: 24 April 2019 Site: Millfield Nursery

SAMPLE REFERENCE	Analysis % V/V						
	Carbon Dioxide (CO_2)	Oxygen (O_2)	Carbon Monoxide (CO)	Nitrogen (N_2)	Hydrogen (H_2)	Methane (CH_4)	Ethane (C_2H_6)
Method of Analysis	**3**	**4**	**3**	**4**	**4**	**3**	**3**
Millfield nursery	12.39	1.9	<0.0005	9	0.0013	78.02	<0.0005

Method of Analysis:- 3 G.C. with F.I.D. - ENV/GAS03 or 09
4 G.C. with T.C.D. - ENV/GAS09

Customer Analytical Requirements	**Authorised by**
CO_2, O_2, CO, N_2, H_2, CH_4, C_2H_6	Phil Shead
Comment Box	

Authorised by:

Analyst: Daniel Bignell

Issue Date: 29 April 2019

SOCOTEC accepts no responsibility for the collection of any of the samples referred to in this report.

Phil Shead, Operations Manager
Direct Dial: 01 283 554461

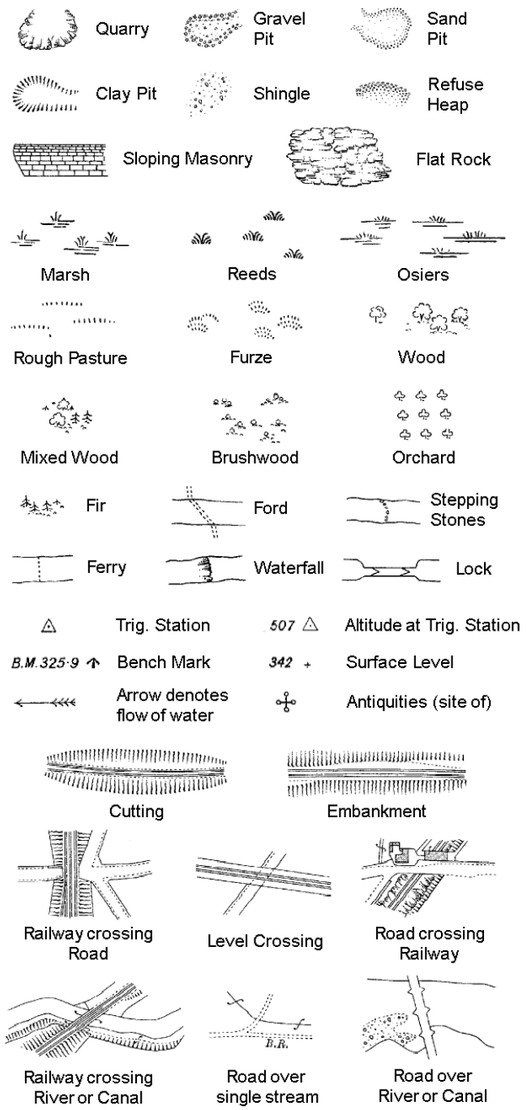
GeoDyne

APPENDIX IX

Historical Plans

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

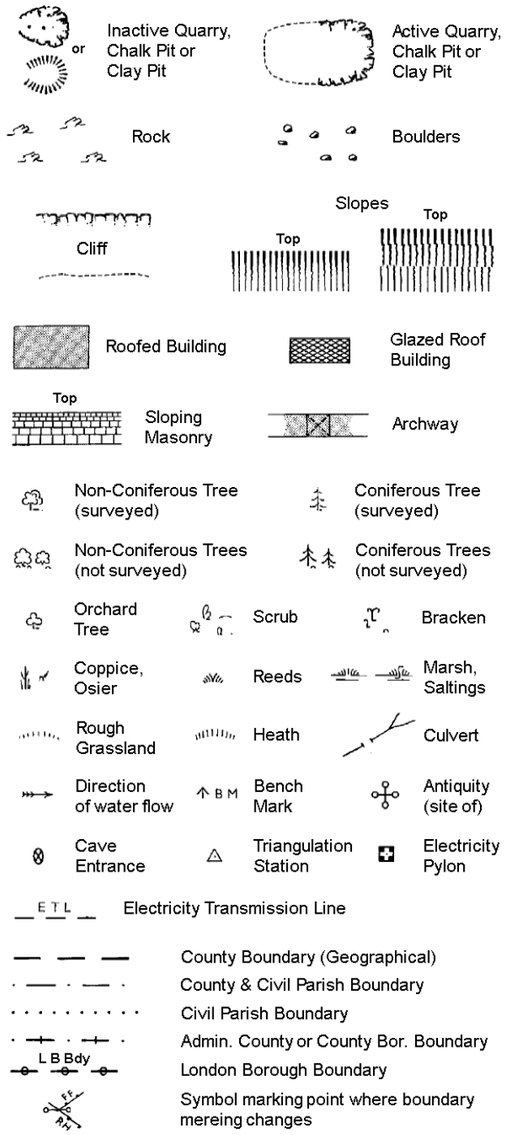
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

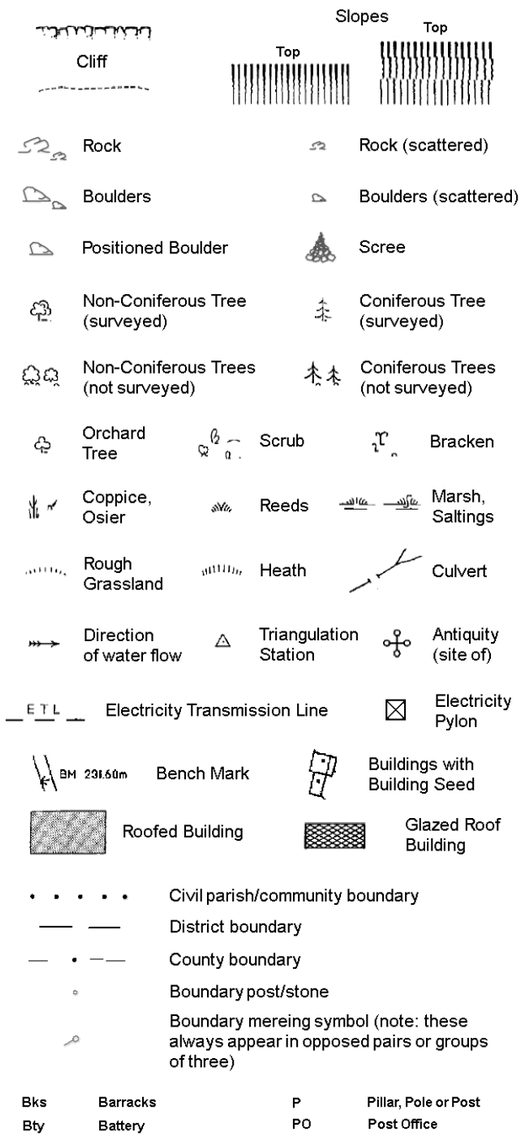
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

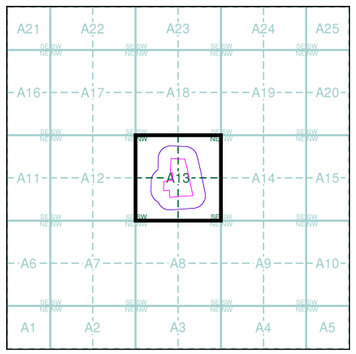
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

GeoDyne

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lincolnshire	1:2,500	1888	2
Lincolnshire	1:2,500	1904	3
Lincolnshire	1:2,500	1932	4
Ordnance Survey Plan	1:2,500	1968 - 1969	5
Additional SIMs	1:2,500	1968 - 1990	6
Additional SIMs	1:2,500	1980	7
Additional SIMs	1:2,500	1988	8
Large-Scale National Grid Data	1:2,500	1995	9
Large-Scale National Grid Data	1:2,500	1996	10
Historical Aerial Photography	1:2,500	1999	11

Historical Map - Segment A13



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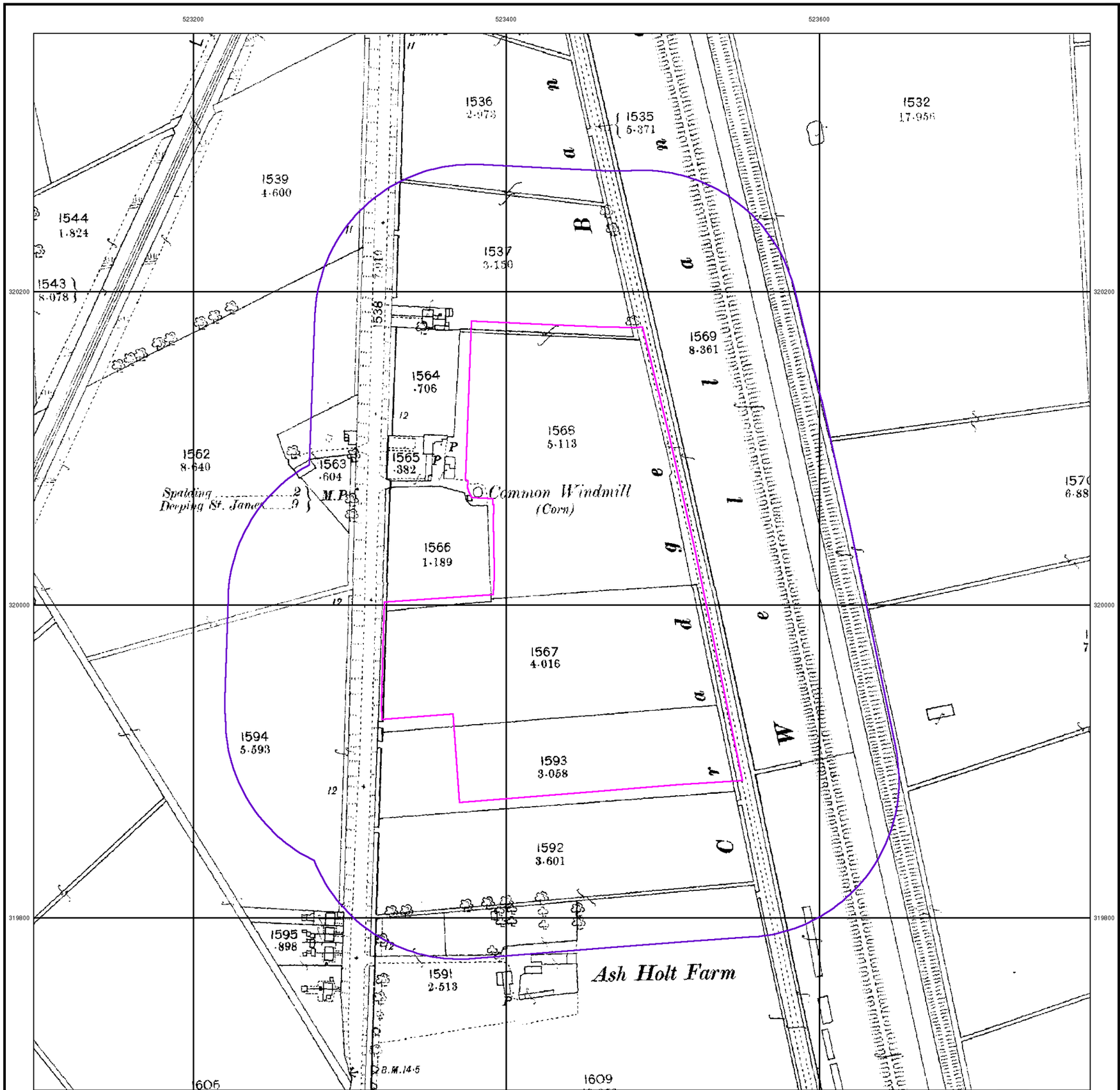
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Site Area (Ha):	4.67
Search Buffer (m):	100

Site Details

Millfield Nursey, Spalding Common, Spalding

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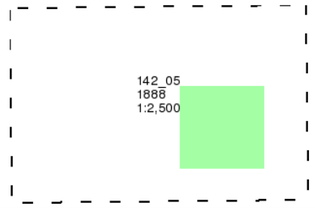
Lincolnshire

Published 1888

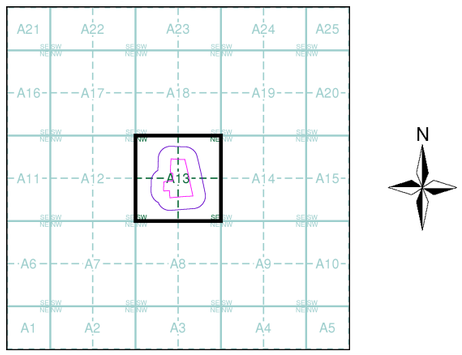
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



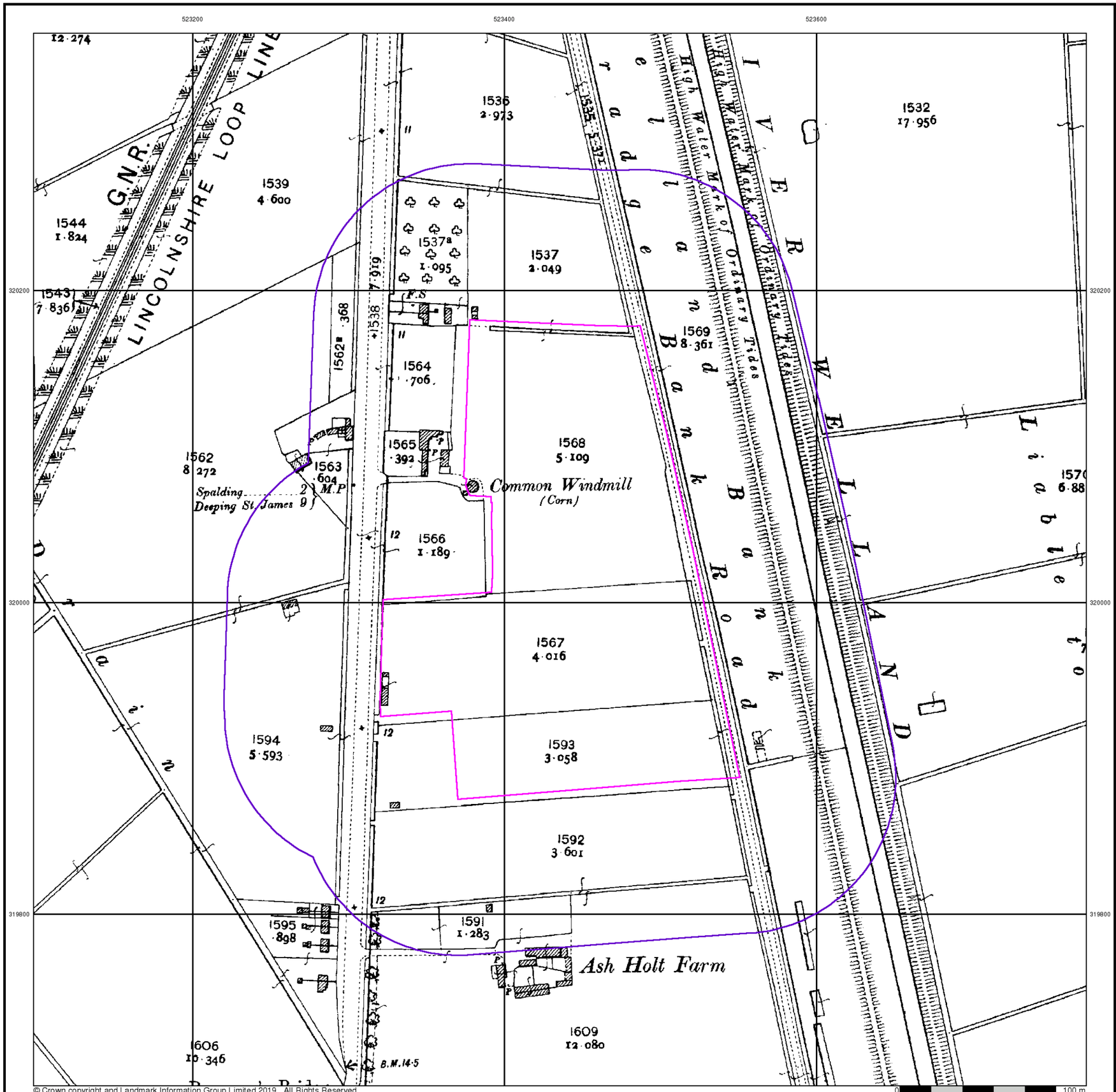
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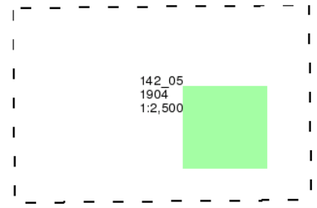
Lincolnshire

Published 1904

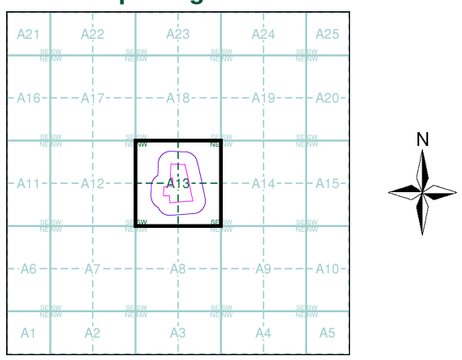
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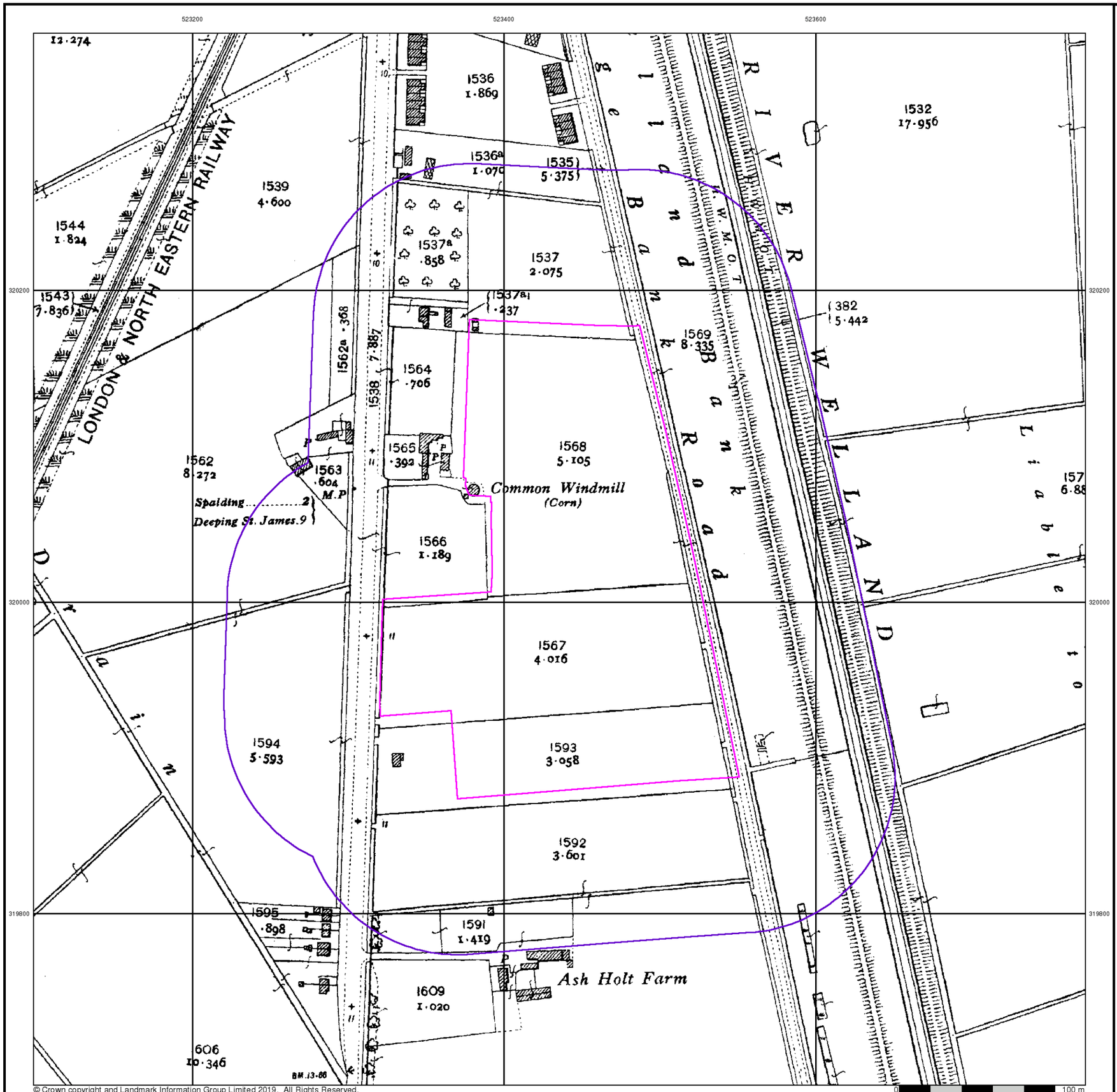
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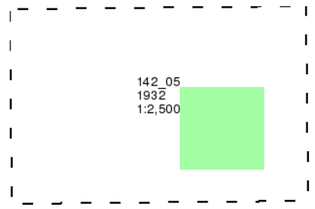
Lincolnshire

Published 1932

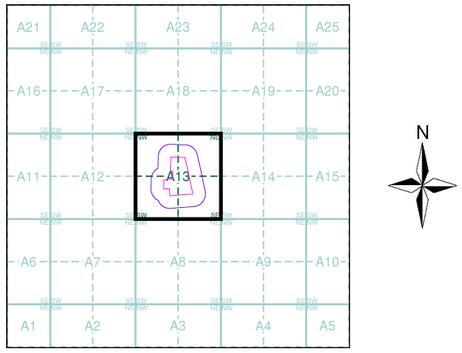
Source map scale - 1:2,500

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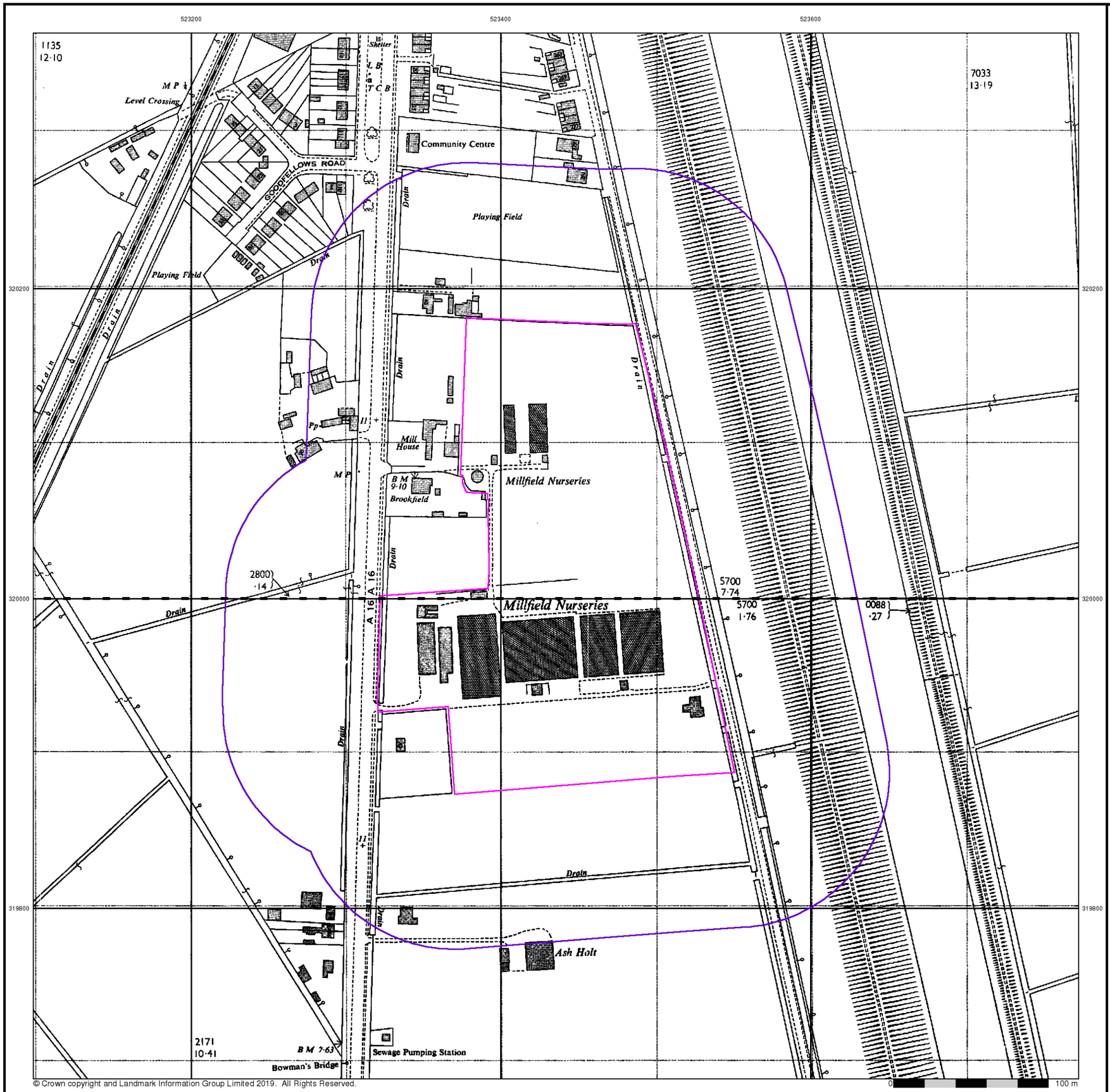
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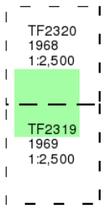
Ordnance Survey Plan

Published 1968 - 1969

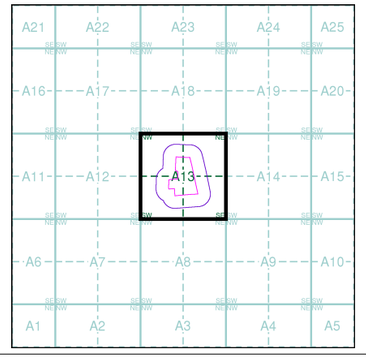
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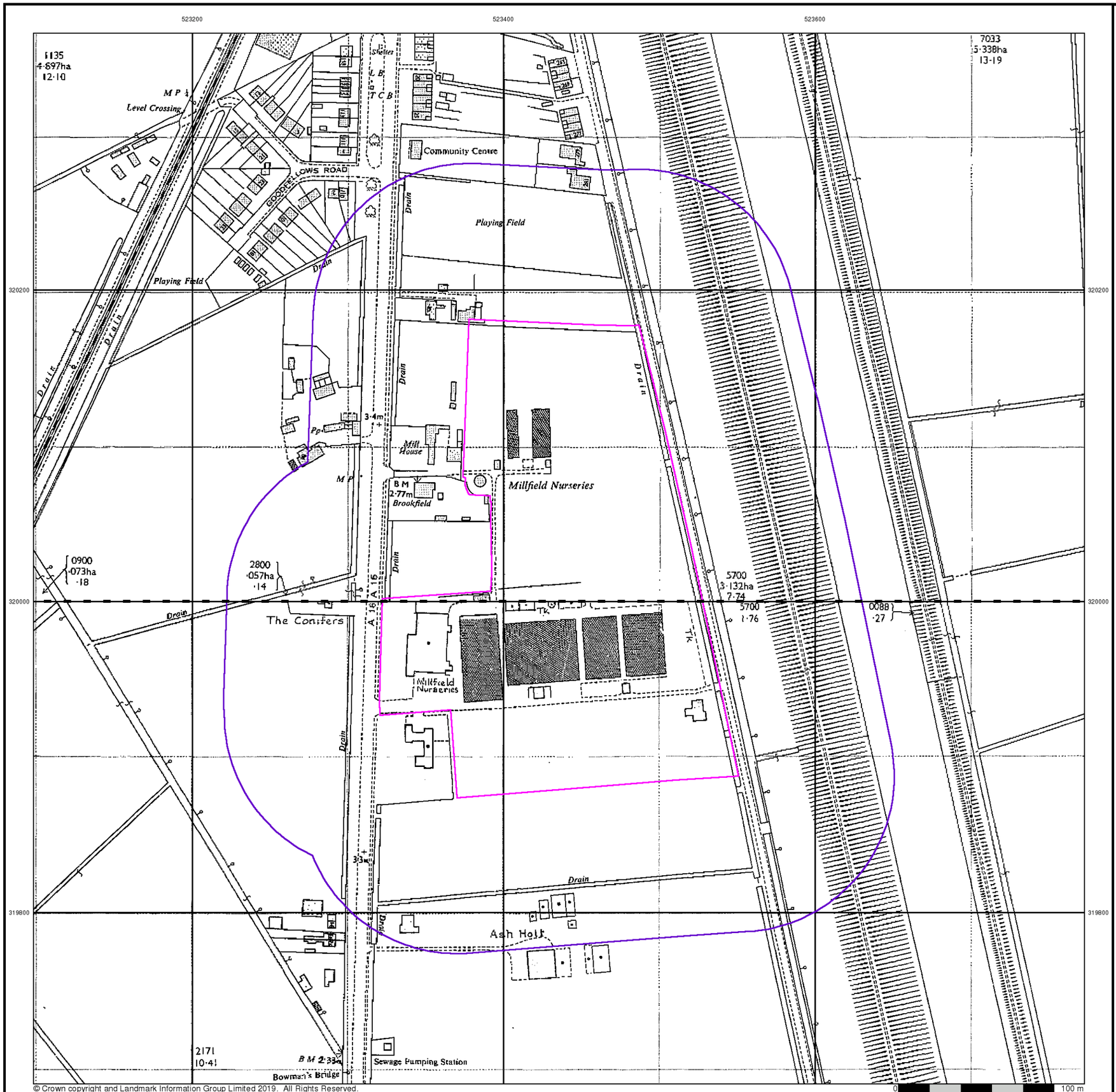
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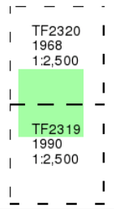
Additional SIMs

Published 1968 - 1990

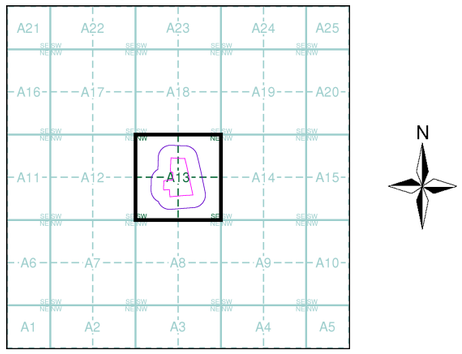
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



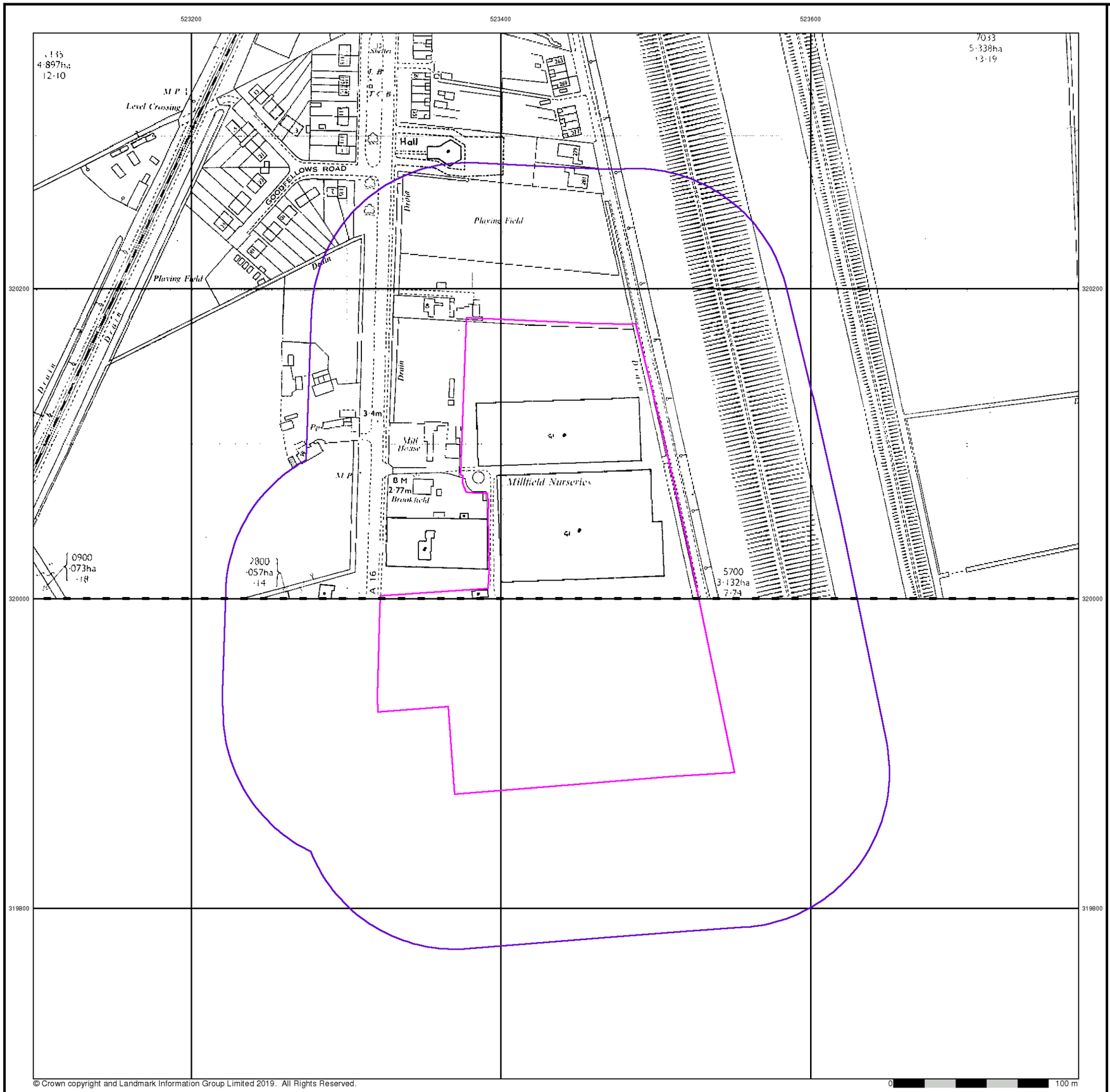
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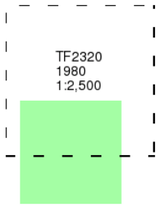
Additional SIMs

Published 1980

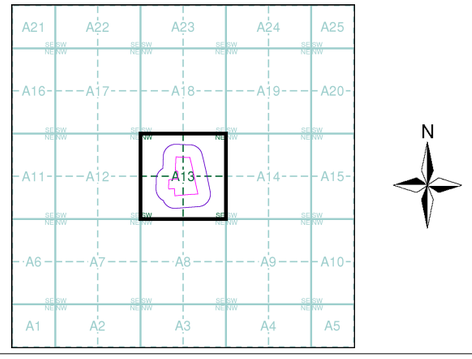
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



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Search Buffer (m):	100

Site Details

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0 100 m

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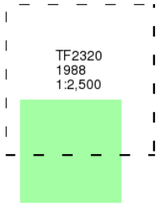
Additional SIMs

Published 1988

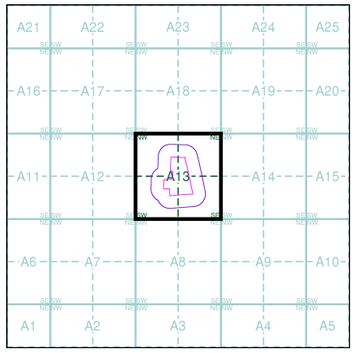
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



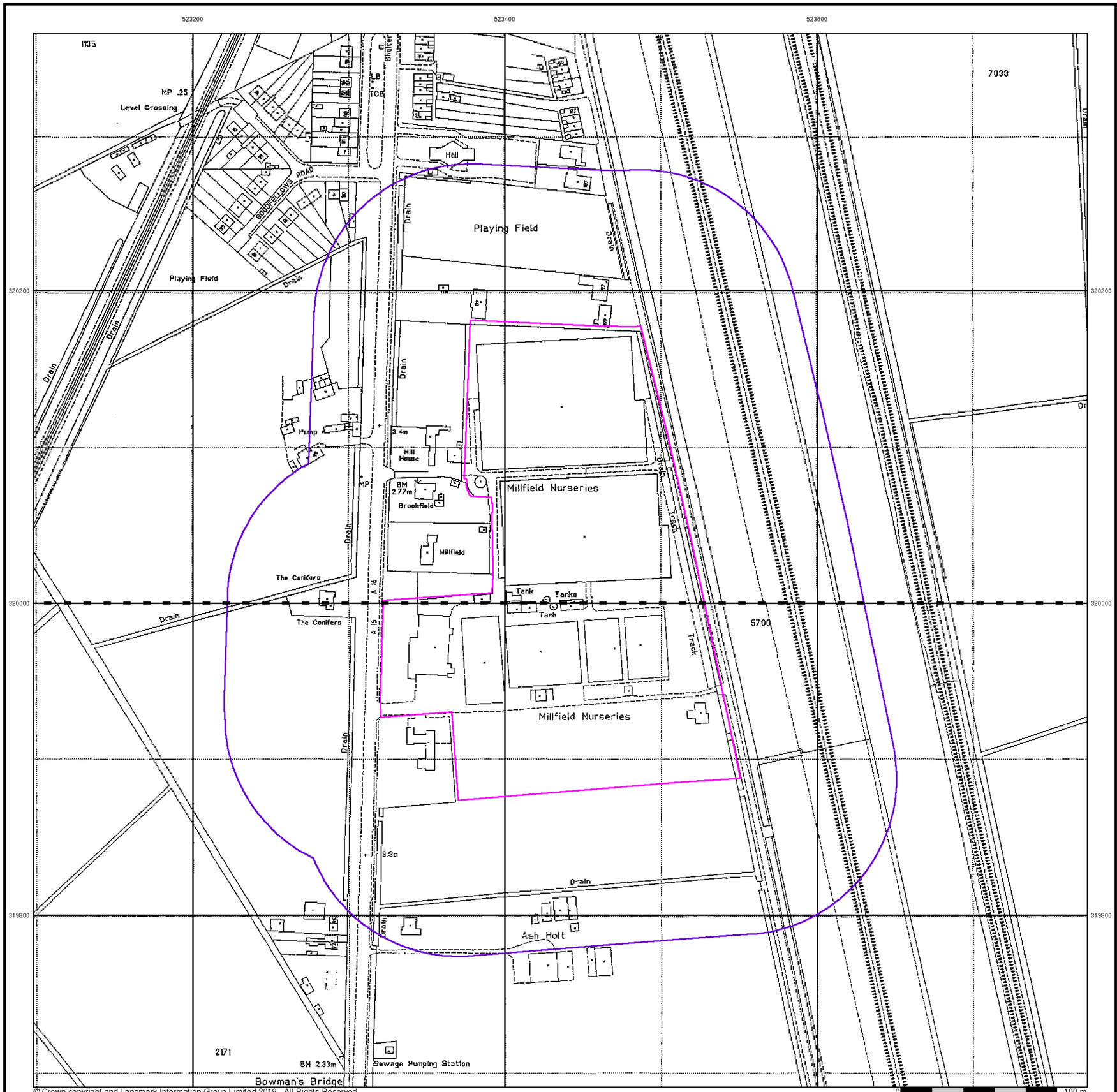
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Site Area (Ha):	4.67
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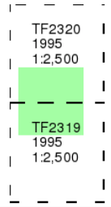
Large-Scale National Grid Data

Published 1995

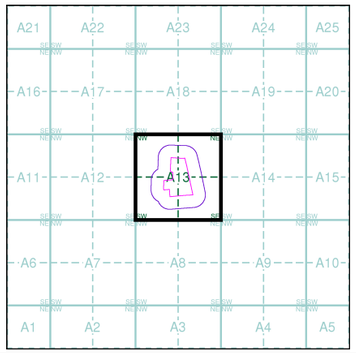
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

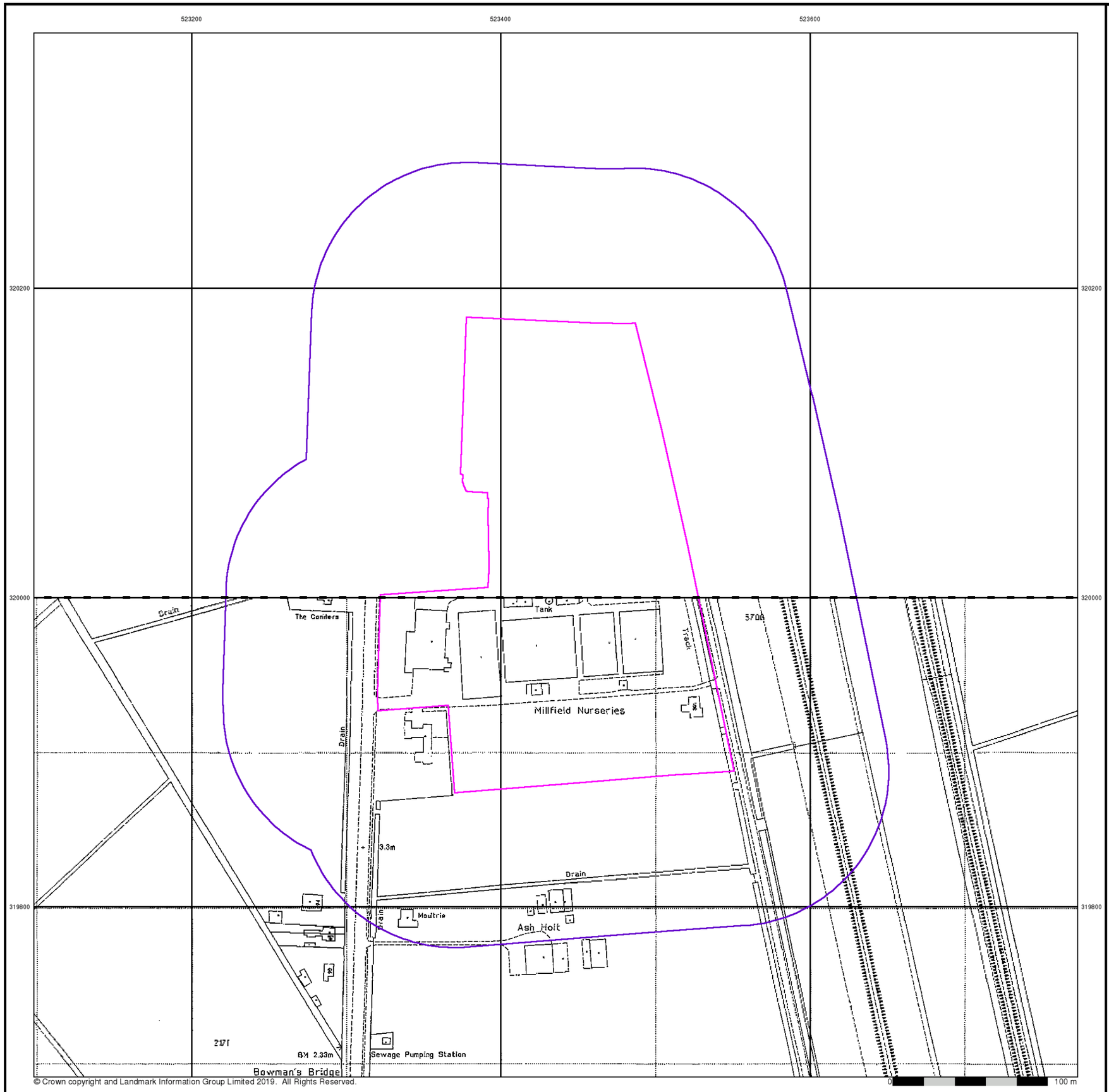
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	100

Site Details

Millfield Nursey, Spalding Common, Spalding

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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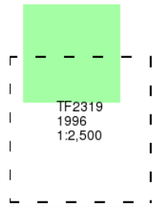
Large-Scale National Grid Data

Published 1996

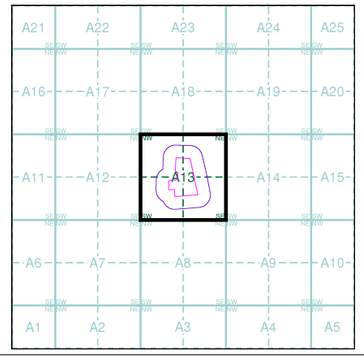
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



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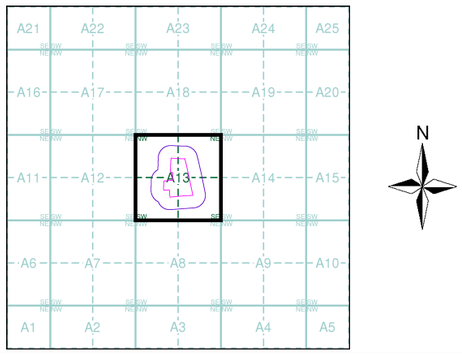
GeoDyne

Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number:	194367619_1_1
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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

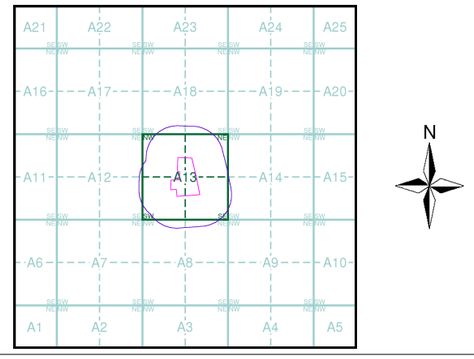
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

GeoDyne

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lincolnshire	1:10,560	1887 - 1888	2
Lincolnshire	1:10,560	1906	3
Lincolnshire	1:10,560	1906	4
Lincolnshire	1:10,560	1932	5
Lincolnshire	1:10,560	1938 - 1952	6
Ordnance Survey Plan	1:10,000	1958 - 1959	7
Ordnance Survey Plan	1:10,000	1971 - 1979	8
Ordnance Survey Plan	1:10,000	1982	9
Ordnance Survey Plan	1:10,000	1992	10
10K Raster Mapping	1:10,000	2000	11
10K Raster Mapping	1:10,000	2006	12
VectorMap Local	1:10,000	2019	13

Historical Map - Slice A



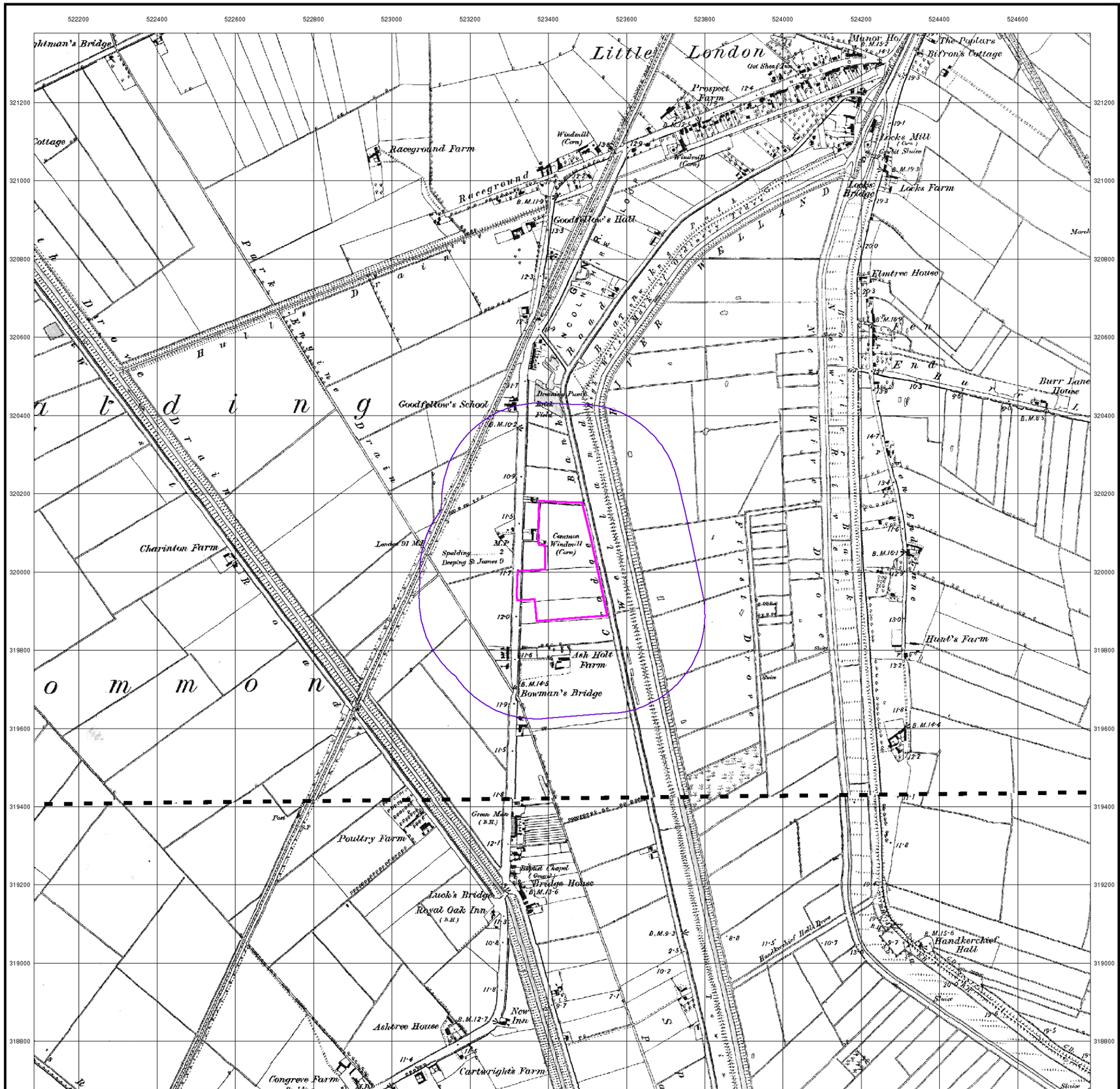
Order Details

Order Number: 194367619_1_1
Customer Ref: D38185
National Grid Reference: 523440, 320020
Slice: A
Site Area (Ha): 4.67
Search Buffer (m): 250

Site Details

Millfield Nursey, Spalding Common, Spalding

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GeoDyne

Lincolnshire

Published 1887 - 1888

Source map scale - 1:10,560

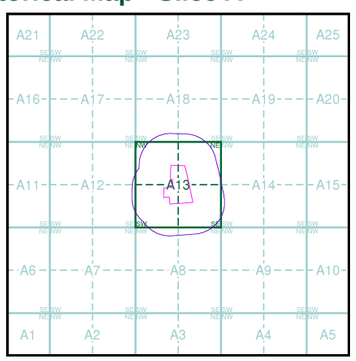
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

142NW
1888
1:10,560

142SW
1887
1:10,560

Historical Map - Slice A



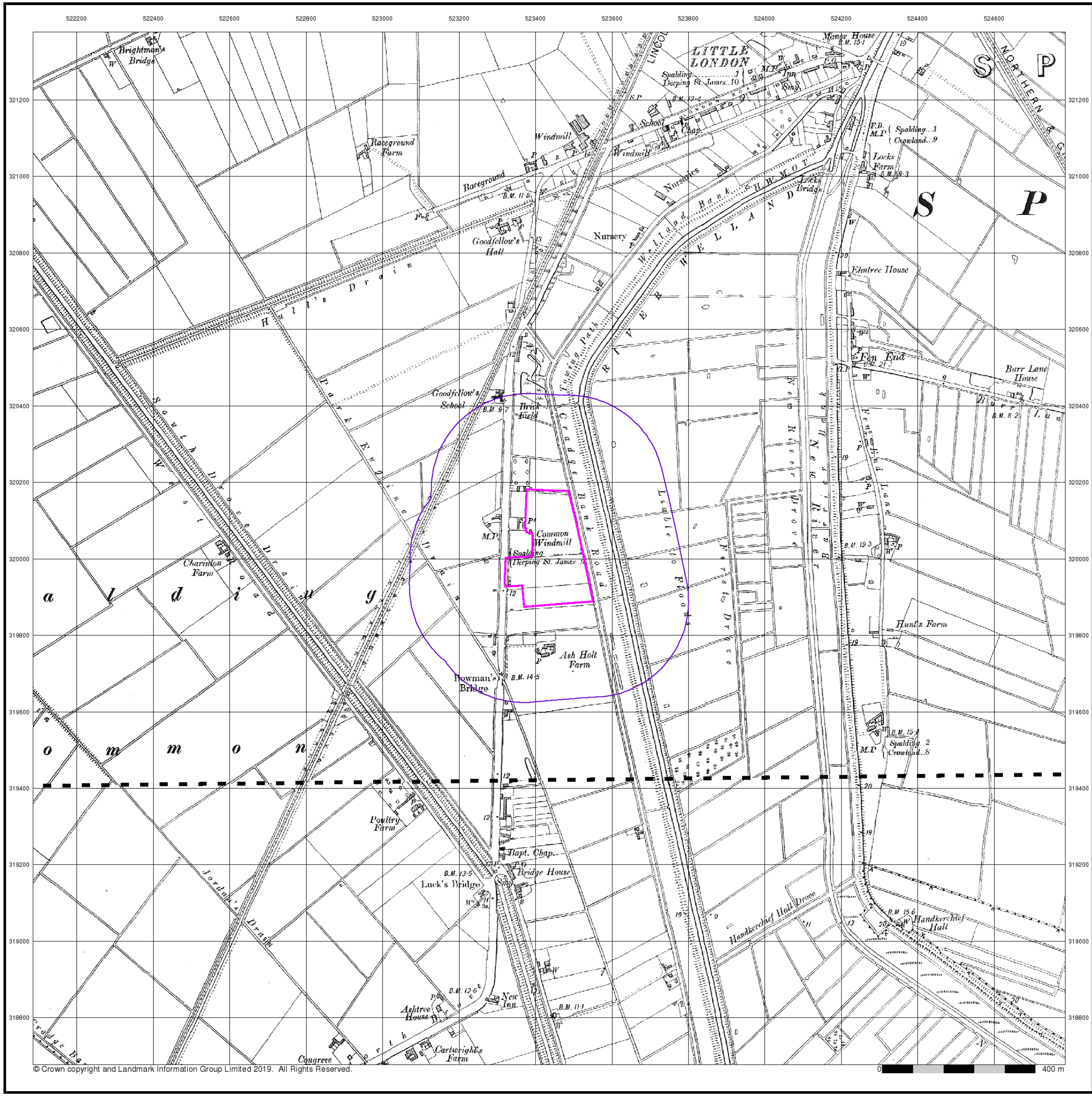
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

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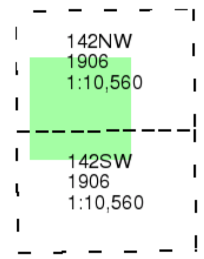
Lincolnshire

Published 1906

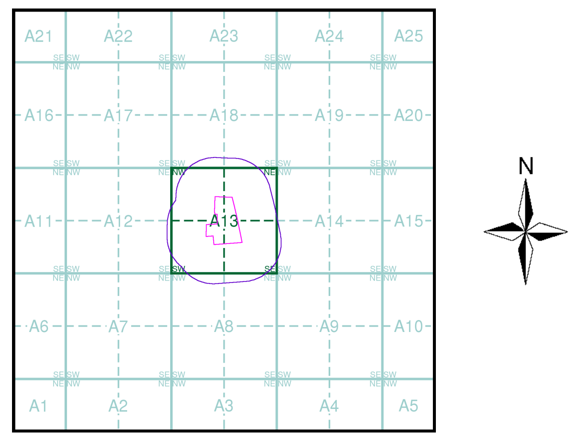
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

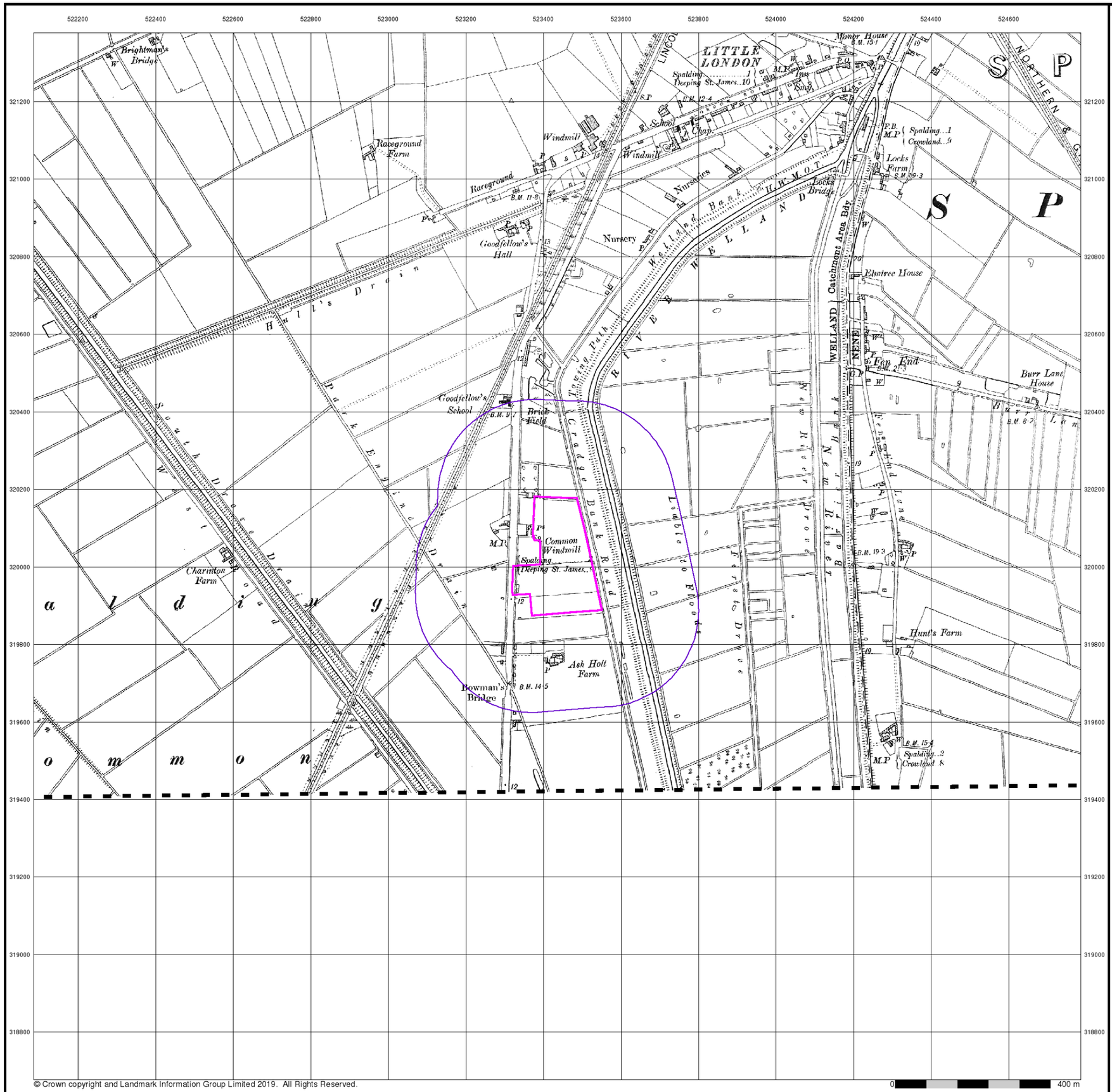


Order Details

Order Number: 194367619_1_1
Customer Ref: D38185
National Grid Reference: 523440, 320020
Slice: A
Site Area (Ha): 4.67
Search Buffer (m): 250

Site Details

Millfield Nursey, Spalding Common, Spalding



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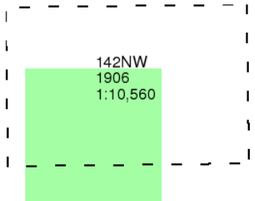
Lincolnshire

Published 1906

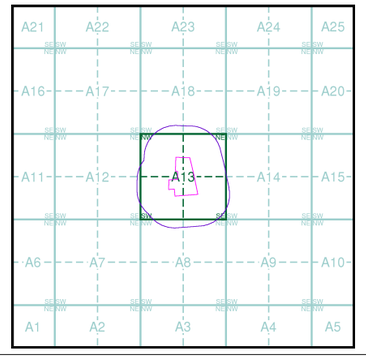
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



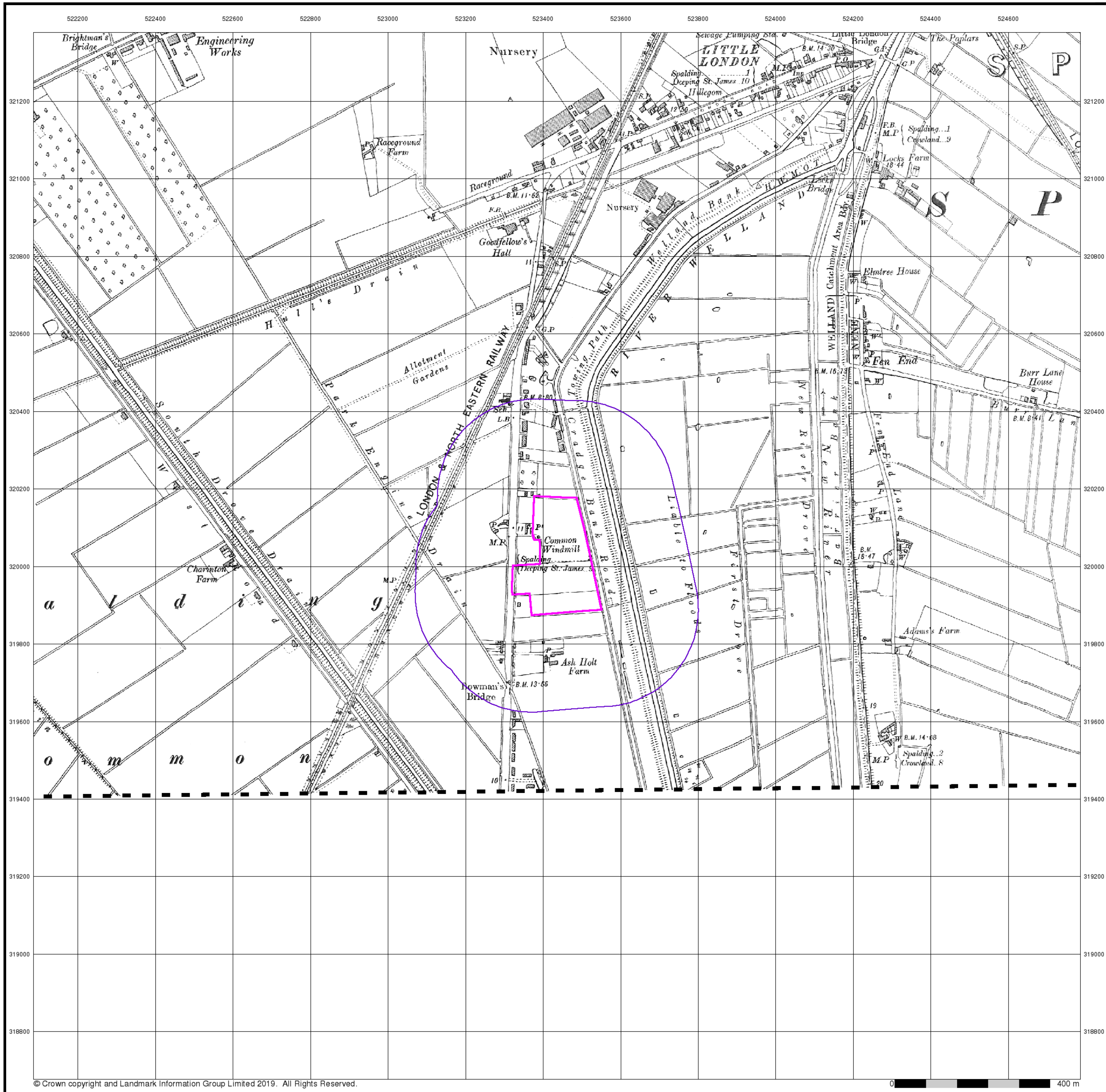
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Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
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Site Details

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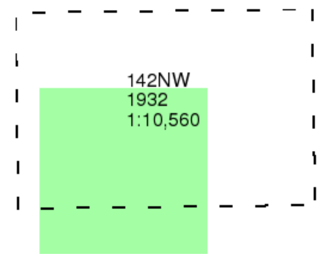
Lincolnshire

Published 1932

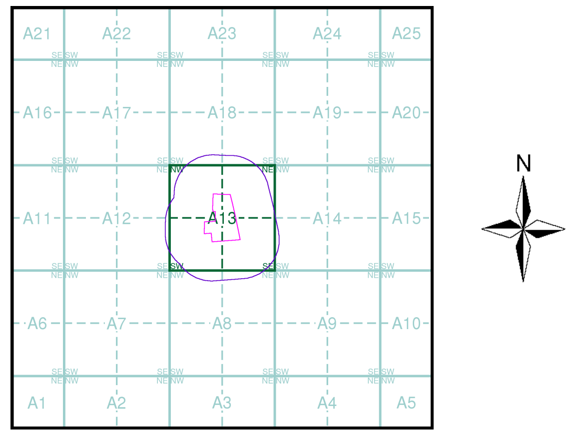
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

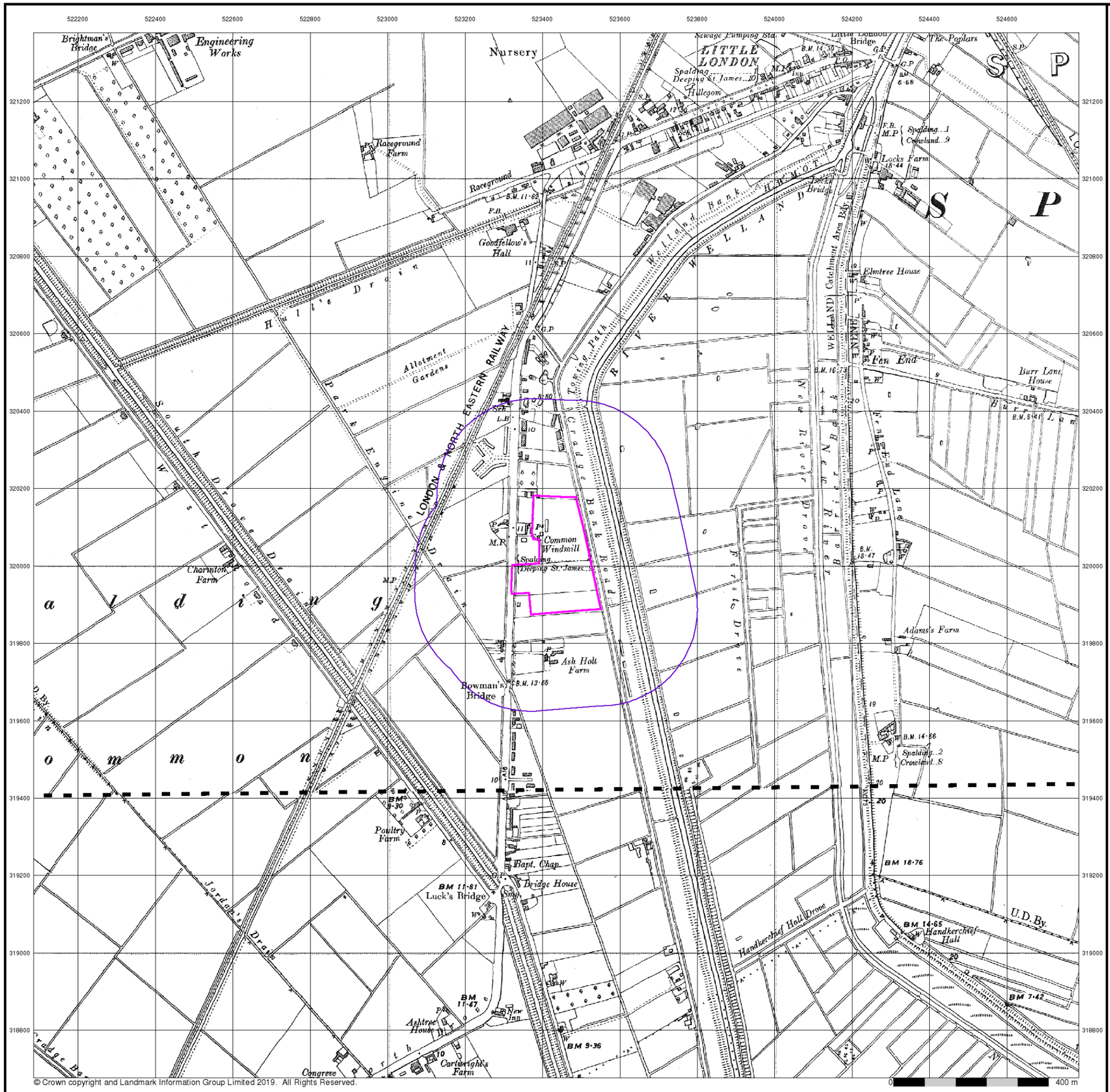
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National Grid Reference: 523440, 320020
Slice: A
Site Area (Ha): 4.67
Search Buffer (m): 250

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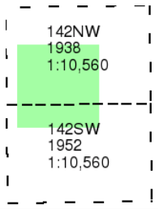
Lincolnshire

Published 1938 - 1952

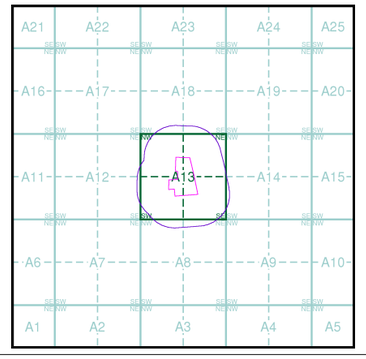
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



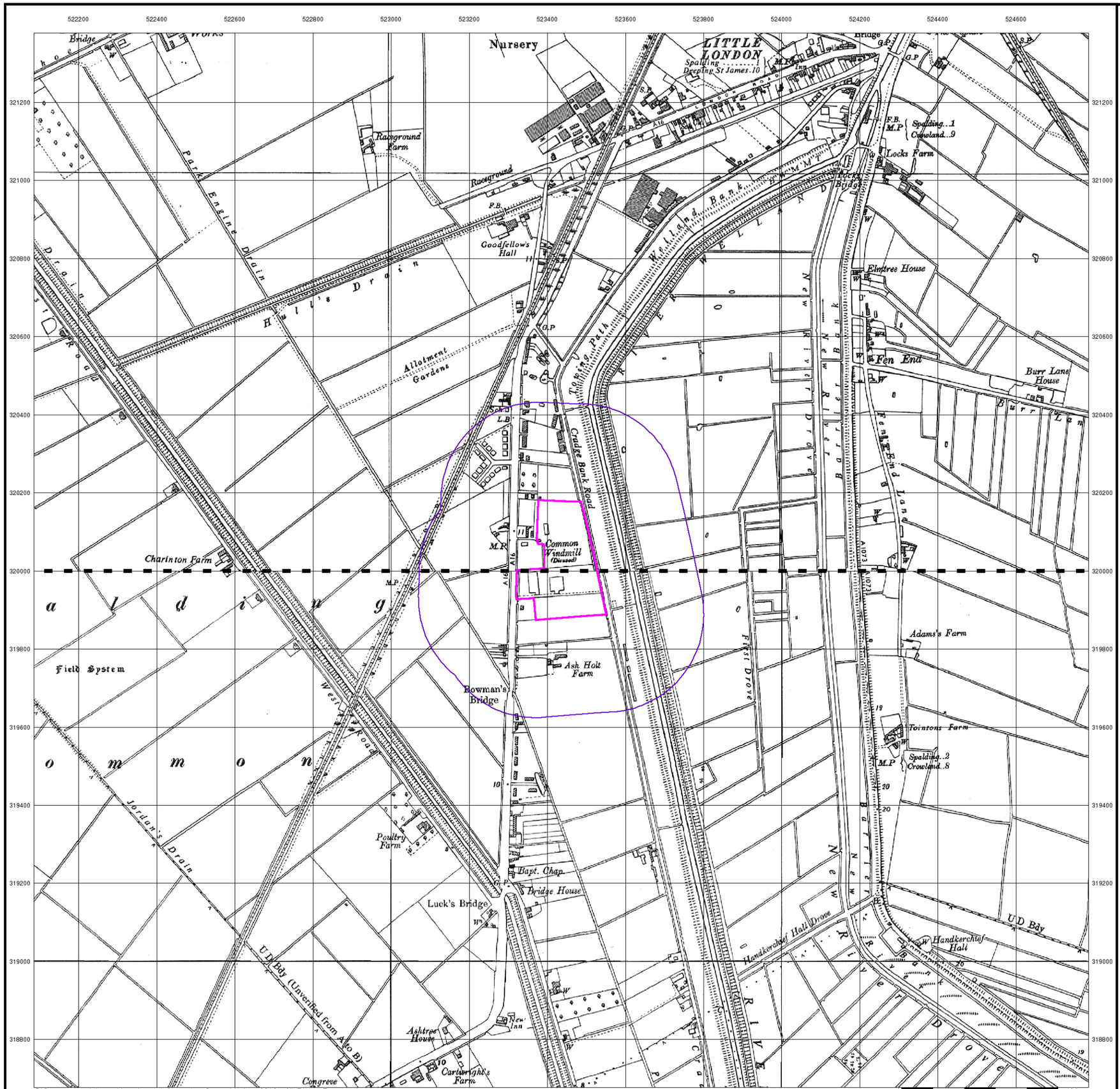
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Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
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Ordnance Survey Plan

Published 1958 - 1959

Source map scale - 1:10,000

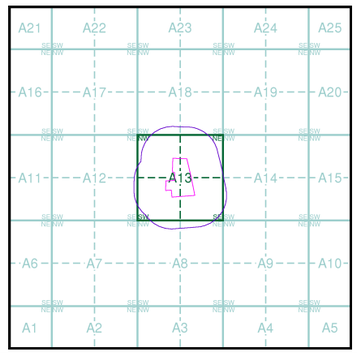
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Map Name(s) and Date(s)

TF22SW
1959
1:10,560

TF21NW
1958
1:10,560

Historical Map - Slice A



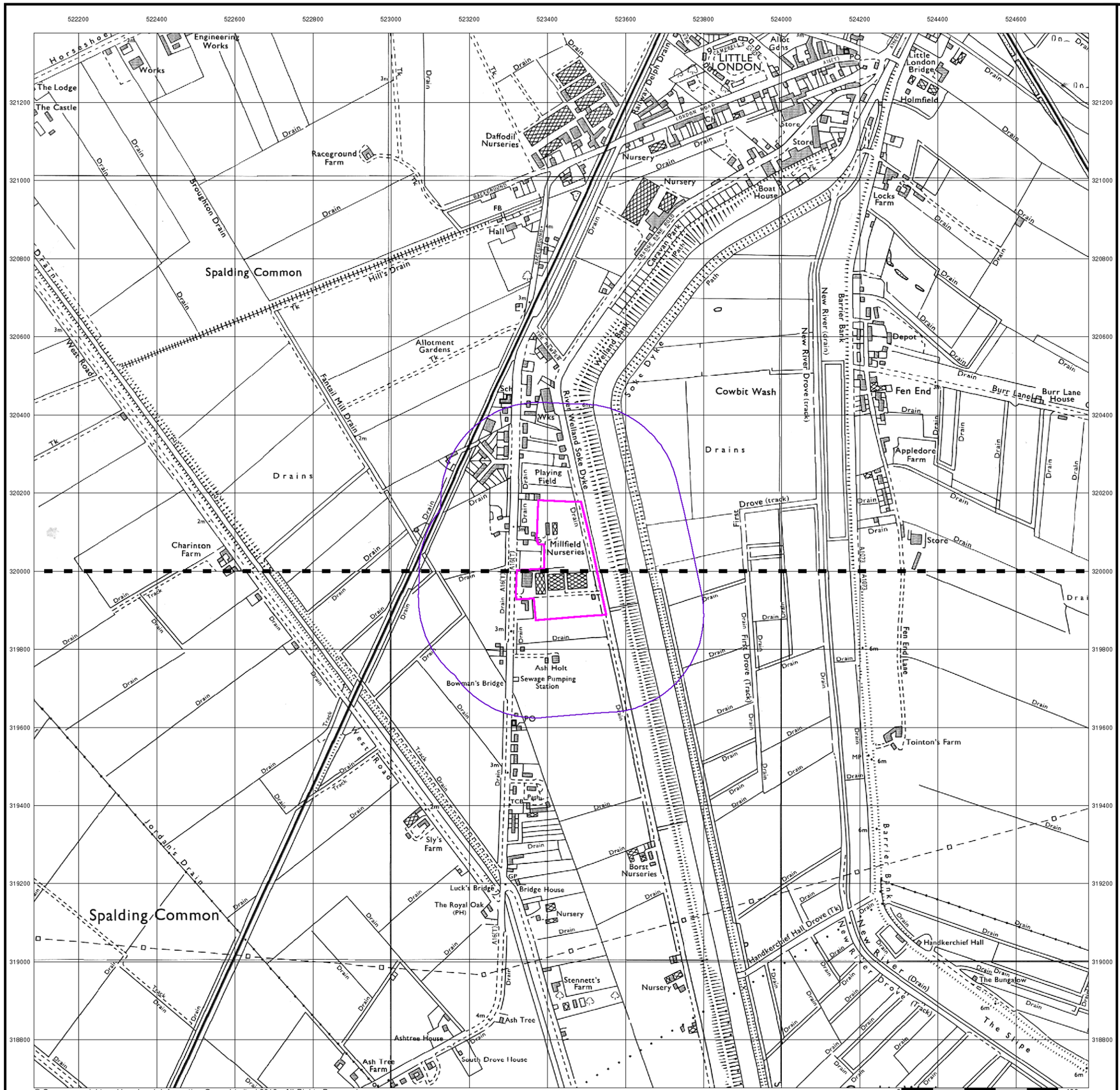
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursery, Spalding Common, Spalding

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Ordnance Survey Plan

Published 1971 - 1979

Source map scale - 1:10,000

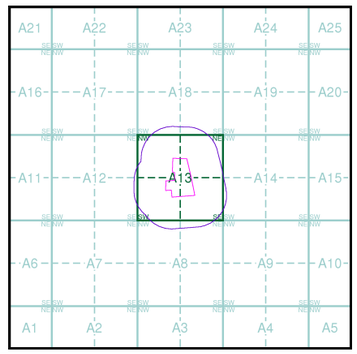
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

TF22SW
1971
1:10,000

TF21NW
1979
1:10,000

Historical Map - Slice A



Order Details

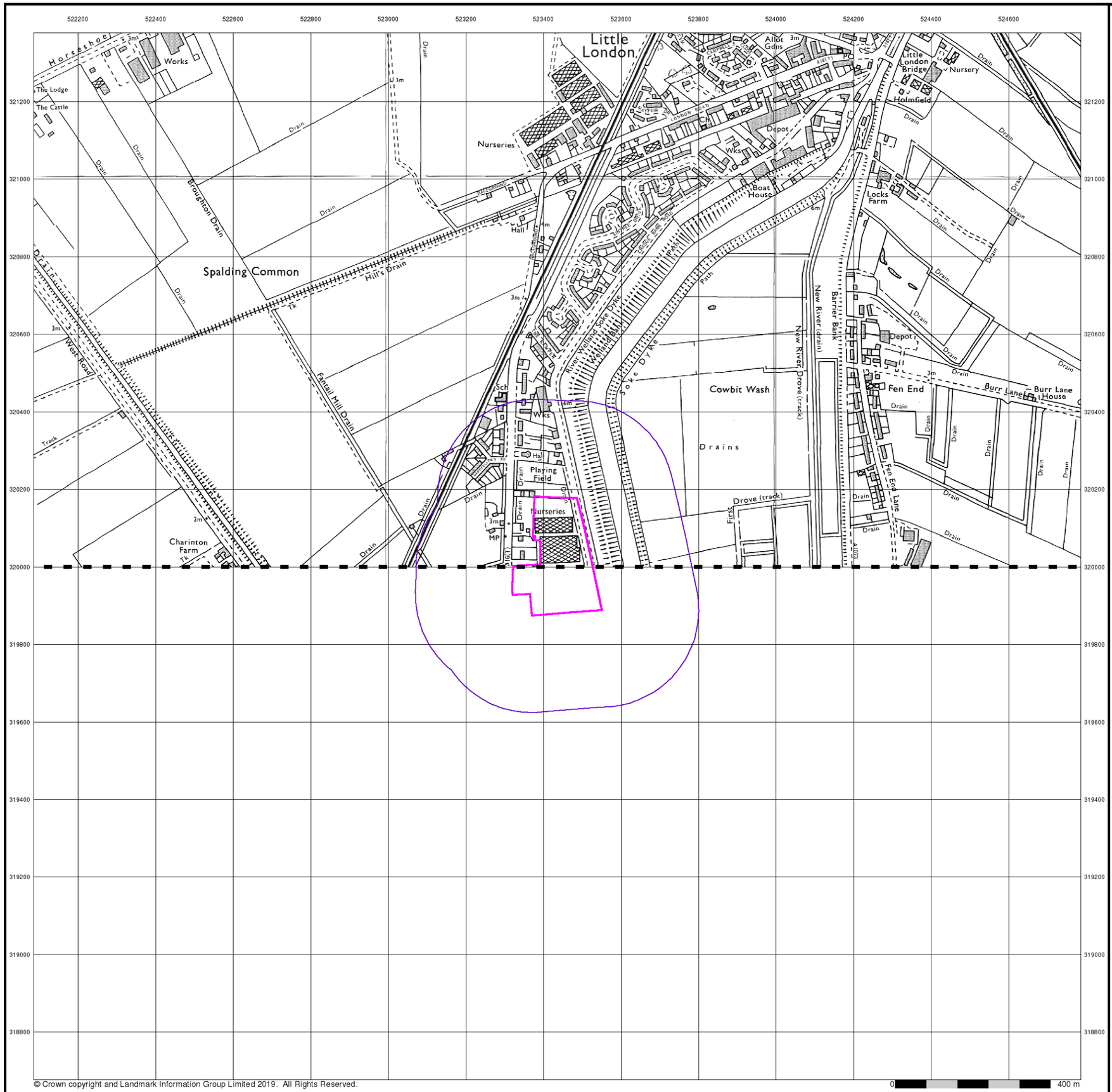
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursey, Spalding Common, Spalding

Landmark INFORMATION GROUP

Tel: 0844 844 9952
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0 400 m

GeoDyne

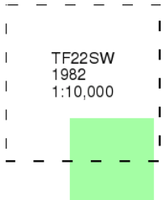
Ordnance Survey Plan

Published 1982

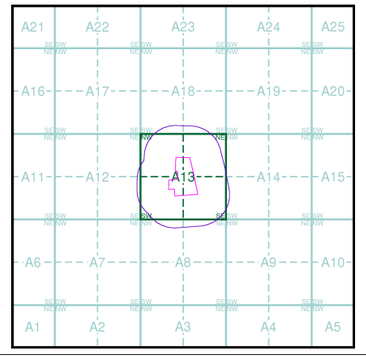
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

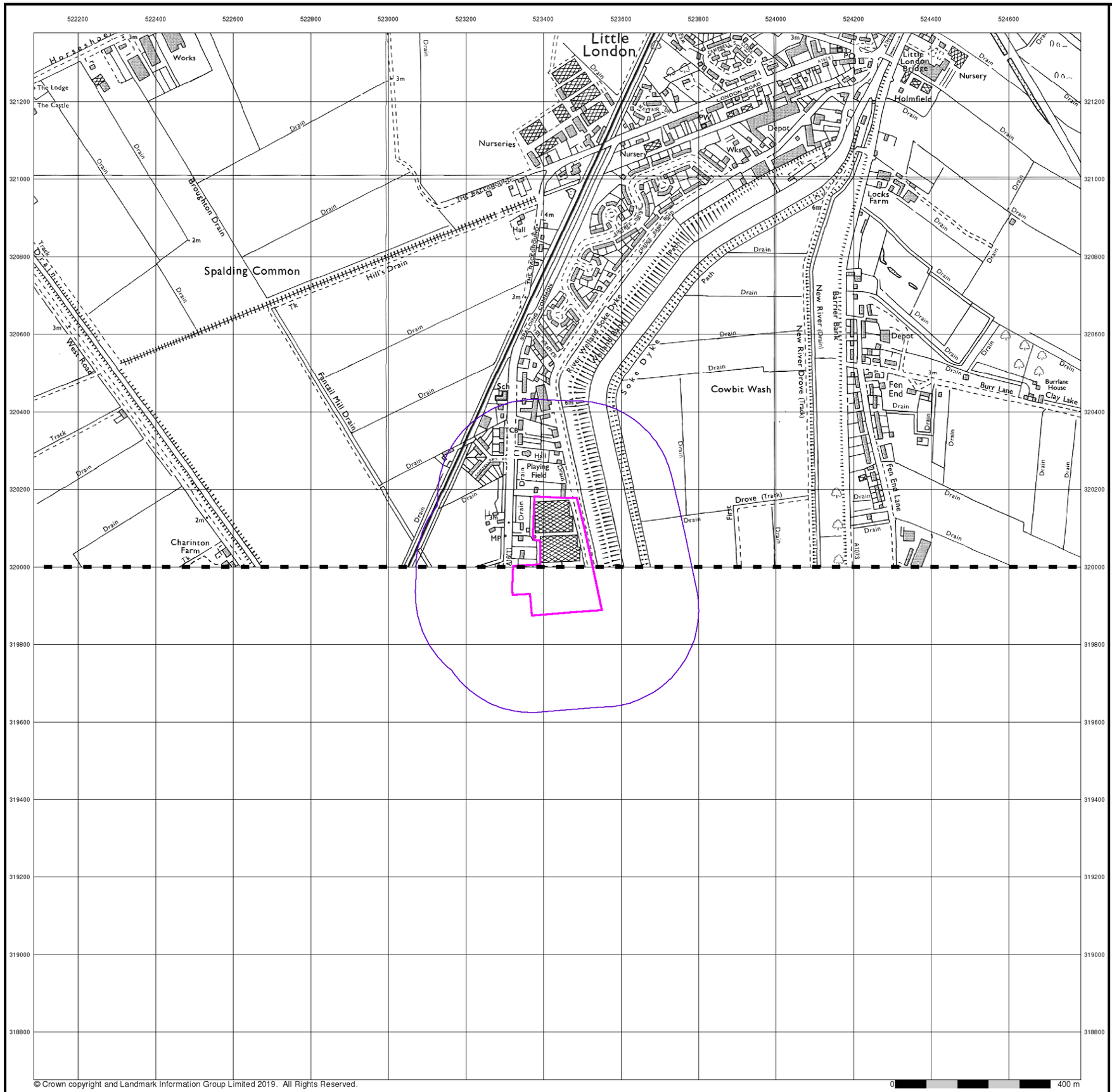
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
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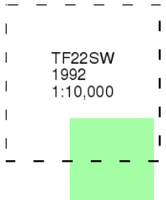
Ordnance Survey Plan

Published 1992

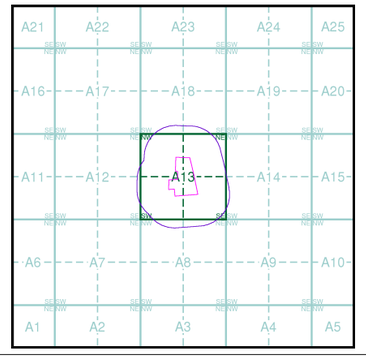
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

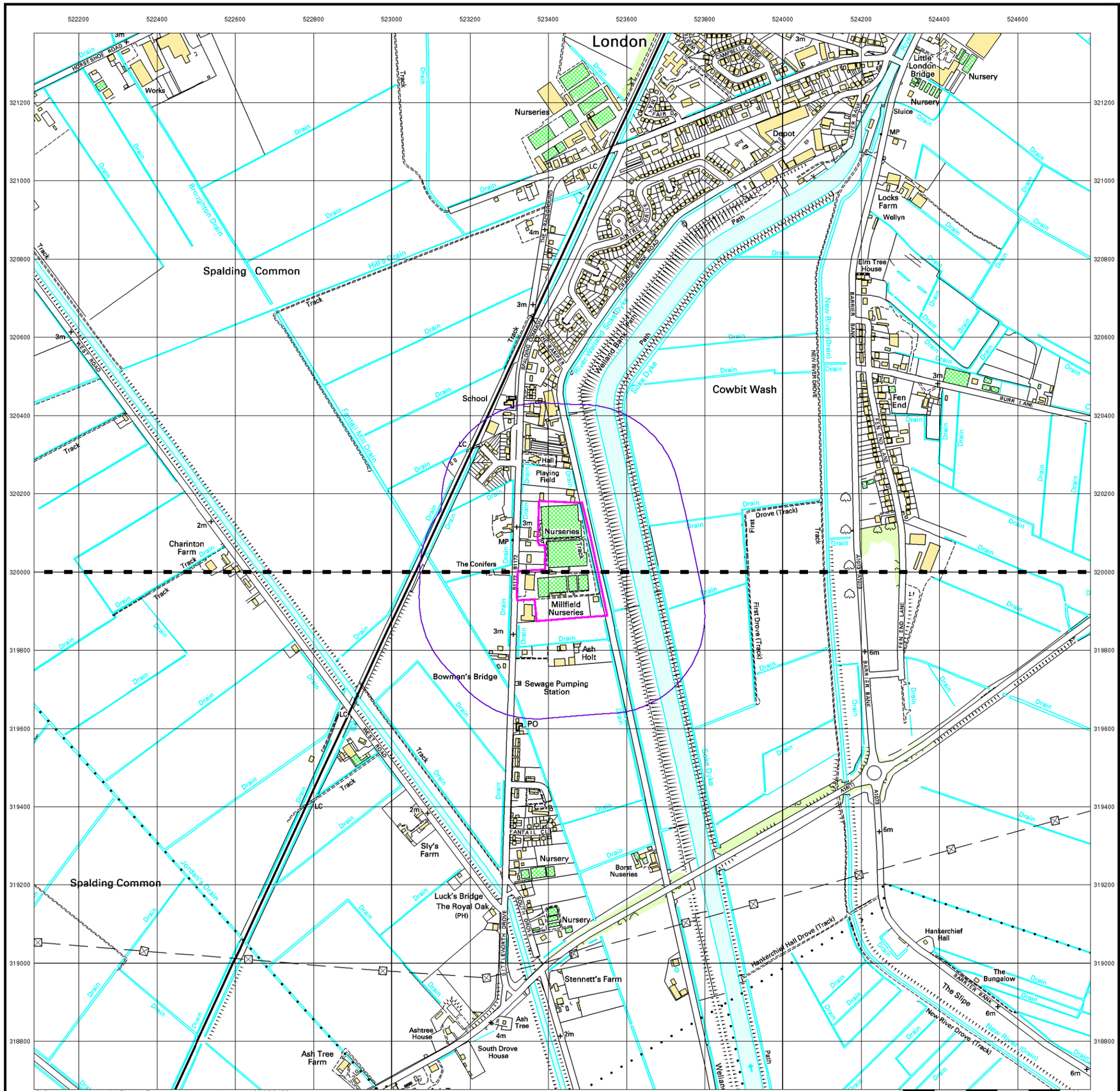
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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10k Raster Mapping

Published 2000

Source map scale - 1:10,000

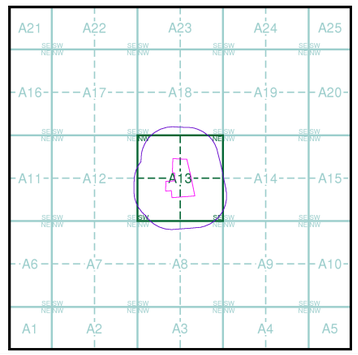
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TF22SW
2000
1:10,000

TF21NW
2000
1:10,000

Historical Map - Slice A



Order Details

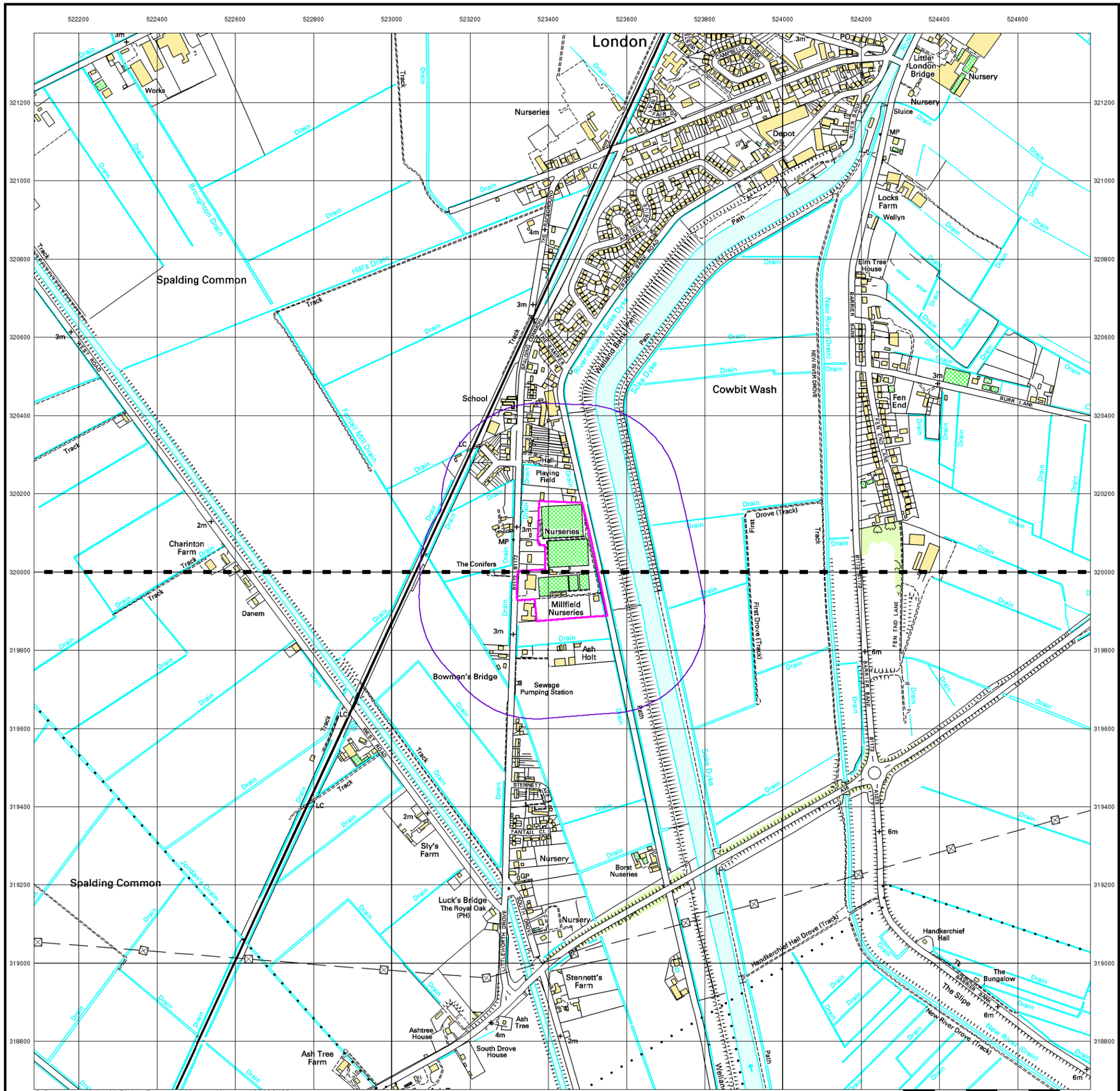
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

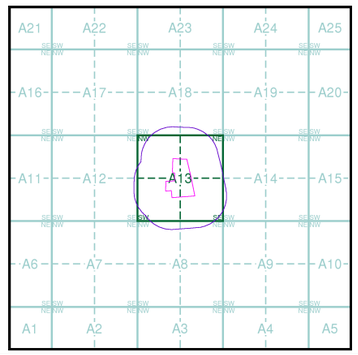
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TF22SW
2006
1:10,000

TF21NW
2006
1:10,000

Historical Map - Slice A



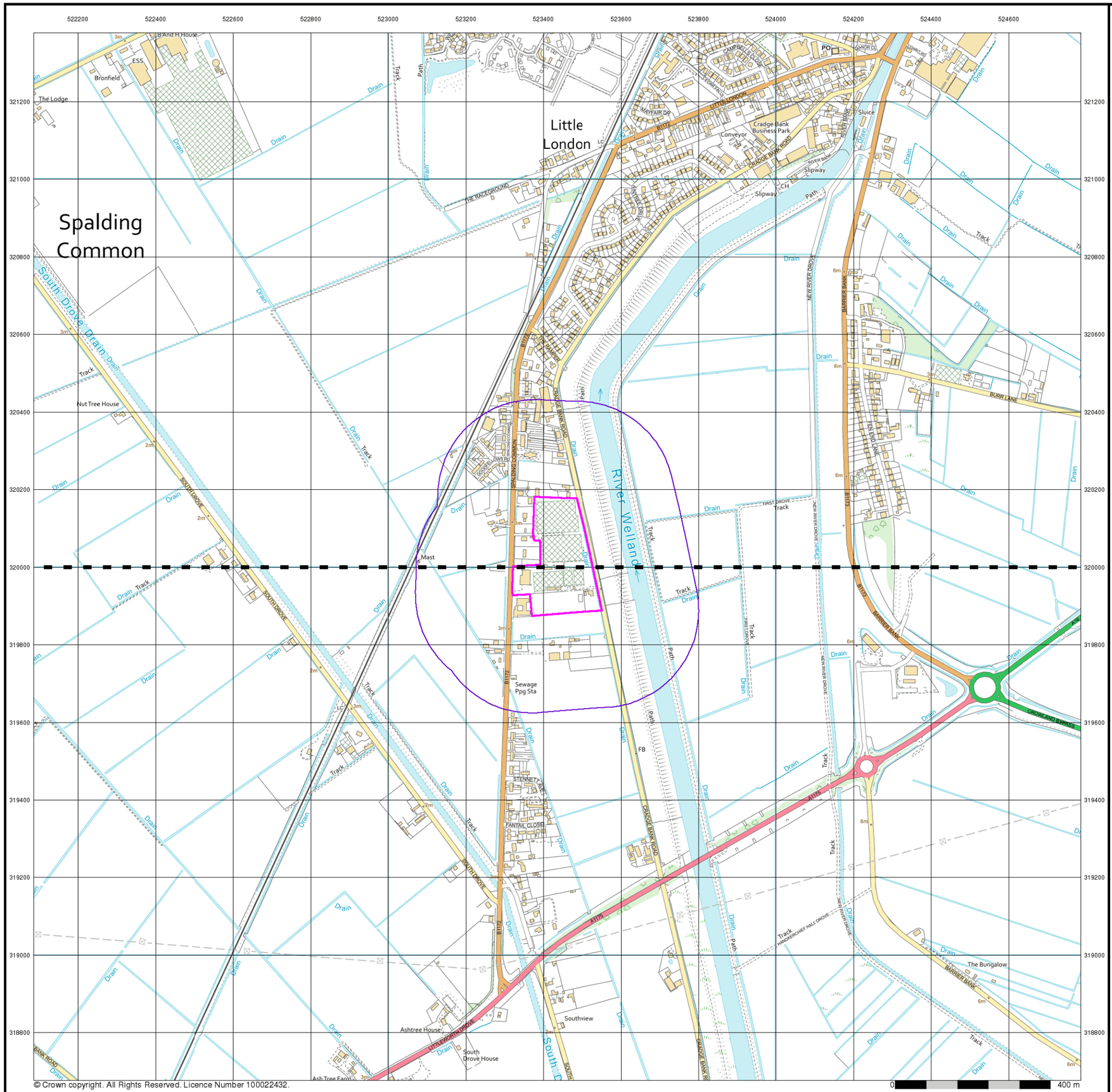
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

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VectorMap Local

Published 2019

Source map scale - 1:10,000

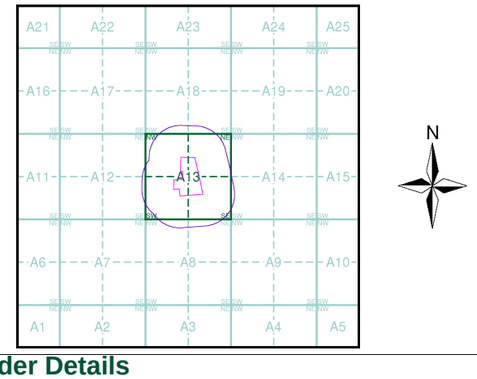
VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

TF22SW
2019
Variable

TF21NW
2019
Variable

Historical Map - Slice A



Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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APPENDIX X

Landmark Envirocheck Report

GeoDyne

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
194367619_1_1

Customer Reference:
D38185

National Grid Reference:
523440, 320020

Slice:
A

Site Area (Ha):
4.67

Search Buffer (m):
250

Site Details:

Millfield Nursey, Spalding Common
Spalding

Client Details:

Mr J Hollands
GeoDyne Ltd
Unit 2.2 Clarendon House
Clarendon Business Park
Clumber Avenue
Nottingham
NG5 1AH

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Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	8
Hazardous Substances	-
Geological	9
Industrial Land Use	11
Sensitive Land Use	12
Data Currency	13
Data Suppliers	17
Useful Contacts	18

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m (*up to 500m)
Agency & Hydrological			
BGS Groundwater Flooding Susceptibility			
Contaminated Land Register Entries and Notices			
Discharge Consents	pg 1	1	
Prosecutions Relating to Controlled Waters			n/a
Enforcement and Prohibition Notices			
Integrated Pollution Controls			
Integrated Pollution Prevention And Control			
Local Authority Integrated Pollution Prevention And Control			
Local Authority Pollution Prevention and Controls	pg 1		4
Local Authority Pollution Prevention and Control Enforcements			
Nearest Surface Water Feature	pg 1	Yes	
Pollution Incidents to Controlled Waters	pg 1		1
Prosecutions Relating to Authorised Processes			
Registered Radioactive Substances			
River Quality	pg 2		1
River Quality Biology Sampling Points			
River Quality Chemistry Sampling Points			
Substantiated Pollution Incident Register			
Water Abstractions	pg 2	1	(*1)
Water Industry Act Referrals			
Groundwater Vulnerability	pg 2	Yes	n/a
Drift Deposits			n/a
Bedrock Aquifer Designations	pg 2	Yes	n/a
Superficial Aquifer Designations	pg 2	Yes	n/a
Source Protection Zones			
Extreme Flooding from Rivers or Sea without Defences	pg 2	Yes	Yes
Flooding from Rivers or Sea without Defences	pg 3	Yes	
Areas Benefiting from Flood Defences			
Flood Water Storage Areas	pg 3		Yes
Flood Defences	pg 3		Yes
OS Water Network Lines	pg 3	4	32

GeoDyne

Summary

Data Type	Page Number	On Site	0 to 250m (*up to 500m)
Waste			
BGS Recorded Landfill Sites			
Historical Landfill Sites			
Integrated Pollution Control Registered Waste Sites			
Licensed Waste Management Facilities (Landfill Boundaries)			
Licensed Waste Management Facilities (Locations)			
Local Authority Landfill Coverage	pg 8	2	n/a
Local Authority Recorded Landfill Sites			
Potentially Infilled Land (Non-Water)	pg 8		1
Potentially Infilled Land (Water)			
Registered Landfill Sites			
Registered Waste Transfer Sites			
Registered Waste Treatment or Disposal Sites			
Hazardous Substances			
Control of Major Accident Hazards Sites (COMAH)			
Explosive Sites			
Notification of Installations Handling Hazardous Substances (NIHHS)			
Planning Hazardous Substance Consents			
Planning Hazardous Substance Enforcements			

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Summary

Data Type	Page Number	On Site	0 to 250m (*up to 500m)
Geological			
BGS 1:625,000 Solid Geology	pg 9	Yes	n/a
BGS Estimated Soil Chemistry	pg 9	Yes	
BGS Recorded Mineral Sites			
BGS Urban Soil Chemistry			
BGS Urban Soil Chemistry Averages			
CBSCB Compensation District			n/a
Coal Mining Affected Areas			n/a
Mining Instability			n/a
Man-Made Mining Cavities			
Natural Cavities			
Non Coal Mining Areas of Great Britain			
Potential for Collapsible Ground Stability Hazards			
Potential for Compressible Ground Stability Hazards	pg 9	Yes	
Potential for Ground Dissolution Stability Hazards			
Potential for Landslide Ground Stability Hazards	pg 9	Yes	
Potential for Running Sand Ground Stability Hazards	pg 9	Yes	
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 9	Yes	
Radon Potential - Radon Affected Areas			n/a
Radon Potential - Radon Protection Measures			n/a
Industrial Land Use			
Contemporary Trade Directory Entries	pg 11	1	1
Fuel Station Entries			
Points of Interest - Commercial Services			
Points of Interest - Education and Health			
Points of Interest - Manufacturing and Production	pg 11	5	3
Points of Interest - Public Infrastructure	pg 11		1
Points of Interest - Recreational and Environmental			
Gas Pipelines			
Underground Electrical Cables			

Data Type	Page Number	On Site	0 to 250m (*up to 500m)
Sensitive Land Use			
Ancient Woodland			
Areas of Adopted Green Belt			
Areas of Unadopted Green Belt			
Areas of Outstanding Natural Beauty			
Environmentally Sensitive Areas			
Forest Parks			
Local Nature Reserves			
Marine Nature Reserves			
National Nature Reserves			
National Parks			
Nitrate Sensitive Areas			
Nitrate Vulnerable Zones	pg 12	1	1
Ramsar Sites			
Sites of Special Scientific Interest			
Special Areas of Conservation			
Special Protection Areas			
World Heritage Sites			

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Mr K A Hayhurst Property Type: Domestic Property (Single) Location: Spalding Common No.42 Spalding Common, Spalding, Lincolnshire, Pe11 3au Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Prnlf02525 Permit Version: 1 Effective Date: 24th April 1990 Issued Date: 24th April 1990 Revocation Date: 23rd July 1997 Discharge Type: Unknown Discharge Environment: Onto Land Receiving Water: Land **Status:** **Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A13SW (S)	0	1	523420 319900
2	**Local Authority Pollution Prevention and Controls** Name: S L Patterns Location: Spalding Common, Spalding, Lincolnshire, PE11 3AS Authority: South Holland District Council, Environmental Services Permit Reference: Not Given Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG2/4 Iron, steel and non-ferrous metal foundry processes **Status:** **Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	196	2	523327 320370
3	**Local Authority Pollution Prevention and Controls** Name: South Lincs Patterns Location: Spalding Common, Spalding Common, Spalding, Pe11 3as Authority: South Holland District Council, Environmental Services Permit Reference: Not Given Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG2/6 Aluminium and aluminium alloy processes **Status:** **Authorised** Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	214	2	523200 320300
3	**Local Authority Pollution Prevention and Controls** Name: South Lincs Patterns Location: Spalding Common, Spalding, Pe11 3as Authority: South Holland District Council, Environmental Services Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG2/4 Iron, steel and non-ferrous metal foundry processes **Status:** **Authorised** Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	214	2	523200 320300
4	**Local Authority Pollution Prevention and Controls** Name: South Lincs Patterns Location: Spalding Common, Spalding, Lincolnshire, PE11 3AS Authority: South Holland District Council, Environmental Services Permit Reference: Not Given Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG2/6 Aluminium and aluminium alloy processes **Status:** **Authorised** Positional Accuracy: Manually positioned to the address or location	A18SW (NW)	223	2	523273 320378
	Nearest Surface Water Feature	A13NE (E)	0	-	523519 320035
5	**Pollution Incidents to Controlled Waters** Property Type: Sheep Location: Spalding District, SPALDING Authority: Environment Agency, Anglian Region Pollutant: Organic Wastes: Animal Carcasses Note: River Welland Incident Date: 15th February 1999 Incident Reference: 2791 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (N)	27	1	523500 320200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Welland GQA Grade: River Quality B Reach: Folly R....New R. Spalding Estimated Distance (km): 20 Flow Rate: Flow less than 5 cumecs Flow Type: River Year: 2000	A13NE (E)	171	1	523689 320088
6	**Water Abstractions** Operator: R Chappell & Sons Licence Number: 5/31/14/*S/0020 Permit Version: 100 Location: R Welland & Drains,Cowbit Wash Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Status: Perpetuity Authorised Start: 01 May Authorised End: 30 September Permit Start Date: 1st April 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	0	1	523500 320100
	Water Abstractions Operator: W D Branton Licence Number: 5/31/14/*S/0158 Permit Version: 100 Location: South Drove Drain Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Status: Perpetuity Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 1st June 1983 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	440	1	522900 319800
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 24 North Northamptonshire Scale: 1:100,000	A13SW (SE)	0	1	523435 320016
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13SW (SE)	0	3	523435 320016
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13SW (S)	0	3	523435 320000
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	A13SW (S)	0	3	523435 320000
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	A13SW (SE)	0	3	523435 320016
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SE)	0	1	523435 320016
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	16	1	523305 319980
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13NE (E)	137	1	523654 320064

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (N)	0	1	523435 320064
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas Type: Flood Water Storage Areas Reference: Not Supplied	A13NE (E)	138	1	523655 320064
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SE (E)	52	1	523582 319989
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13NE (E)	52	1	523571 320044
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13NE (NE)	54	1	523555 320122
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13NE (E)	140	1	523657 320063
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SE (E)	141	1	523669 320008
7	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 85.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NE (NE)	0	4	523507 320092
8	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 141.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NE (E)	0	4	523520 320035
9	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (SE)	0	4	523539 319943
10	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 32.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (SE)	0	4	523545 319913
11	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 50.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (SE)	11	4	523552 319877

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 541.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Welland Soke Dyke Catchment Name: Welland Primacy: 2	A13NE (E)	12	4	523532 320036
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 153.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SW (W)	18	4	523304 319973
14	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 262.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SW (W)	24	4	523305 320025
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NE (N)	34	4	523480 320211
16	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.3 Watercourse Level: Underground Permanent: True Watercourse Name: River Welland Soke Dyke Catchment Name: Welland Primacy: 2	A13SE (SE)	36	4	523569 319857
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 556.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Welland Soke Dyke Catchment Name: Welland Primacy: 2	A13SE (SE)	41	4	523569 319851
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	45	4	523330 320125
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SW (SW)	49	4	523322 319870
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SW (SW)	53	4	523321 319856

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 243.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (S)	61	4	523453 319819
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (SE)	61	4	523561 319828
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 45.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	62	4	523334 320224
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 280.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	68	4	523309 320140
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 189.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (SE)	72	4	523564 319817
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SW (SW)	85	4	523319 319806
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 44.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (N)	90	4	523378 320271
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7060.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Welland Catchment Name: Welland Primacy: 1	A13NE (E)	108	4	523625 320061
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 692.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Fantail Mill Drain Catchment Name: Welland Primacy: 2	A13SW (SW)	135	4	523199 319868

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1926.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Soke Dyke Catchment Name: Welland Primacy: 2	A13NE (E)	154	4	523670 320066
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 377.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13SE (E)	162	4	523711 319906
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 234.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NE (NE)	163	4	523668 320118
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 77.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Fantail Mill Drain Catchment Name: Welland Primacy: 2	A13SW (W)	190	4	523132 319974
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 180.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	200	4	523145 320152
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.8 Watercourse Level: Underground Permanent: True Watercourse Name: River Welland Soke Dyke Catchment Name: Welland Primacy: 2	A18SE (N)	209	4	523453 320387
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 123.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Welland Soke Dyke Catchment Name: Welland Primacy: 2	A18SE (N)	216	4	523452 320393
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 124.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	225	4	523145 320152
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 231.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	227	4	523194 320313

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 186.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Welland Primacy: 2	A13NW (NW)	230	4	523121 320162
40	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Fantail Mill Drain Catchment Name: Welland Primacy: 2	A12NE (W)	234	4	523092 320040
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.4 Watercourse Level: Underground Permanent: True Watercourse Name: Fantail Mill Drain Catchment Name: Welland Primacy: 2	A12NE (W)	239	4	523088 320045
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Fantail Mill Drain Catchment Name: Welland Primacy: 2	A12NE (W)	249	4	523080 320057

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: South Holland District Council - Has no landfill data to supply		0	2	523435 320016
	Local Authority Landfill Coverage Name: Lincolnshire County Council - Had landfill data but passed it to the relevant environment agency		0	5	523435 320016
43	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1996	A13NE (N)	175	-	523445 320353

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Kellaways Formation And Oxford Clay Formation (Undifferentiated)	A13SW (SE)	0	6	523435 320016
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SE)	0	6	523435 320016
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320000
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320001

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	6	523435 320001
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	6	523435 320016

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	**Contemporary Trade Directory Entries** Name: Freshco (Spalding) Ltd Location: Spalding Common, Spalding, Lincolnshire, PE11 3JZ Classification: Frozen Food Processors & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	0	-	523355 319971
45	**Contemporary Trade Directory Entries** Name: South Lincs Foundry Location: Ivanhoe, Spalding Common, Spalding, Lincolnshire, PE11 3AS Classification: Foundries **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	239	-	523299 320407
46	**Points of Interest - Manufacturing and Production** Name: Tank Location: PE11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SE (S)	0	7	523442 319998
46	**Points of Interest - Manufacturing and Production** Name: Tank Location: PE11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SW (S)	0	7	523432 319999
46	**Points of Interest - Manufacturing and Production** Name: Tank Location: PE11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SW (SW)	0	7	523428 320002
46	**Points of Interest - Manufacturing and Production** Name: Tanks Location: PE11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	0	7	523440 320006
46	**Points of Interest - Manufacturing and Production** Name: Tank Location: PE11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	0	7	523414 320008
47	**Points of Interest - Manufacturing and Production** Name: H Freeman & Sons Location: The Conifers, Spalding Common, Spalding, PE11 3AU Category: Farming Class Code: Arable Farming Positional Accuracy: Positioned to address or location	A13SW (W)	34	7	523288 319998
48	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SW (NW)	223	7	523258 320369
48	**Points of Interest - Manufacturing and Production** Name: Works Location: PE11 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SW (NW)	223	7	523258 320369
49	**Points of Interest - Public Infrastructure** Name: Sewage Pumping Station Location: PE11 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A13SW (S)	170	7	523349 319706

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Nitrate Vulnerable Zones** Name: Vernatt'S Drain Nvz Description: Surface Water Source: Environment Agency, Head Office	A13SW (SE)	0	3	523435 320016
51	**Nitrate Vulnerable Zones** Name: River Welland Nvz Description: Surface Water Source: Environment Agency, Head Office	A13NE (E)	59	3	523579 320047

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices South Holland District Council - Environmental Services	October 2013	Annual Rolling Update
Discharge Consents Environment Agency - Anglian Region	January 2019	Quarterly
Enforcement and Prohibition Notices Environment Agency - Anglian Region	March 2013	Annual Rolling Update
Integrated Pollution Controls Environment Agency - Anglian Region	October 2008	Variable
Integrated Pollution Prevention And Control Environment Agency - Anglian Region	January 2019	Quarterly
Local Authority Integrated Pollution Prevention And Control South Holland District Council - Environmental Services	October 2014	Variable
Local Authority Pollution Prevention and Controls South Holland District Council - Environmental Services	October 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements South Holland District Council - Environmental Services	October 2014	Variable
Nearest Surface Water Feature Ordnance Survey	September 2017	
Pollution Incidents to Controlled Waters Environment Agency - Anglian Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes Environment Agency - Anglian Region	March 2013	Annual Rolling Update
Prosecutions Relating to Controlled Waters Environment Agency - Anglian Region	March 2013	Annual Rolling Update
Registered Radioactive Substances Environment Agency - Anglian Region	June 2016	
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register Environment Agency - Anglian Region - Northern Area	January 2019	Quarterly
Water Abstractions Environment Agency - Anglian Region	January 2019	Quarterly
Water Industry Act Referrals Environment Agency - Anglian Region	October 2017	Quarterly
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Source Protection Zones Environment Agency - Head Office	January 2018	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2018	Quarterly

Agency & Hydrological	Version	Update Cycle
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2018	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	August 2018	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	August 2018	Quarterly
Flood Defences Environment Agency - Head Office	August 2018	Quarterly
OS Water Network Lines Ordnance Survey	October 2018	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water Suitability Environment Agency - Head Office	October 2013	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually
Waste	**Version**	**Update Cycle**
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Environment Agency - Head Office	July 2018	Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - Anglian Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency - Anglian Region - Northern Area	July 2018	Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - Anglian Region - Northern Area	January 2019	Quarterly
Local Authority Landfill Coverage Lincolnshire County Council South Holland District Council - Environmental Services	May 2000 May 2000	Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Lincolnshire County Council South Holland District Council - Environmental Services	May 2000 May 2000	Not Applicable Not Applicable
Potentially Infilled Land (Non-Water) Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water) Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites Environment Agency - Anglian Region - Northern Area	March 2003	Not Applicable
Registered Waste Transfer Sites Environment Agency - Anglian Region - Northern Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - Anglian Region - Northern Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
South Holland District Council	January 2016	Variable
Lincolnshire County Council - Highways and Planning Department	June 2010	Variable
Planning Hazardous Substance Consents		
Lincolnshire County Council - Highways and Planning Department	August 2007	Variable
South Holland District Council	January 2016	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	October 2015	Annually
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	November 2018	Bi-Annually
CBSCB Compensation District		
Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas		
The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	July 2011	Annually

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	January 2019	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2018	Quarterly
Gas Pipelines National Grid	July 2014	
Points of Interest - Commercial Services PointX	November 2018	Quarterly
Points of Interest - Education and Health PointX	November 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	November 2018	Quarterly
Points of Interest - Public Infrastructure PointX	November 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	November 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	
Sensitive Land Use	**Version**	**Update Cycle**
Ancient Woodland Natural England	August 2018	Bi-Annually
Areas of Outstanding Natural Beauty Natural England	August 2018	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	August 2018	Bi-Annually
Marine Nature Reserves Natural England	January 2018	Bi-Annually
National Nature Reserves Natural England	August 2018	Bi-Annually
National Parks Natural England	April 2017	Bi-Annually
Nitrate Vulnerable Zones Environment Agency - Head Office Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2017 October 2015	Bi-Annually
Ramsar Sites Natural England	August 2018	Bi-Annually
Sites of Special Scientific Interest Natural England	October 2018	Bi-Annually
Special Areas of Conservation Natural England	August 2018	Bi-Annually
Special Protection Areas Natural England	August 2018	Bi-Annually

Data Suppliers

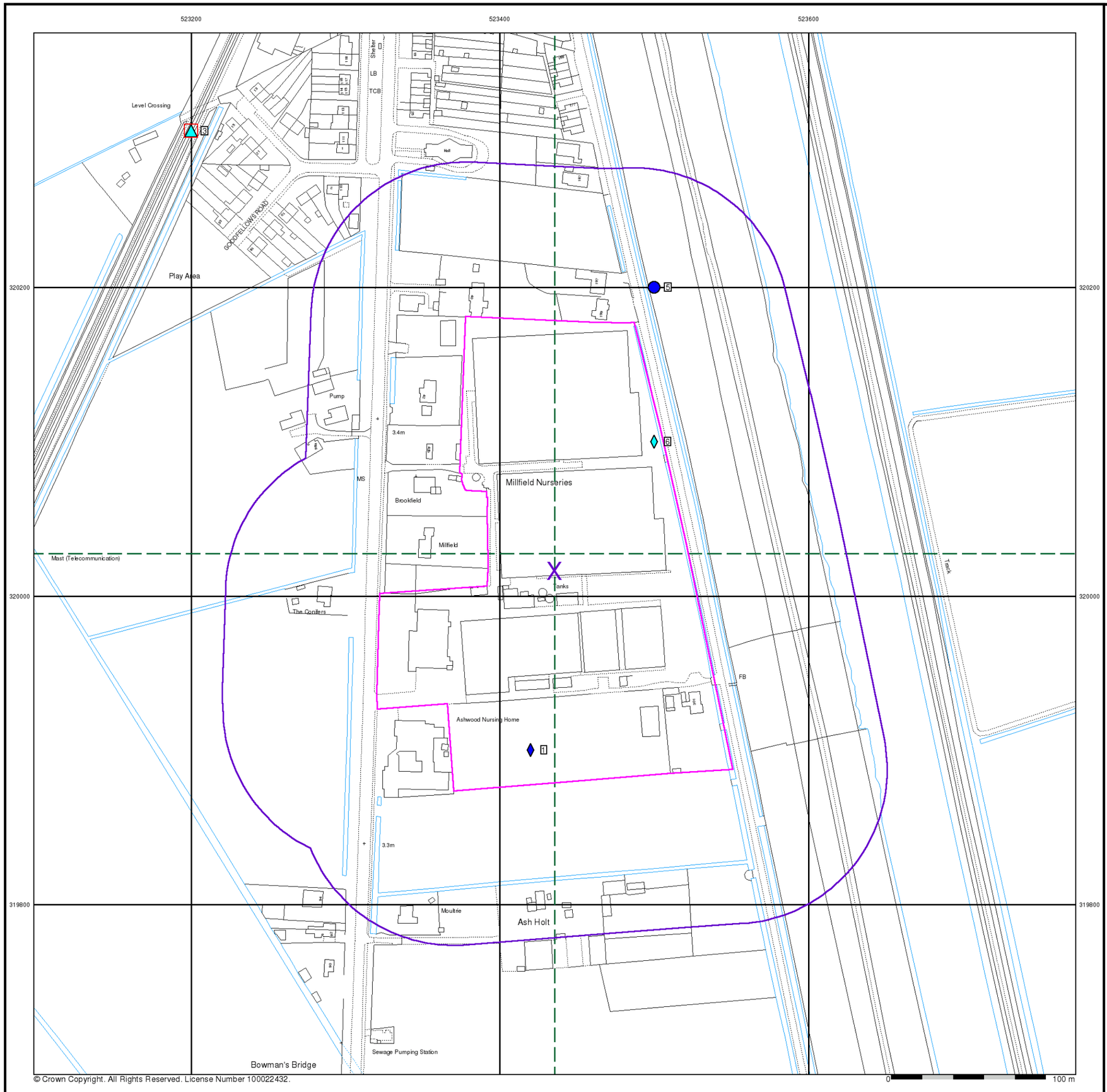
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	The Coal Authority
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Peter Brett Associates	pba peterbrett

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
2	**South Holland District Council - Environmental Services** Council Offices, Priory Road, Spalding, Lincolnshire, PE11 2XE	Website: www.sholland.gov.uk
3	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
5	**Lincolnshire County Council** 4th Floor, City Hall, Lincoln, Lincolnshire, LN1 1DN	Telephone: 01522 552222 Fax: 01522 552288 Email: PublicRelations@lincolnshire.gov.uk Website: www.lincolnshire.gov.uk
6	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
7	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
8	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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GeoDyne

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

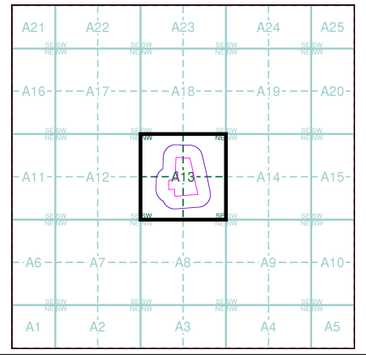
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A13



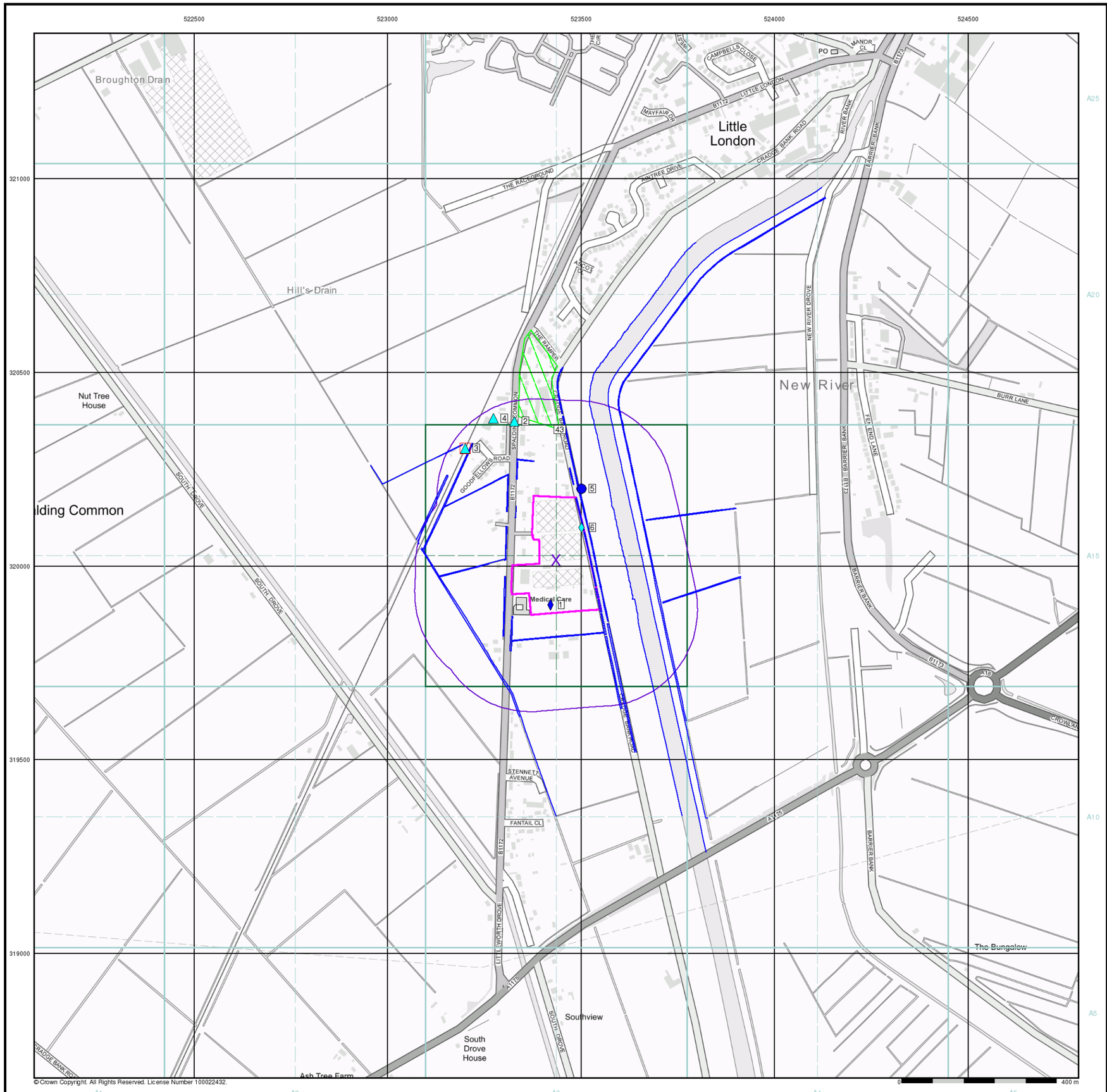
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Plot Buffer (m):	100

Site Details

Millfield Nursey, Spalding Common, Spalding

Landmark INFORMATION GROUP
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GeoDyne

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

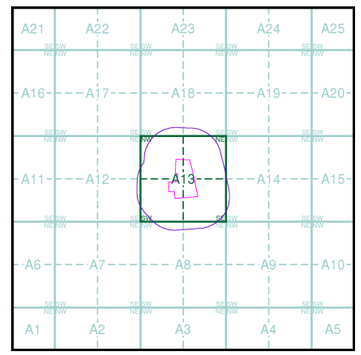
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
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- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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Industrial Land Use Map

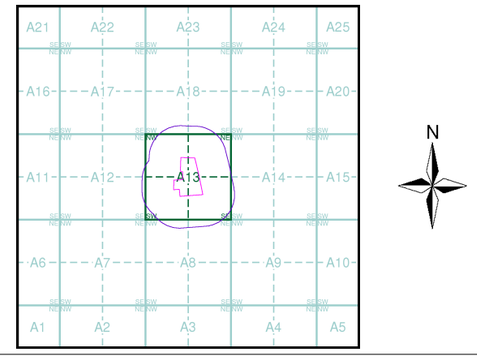
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



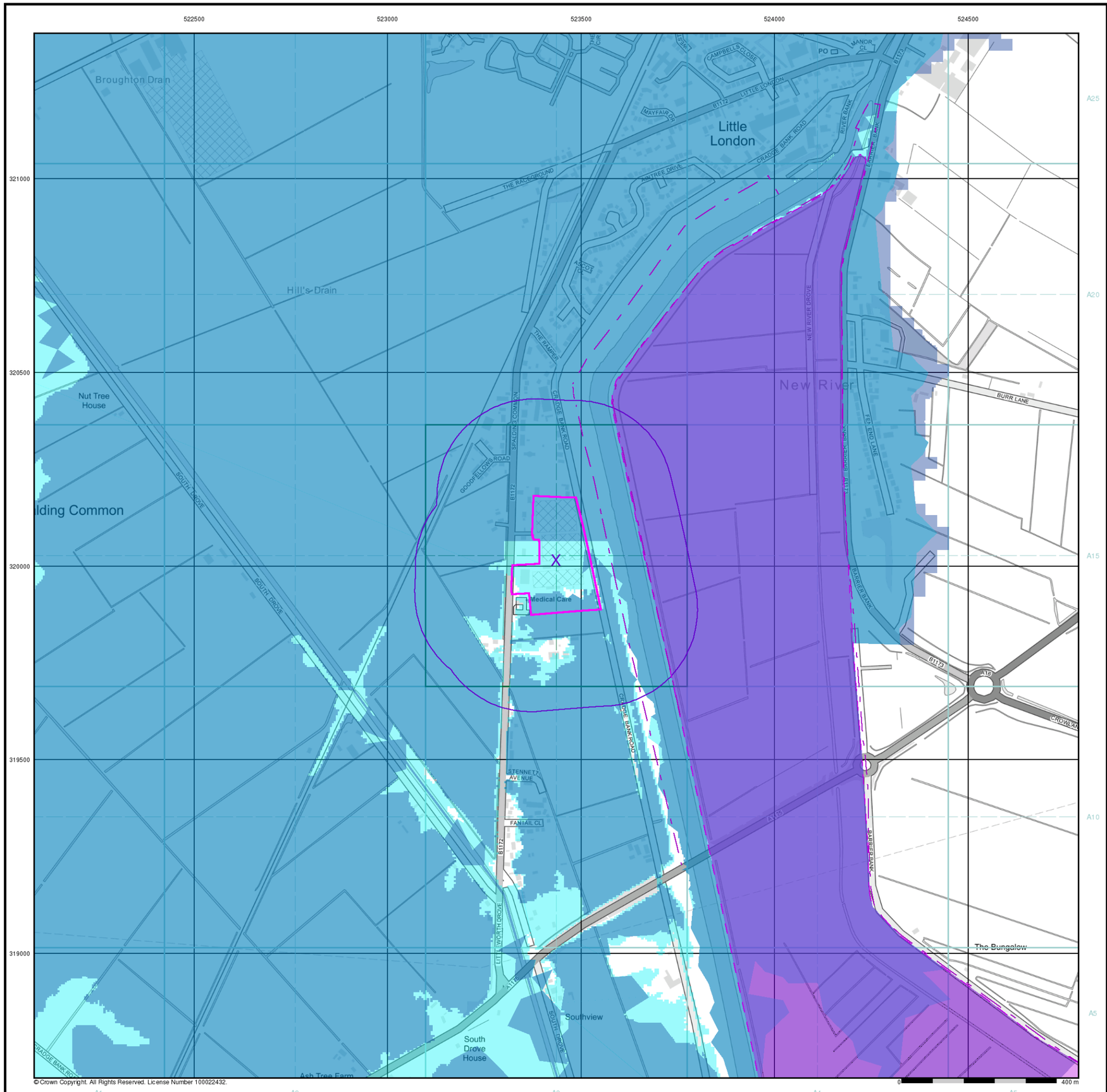
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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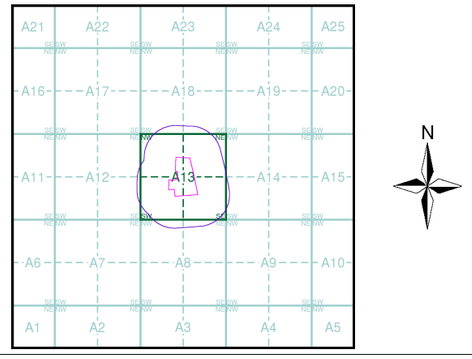
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

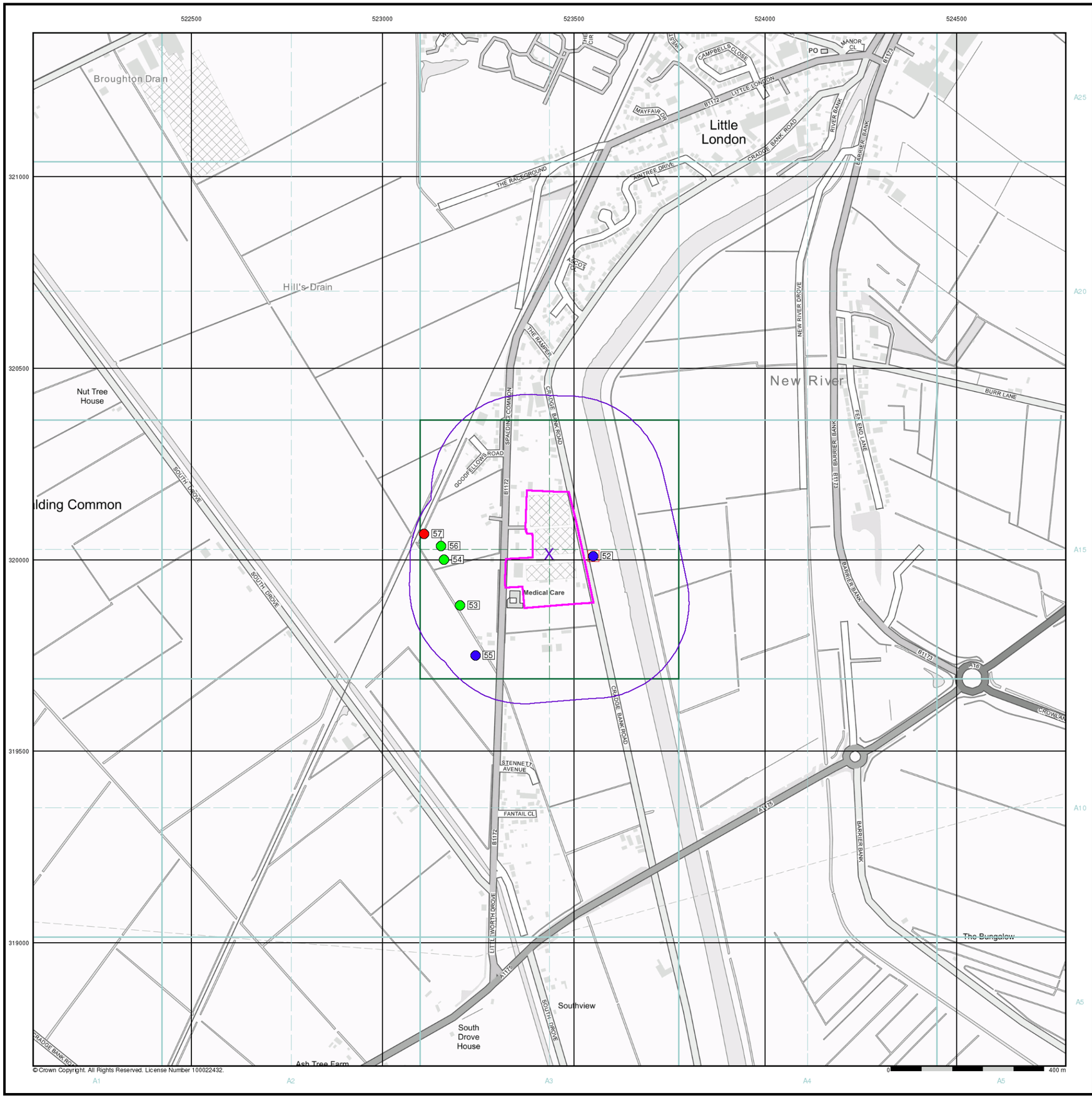
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Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

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GeoDyne

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

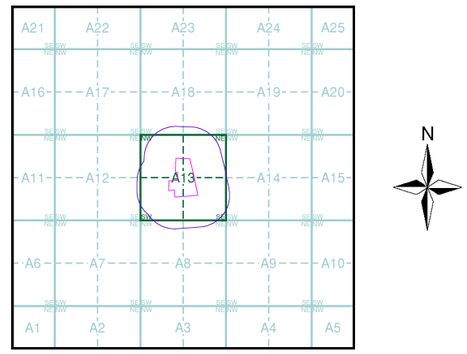
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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GeoDyne

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

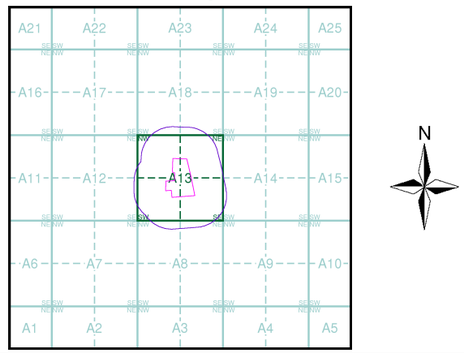
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

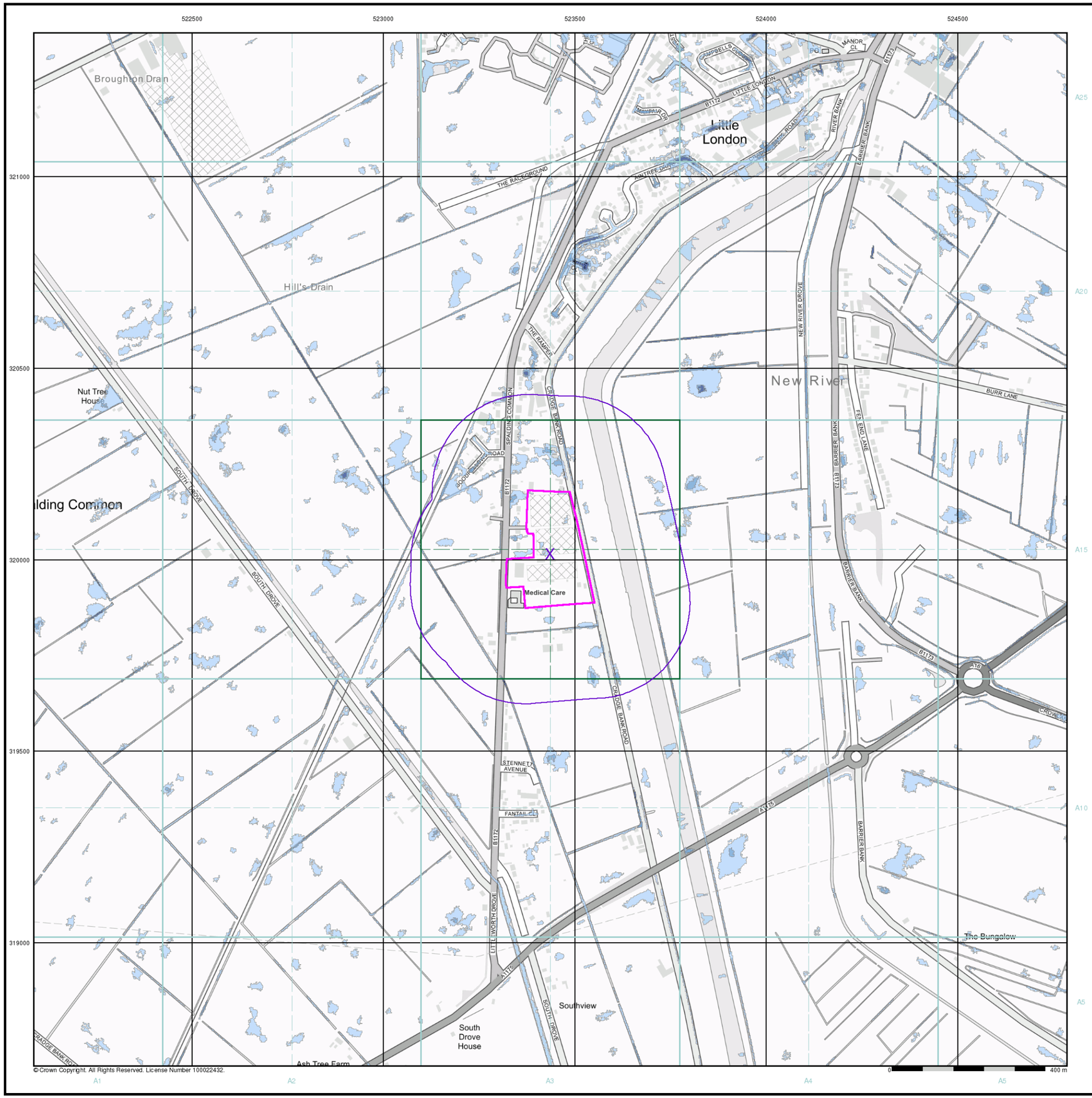
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

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GeoDyne

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

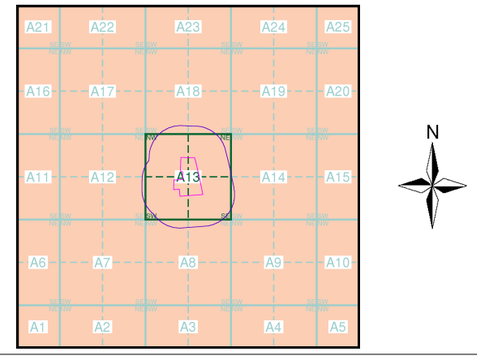
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

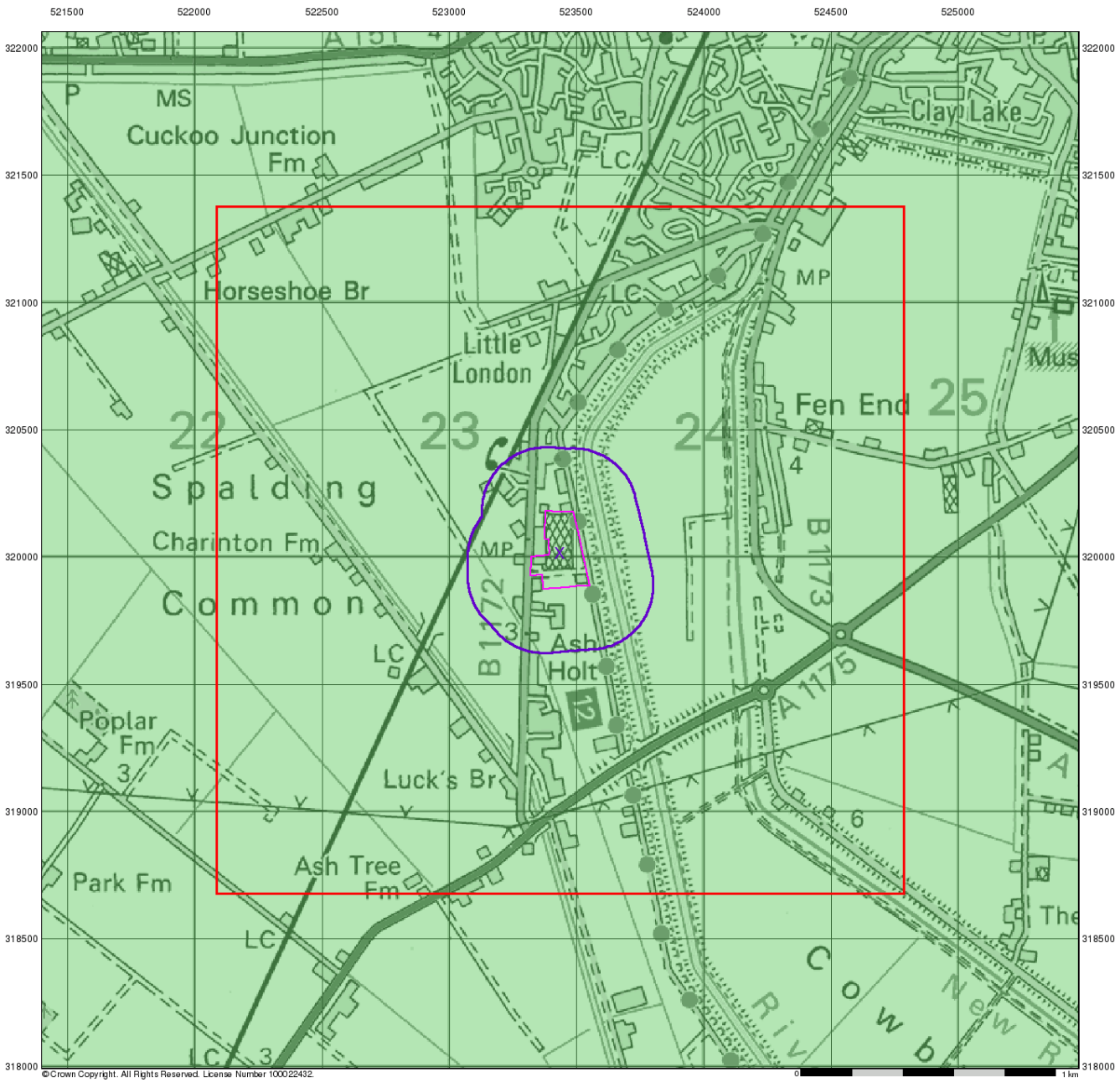
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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GeoDyne

Groundwater Vulnerability

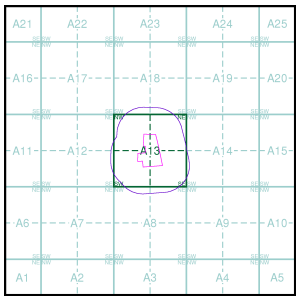
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



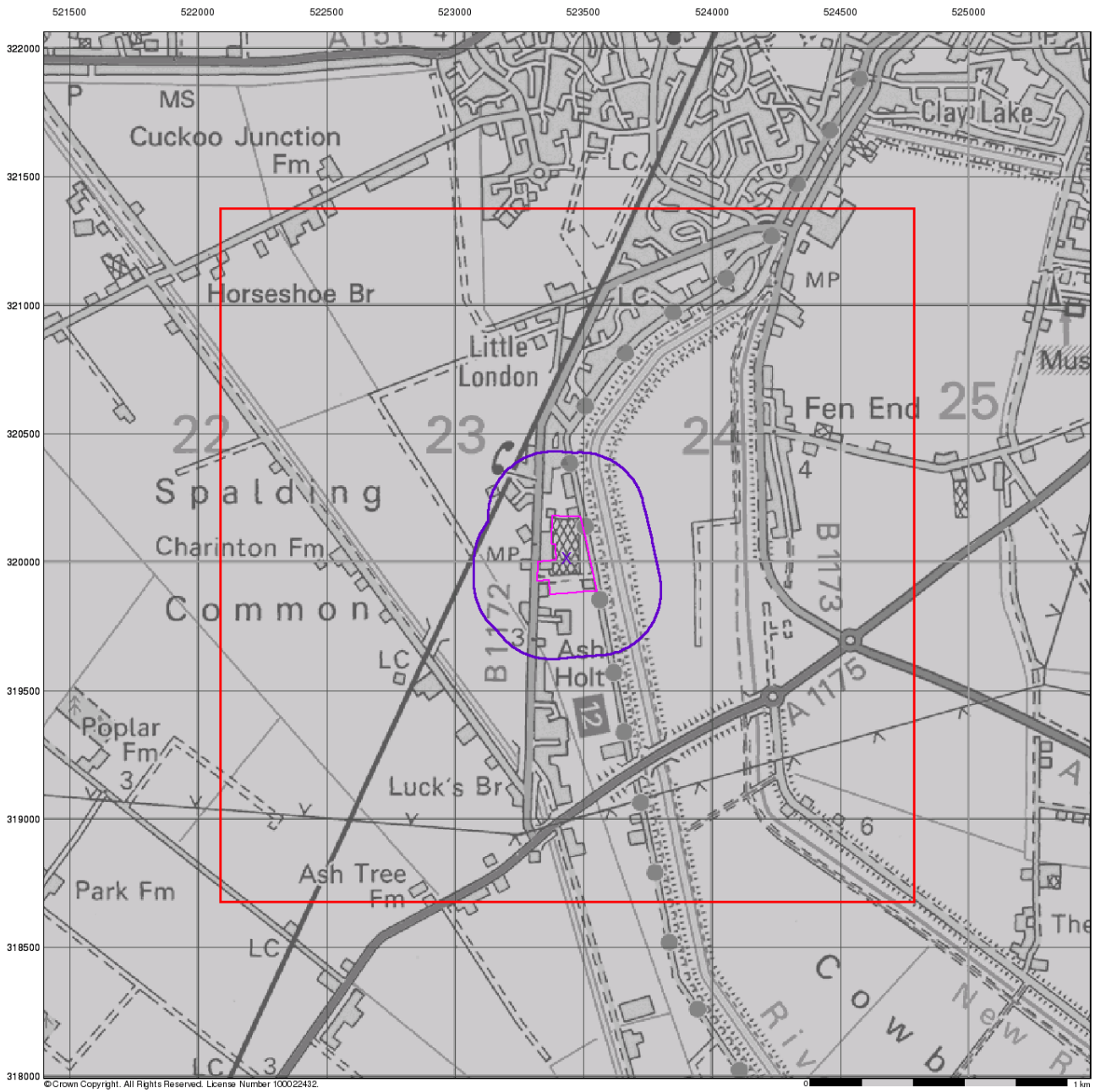
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursey, Spalding Common, Spalding

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GeoDyne

Bedrock Aquifer Designation

General

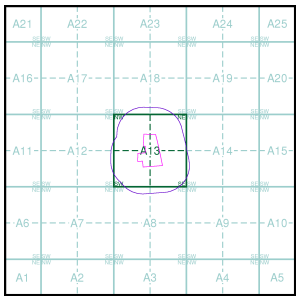
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

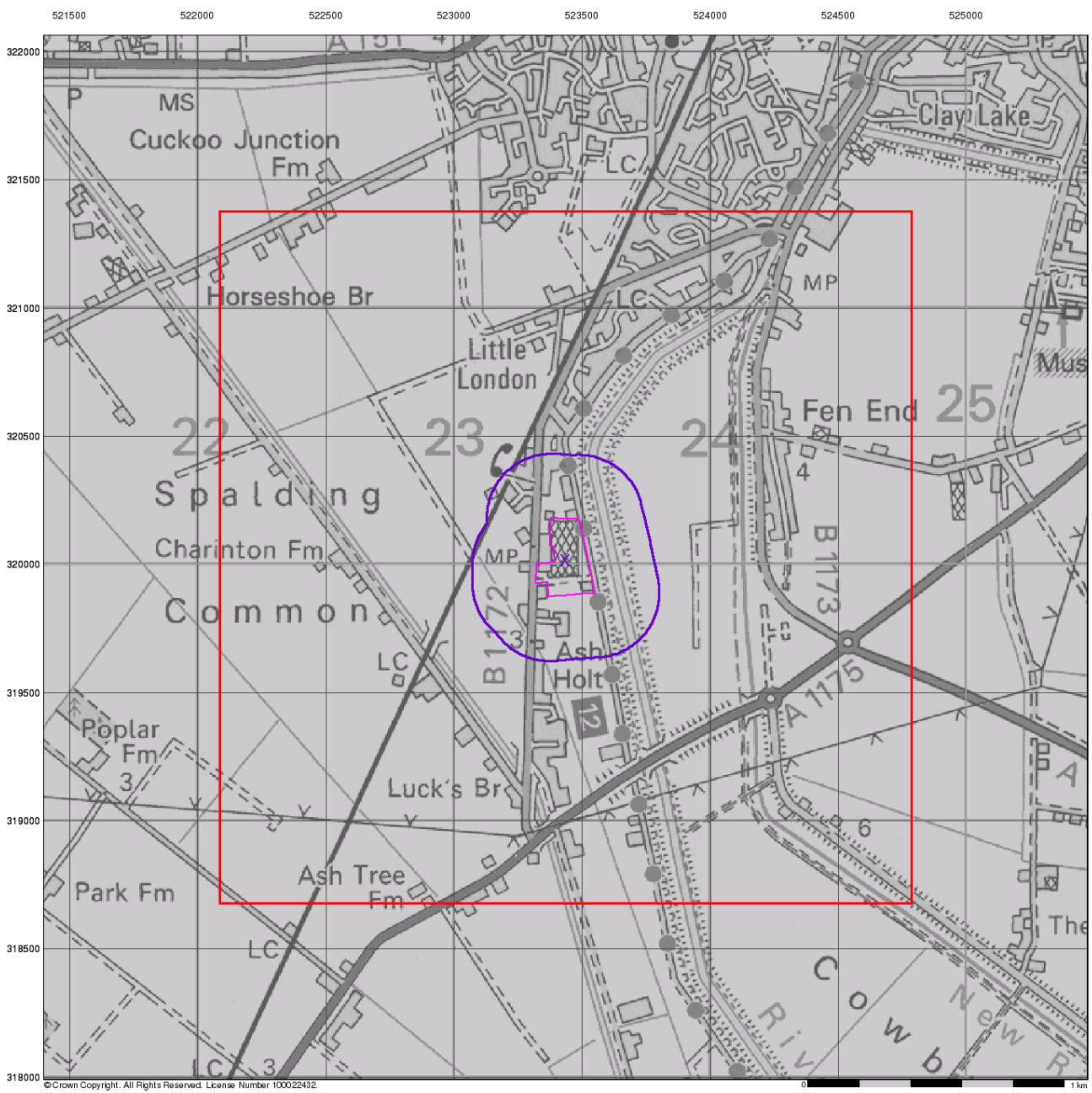
Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursery, Spalding Common, Spalding

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GeoDyne

Superficial Aquifer Designation

General

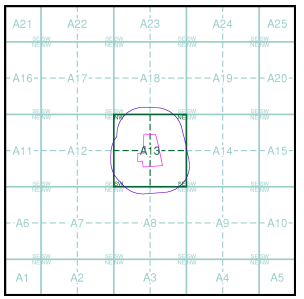
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



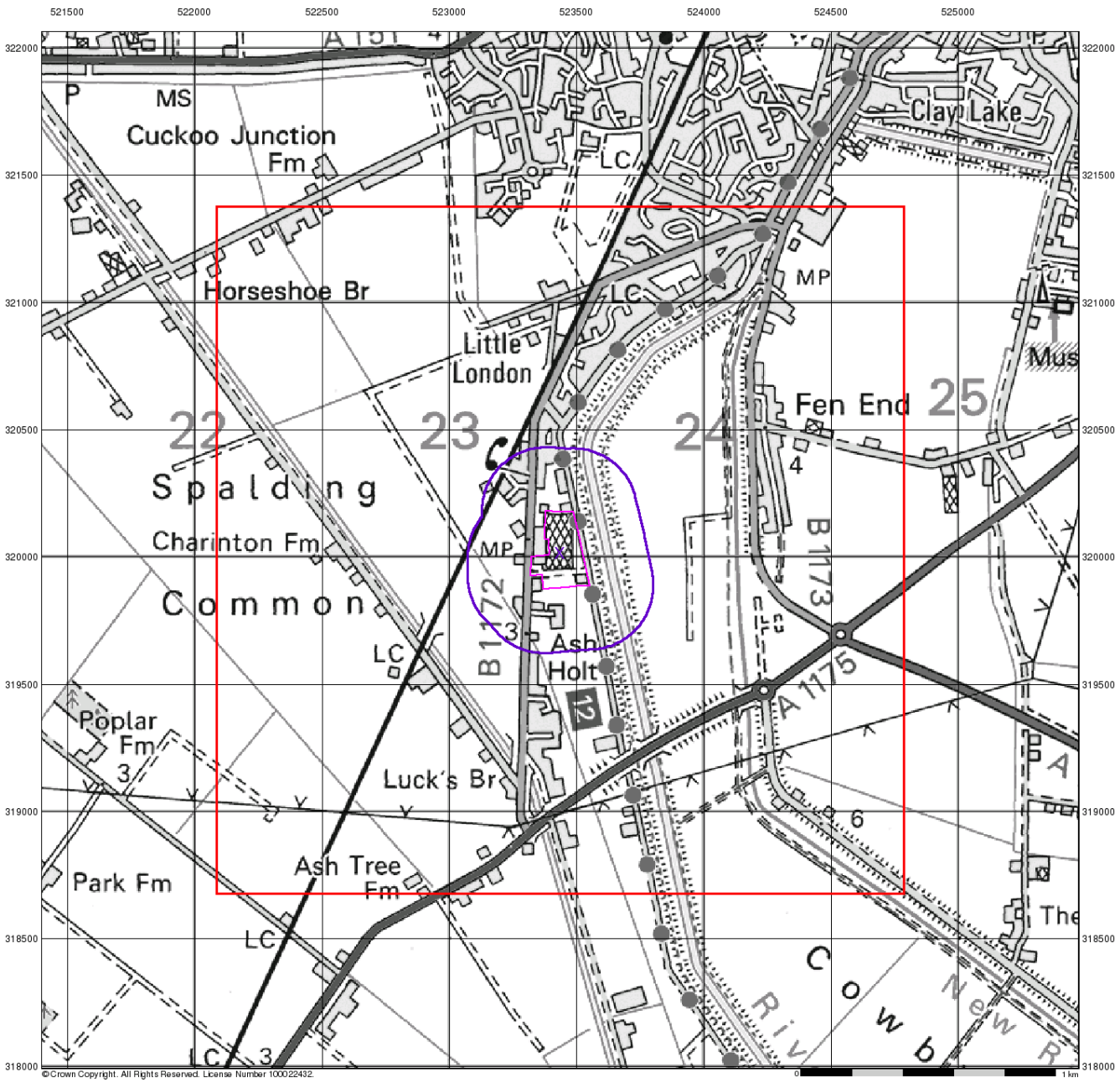
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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GeoDyne

Source Protection Zones

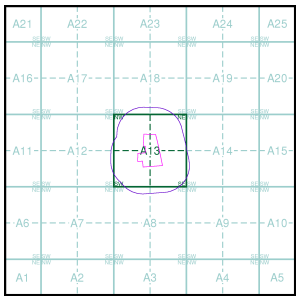
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



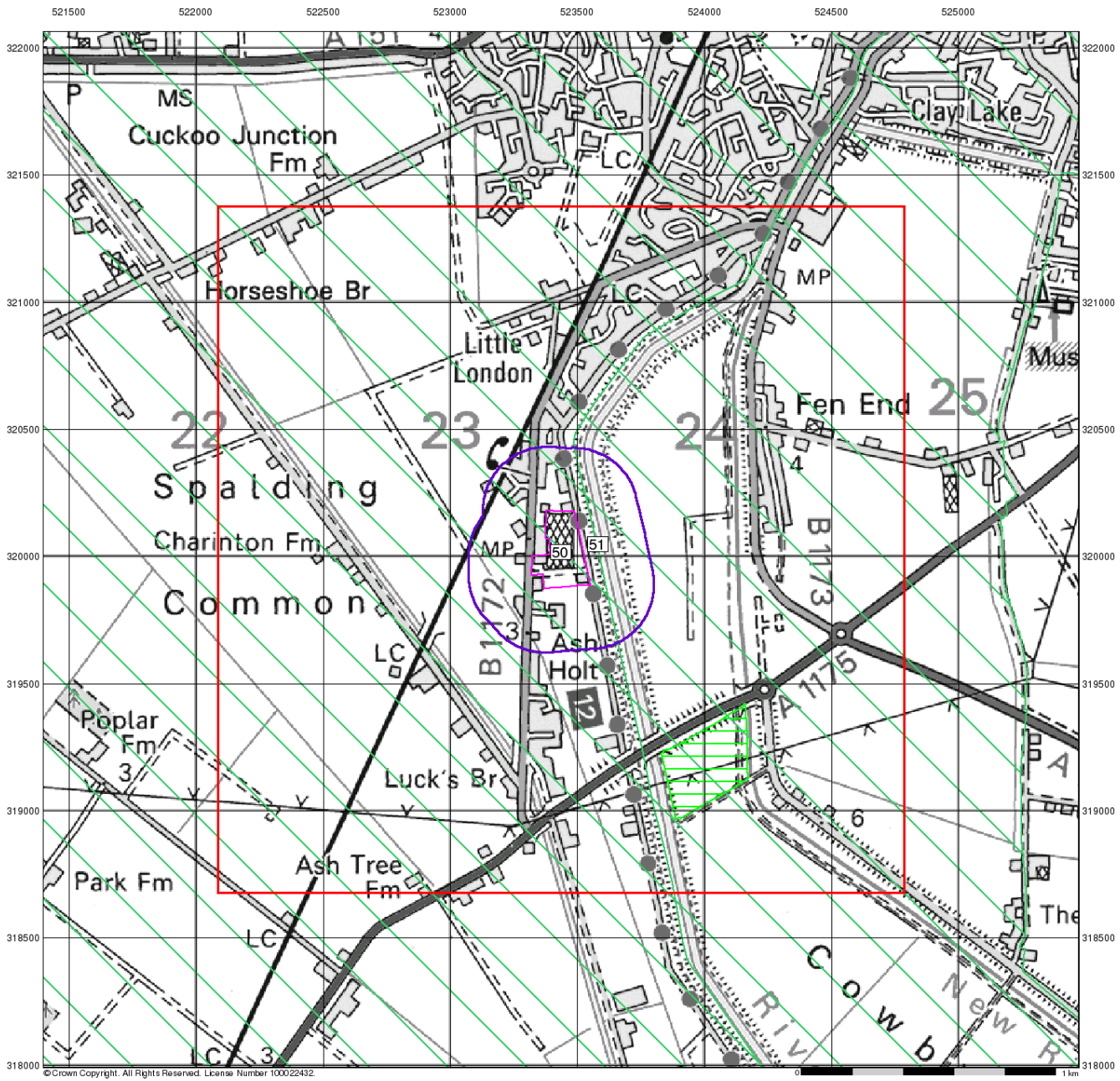
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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GeoDyne

Sensitive Land Uses

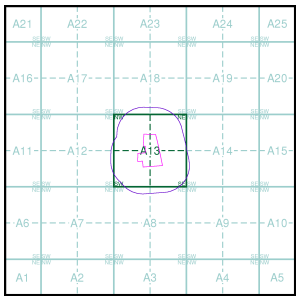
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A



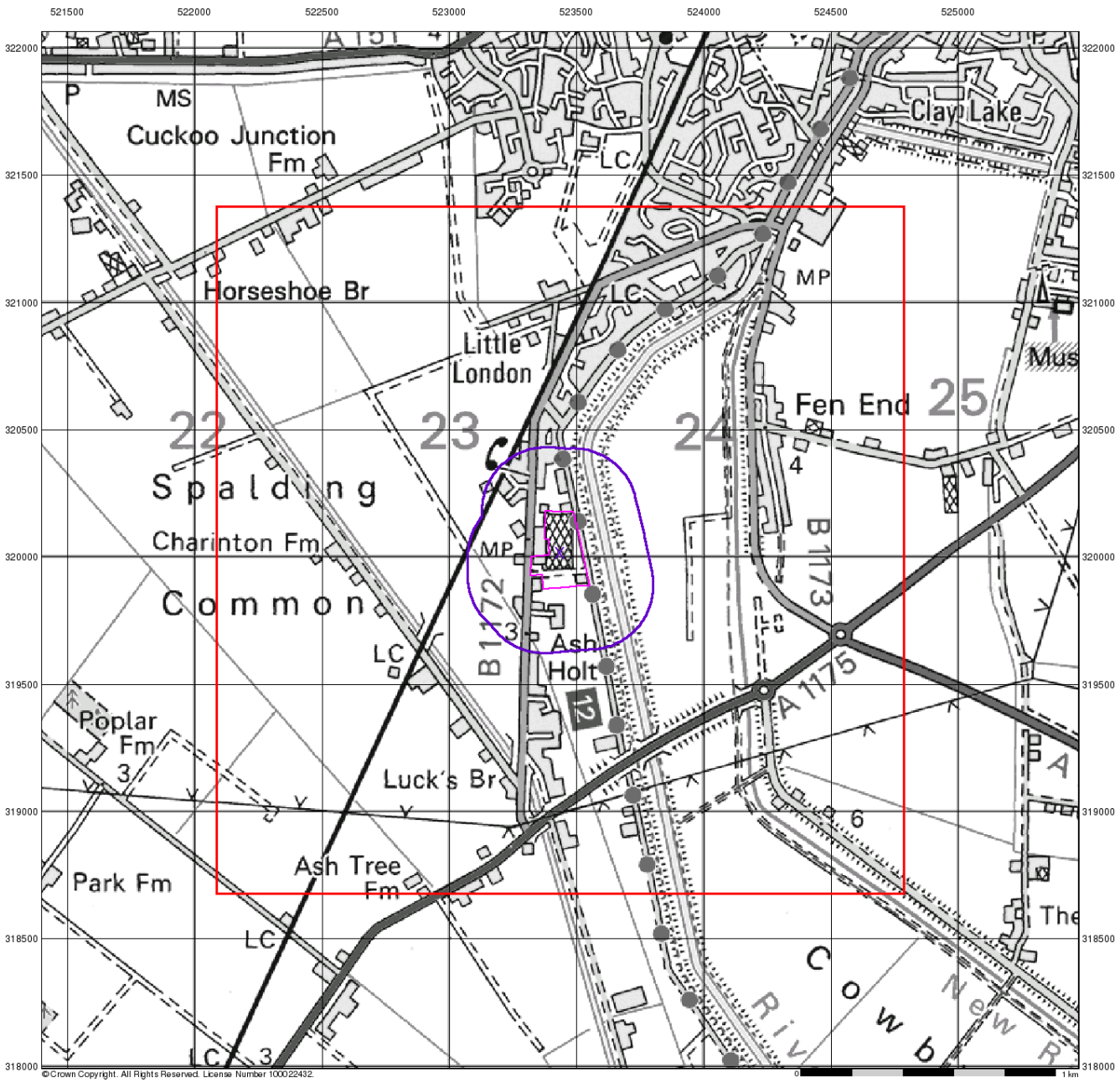
Order Details

Order Number:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
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BGS Flood GFS Data

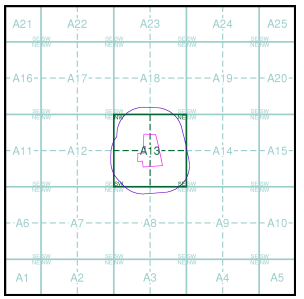
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

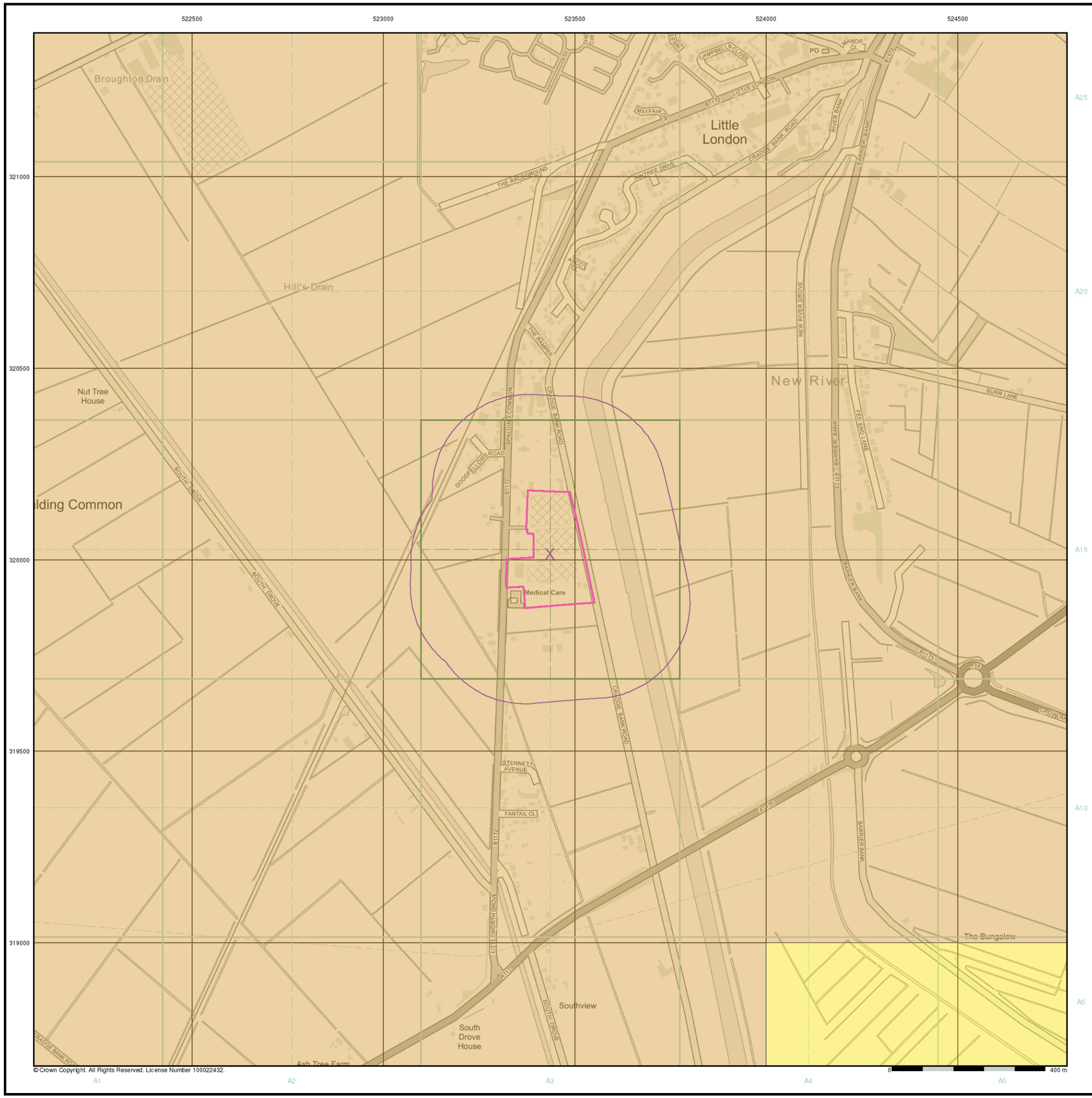
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Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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GeoDyne

General

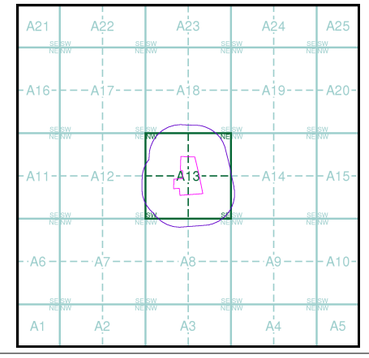
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



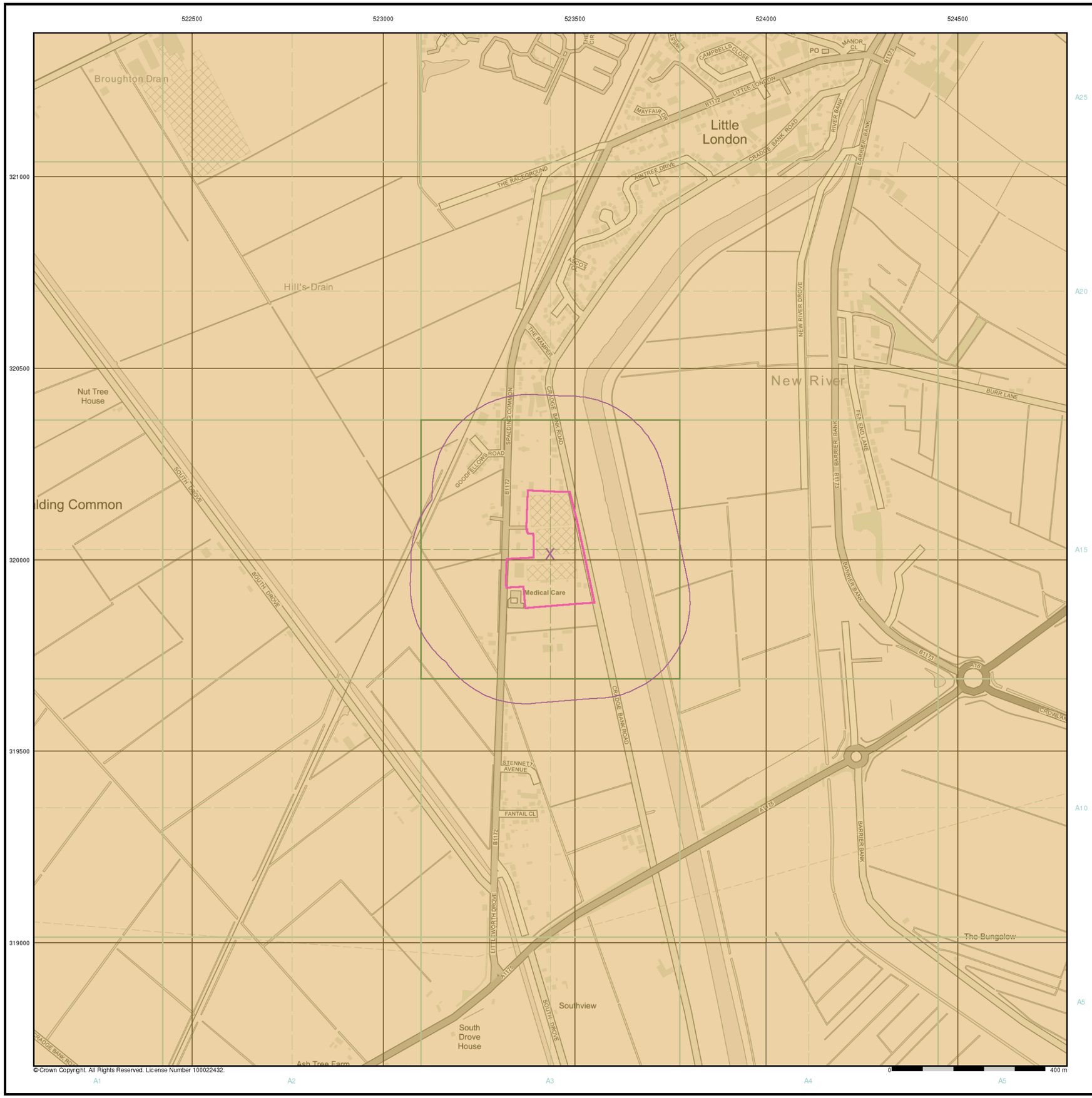
Order Details

Order Details:	194367619_1_1
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Slice:	A
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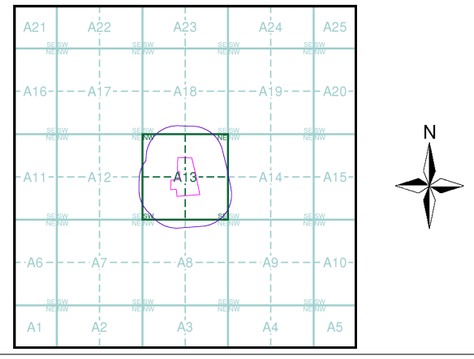
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



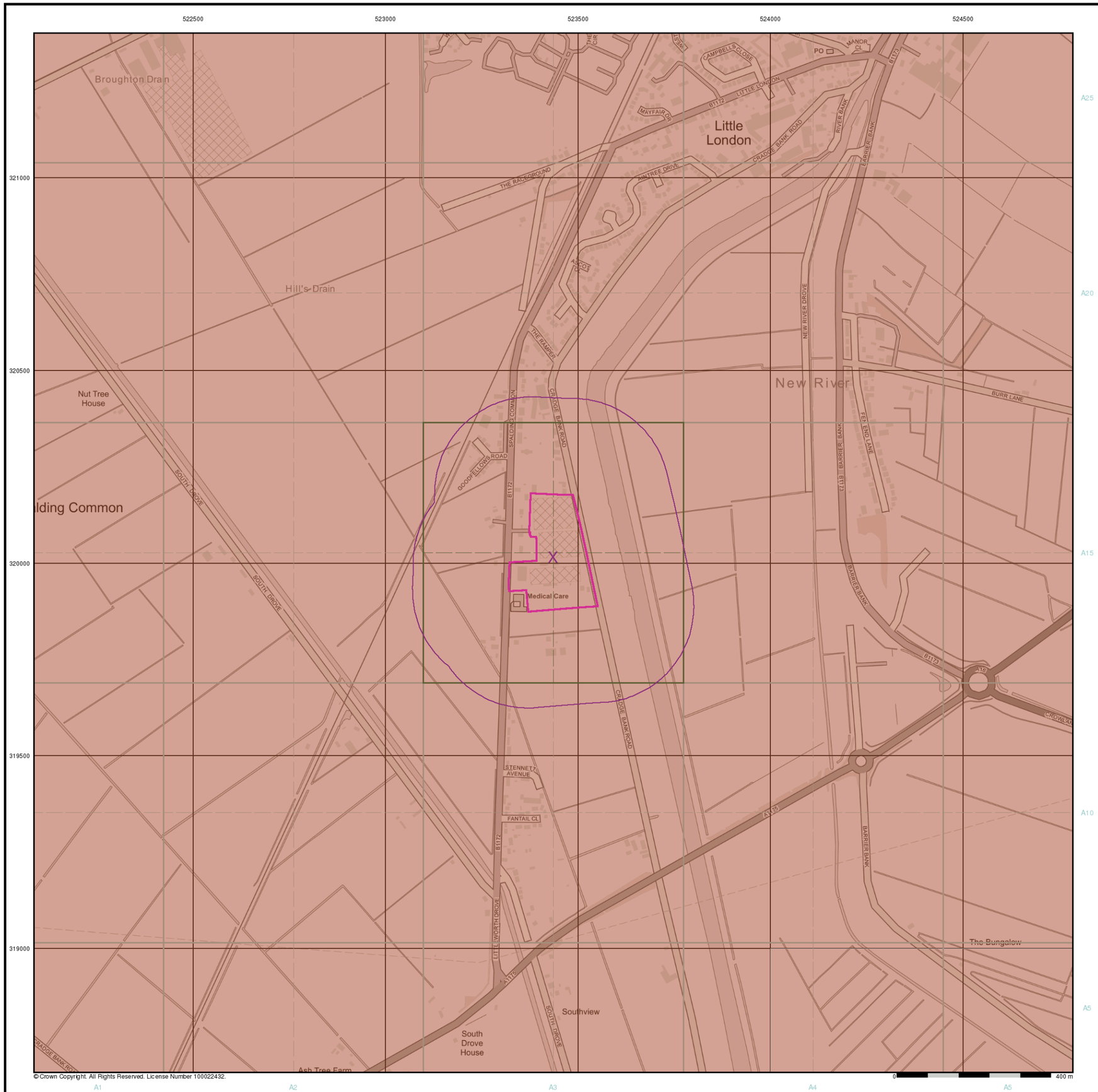
Order Details

Order Details:	194367619_1_1
Customer Ref:	D38185
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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GeoDyne

General

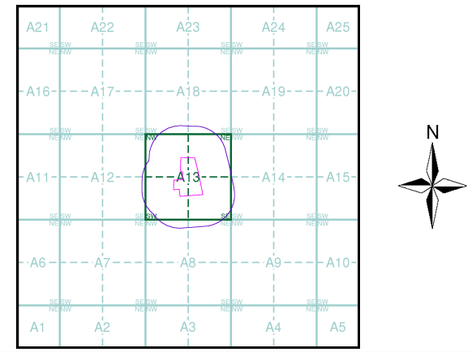
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



Order Details

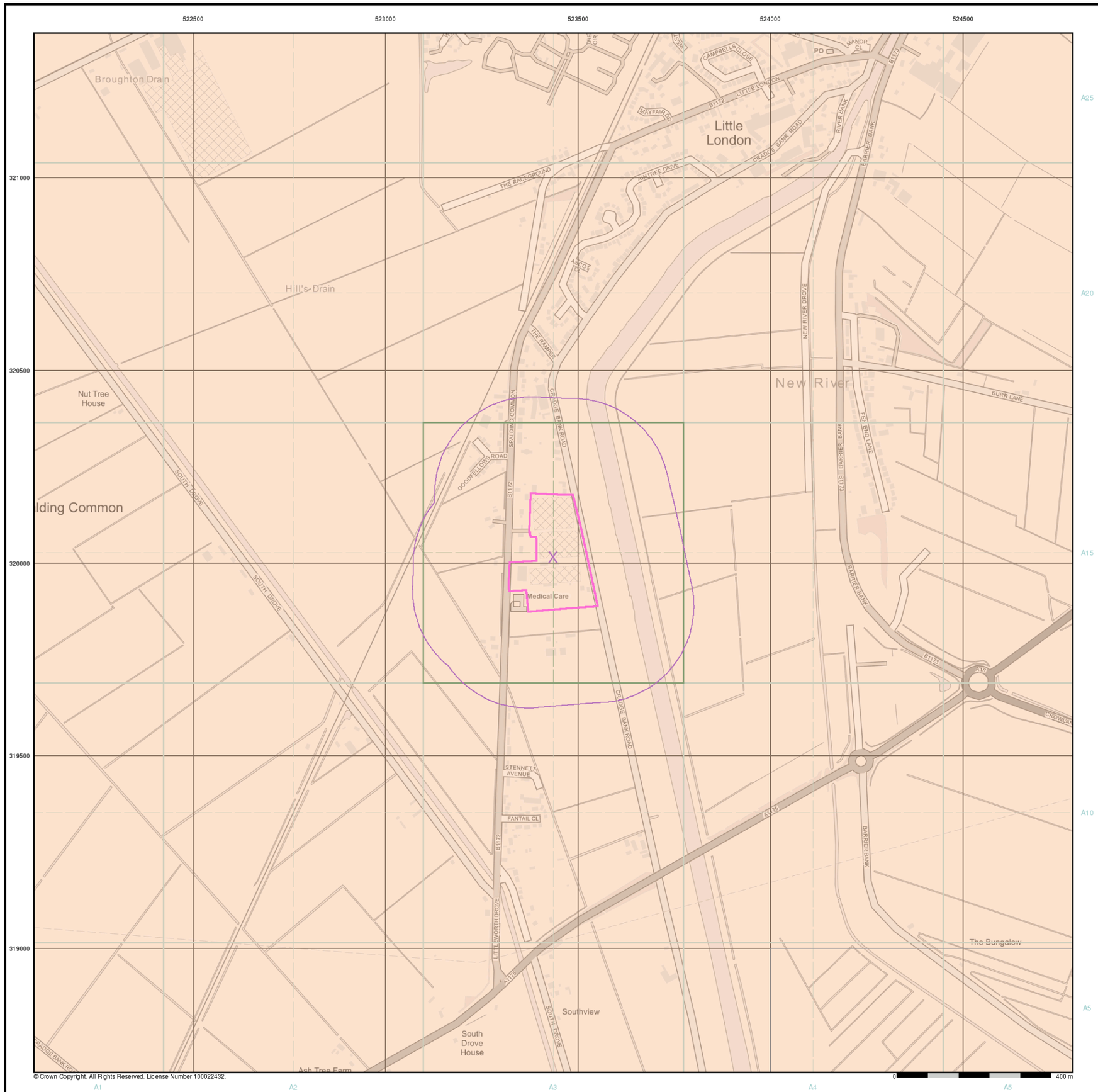
Order Details:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursey, Spalding Common, Spalding

Landmark INFORMATION GROUP

Tel: 0844 844 9952
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GeoDyne

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A

Order Details

Order Details:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

Millfield Nursey, Spalding Common, Spalding

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GeoDyne

General

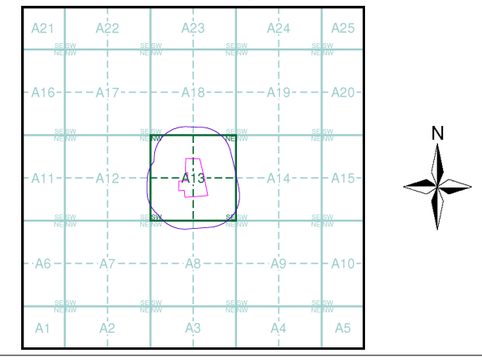
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details:	194367619_1_1
Customer Ref:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details

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Geology 1:50,000 Maps Legends

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	TFD	Tidal Flat Deposits	Clay and Silt	Not Supplied - Holocene
	TFD1	Tidal Flat Deposits, 1	Clay and Silt	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	OXC	Oxford Clay Formation	Mudstone	Not Supplied - Callovian

GeoDyne

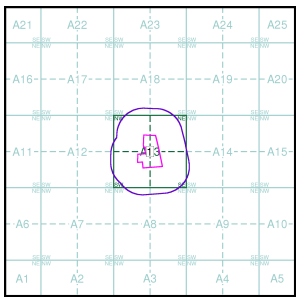
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**144**
Map Name:	**Spalding**
Map Date:	**1992**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Not Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



Order Details:

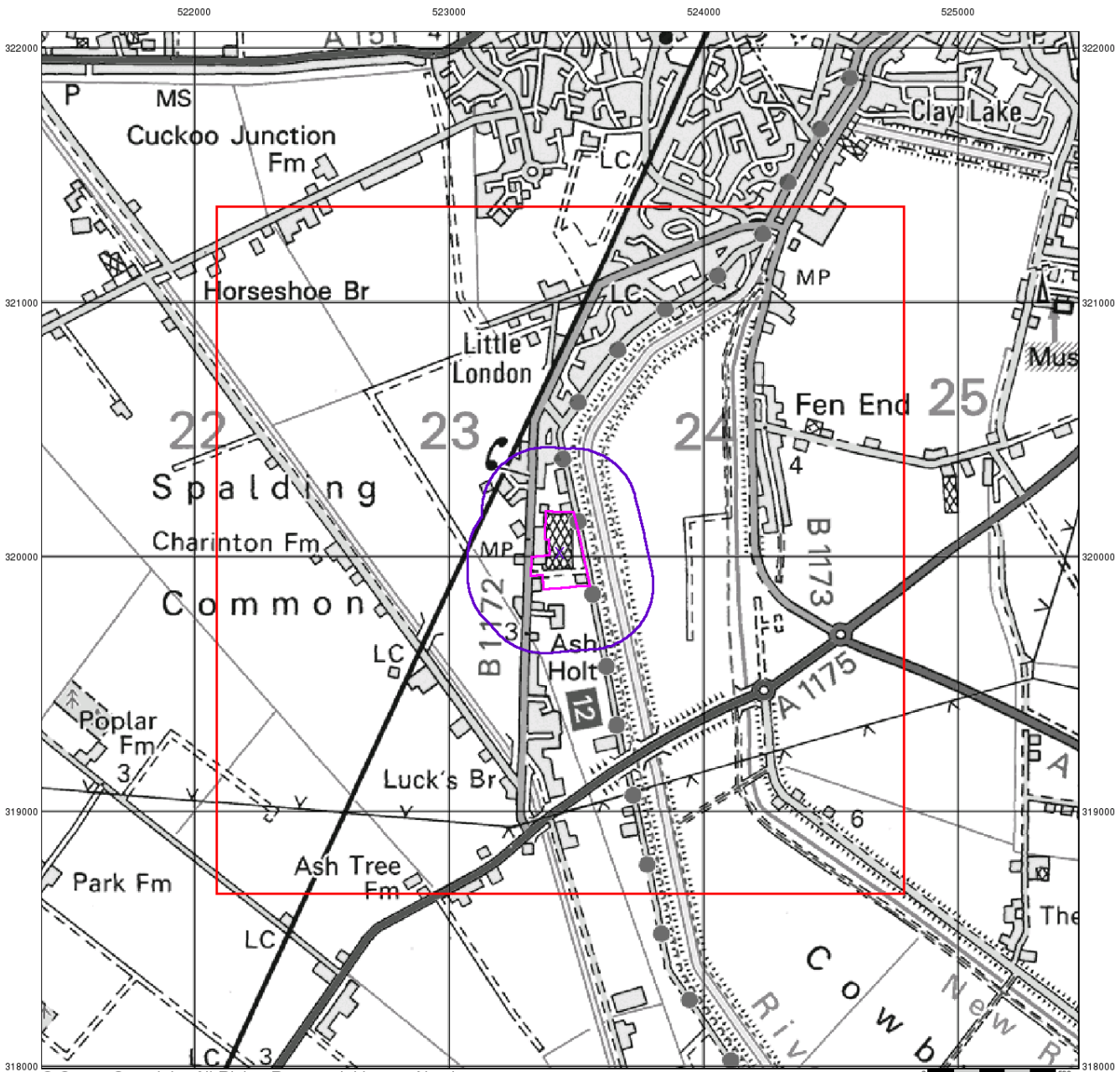
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Customer Reference:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details:

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Artificial Ground and Landslip

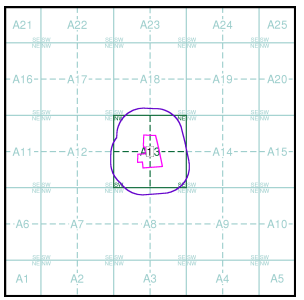
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



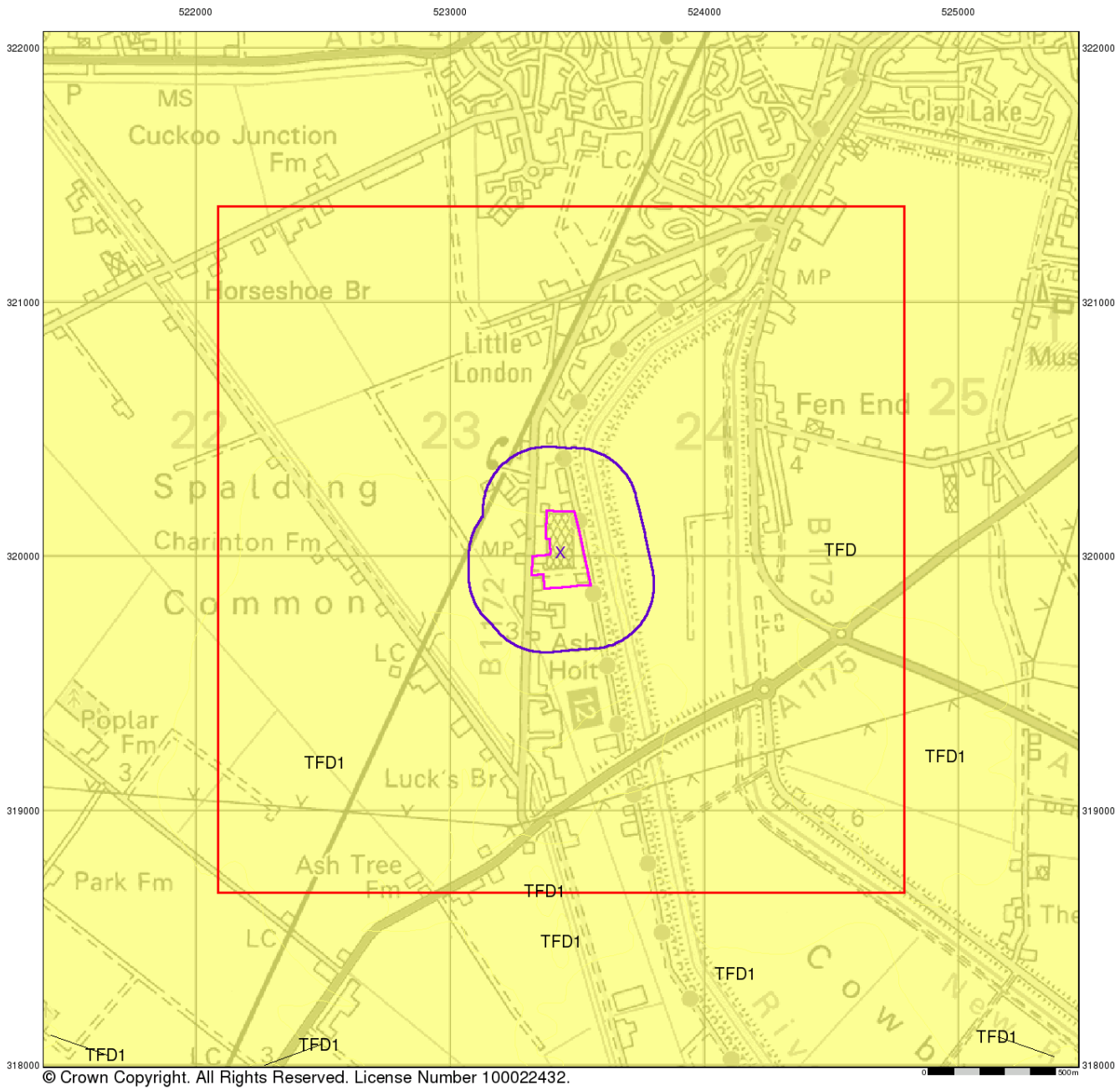
Order Details:

Order Number:	194367619_1_1
Customer Reference:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details:

Millfield Nursery, Spalding Common, Spalding

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Web: www.envirocheck.co.uk



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GeoDyne

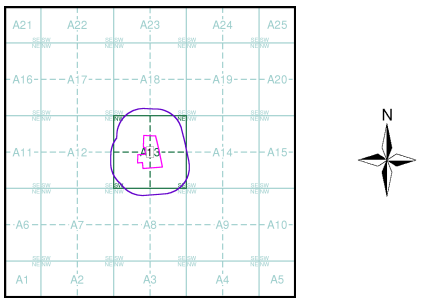
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



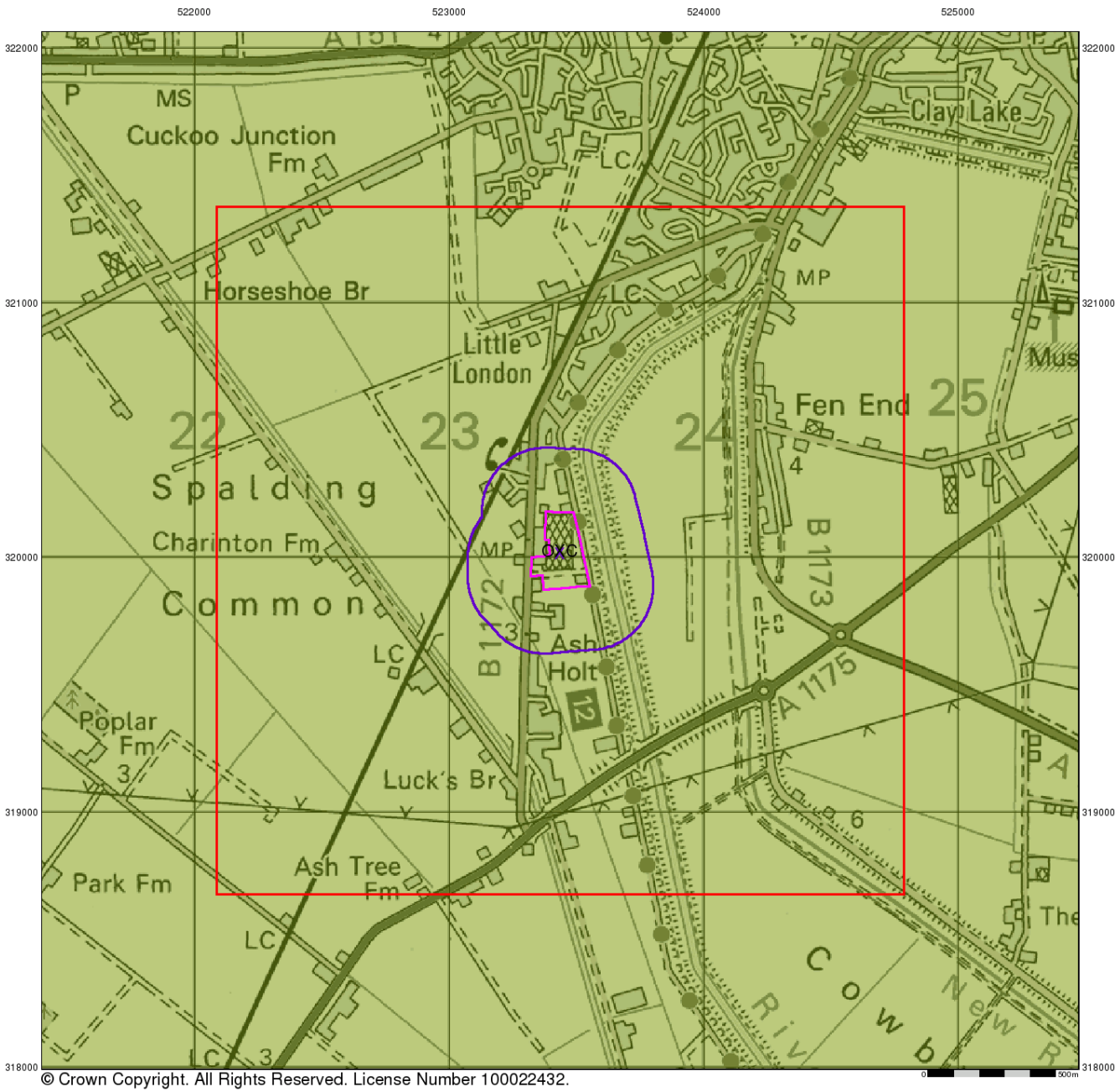
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Order Number:	194367619_1_1
Customer Reference:	D38185
National Grid Reference:	523440, 320020
Slice:	A
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Site Details:

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GeoDyne

Bedrock and Faults

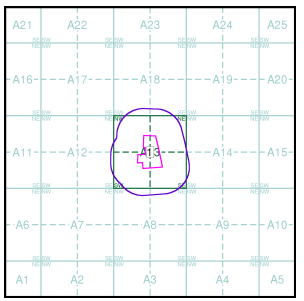
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



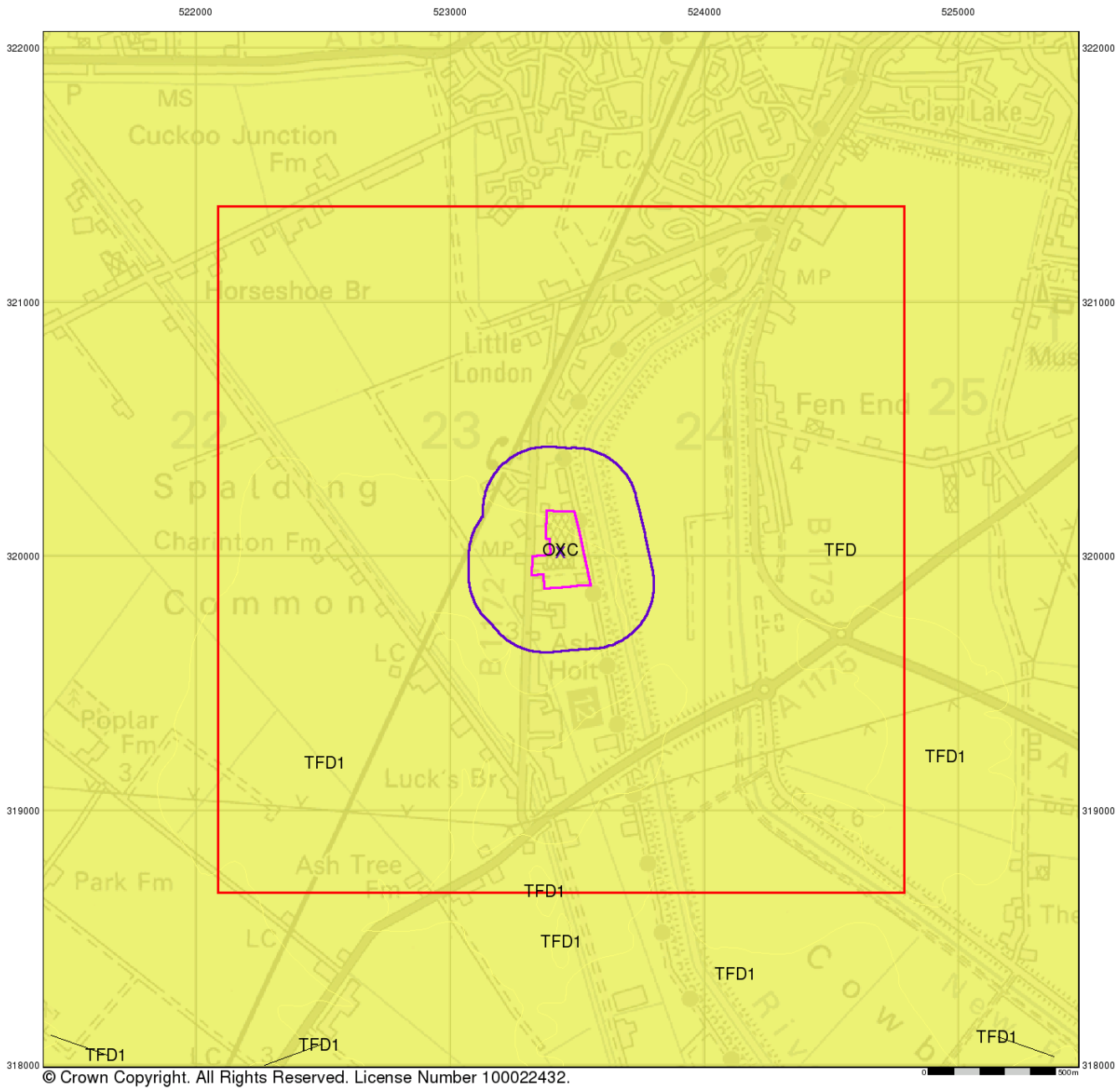
Order Details:

Order Number:	194367619_1_1
Customer Reference:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

Site Details:

Millfield Nursery, Spalding Common, Spalding

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Tel: 0844 844 9952
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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

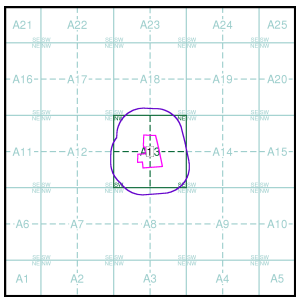
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number:	194367619_1_1
Customer Reference:	D38185
National Grid Reference:	523440, 320020
Slice:	A
Site Area (Ha):	4.67
Search Buffer (m):	250

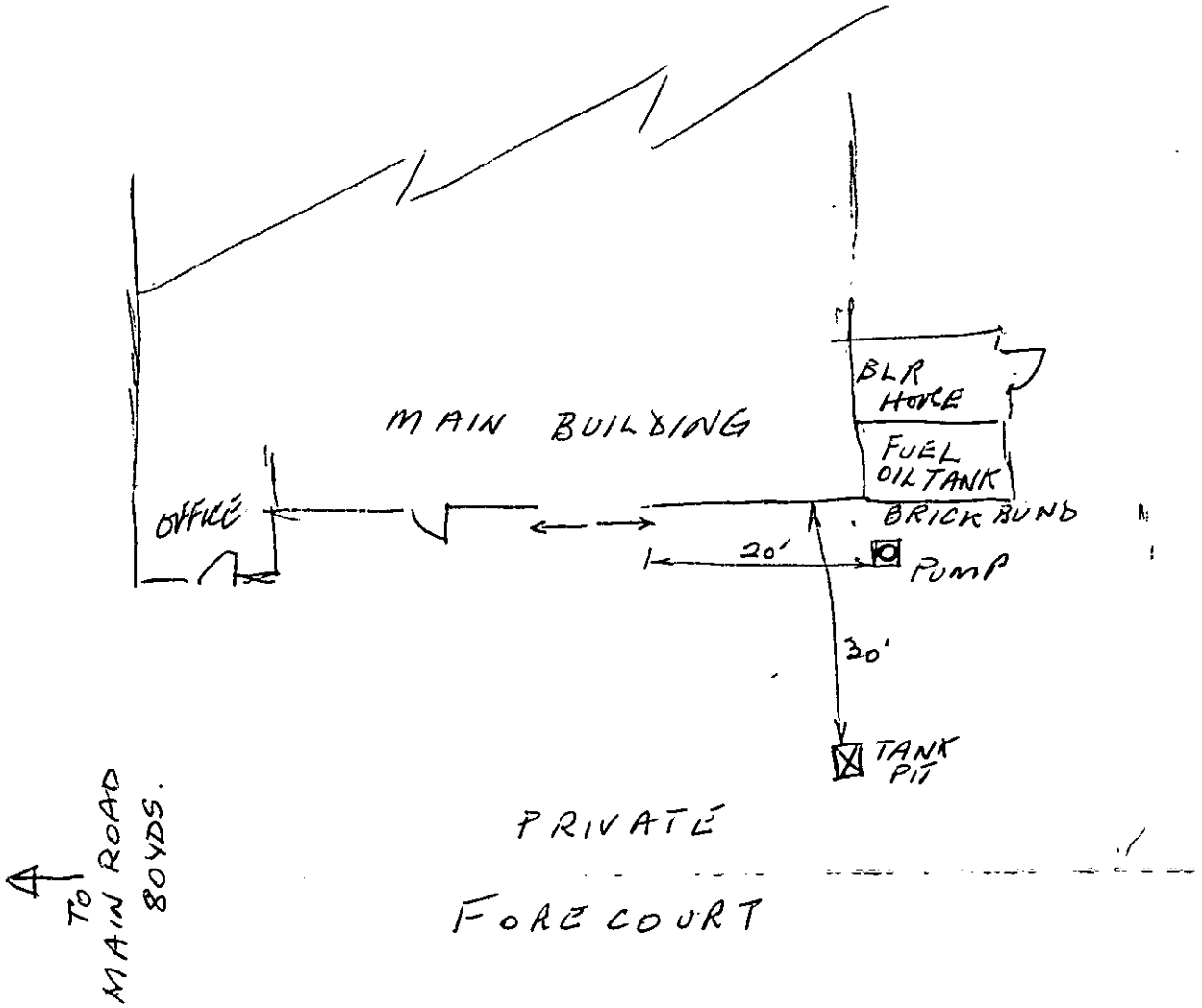
Site Details:

Millfield Nursey, Spalding Common, Spalding

GeoDyne

APPENDIX XI

Petroleum Licensing Officer Information


MAIN BUILDING
BLR HOUSE
FUEL OIL TANK
OFFICE
BRICK BUND
20'
PUMP
30'
TANK PIT
PRIVATE
FORECOURT
TO MAIN ROAD 80 YDS.
FIELD

(CO2/00695)

F10778

LINCOLNSHIRE FIRE BRIGADE
PETROLEUM FILE SUMMARY SHEET

0715

PREMISE NAME: PARIGO HORTICULTURAL CO. LTD. TEL NO: 723294

PREMISES ADDRESS: SPALDING COMMON SPALDING LINCOLNSHIRE PE11 3AU

LICENCEE NAME: 'AS ABOVE' LICENCEE ADDRESS: 'AS ABOVE'

ELECTRICAL CERTIFICATE: YES/~~NO~~ LICENCE CONDITIONS: 'A' AND 'B' + [illegible]

RE-INSPECTION PROGRAMME: ~~3~~ - ~~4~~ - 4 YEARS

MONTH: OCTOBER YEAR: 91/95/99/03

INSTALLATION DETAILS

Tank/Store	Date Installed	Capacity	Test Cycle	Tested			
No 1	1975	45446		95	00	05	07

6/8/91 RECOMMENDATIONS MADE [illegible] - but [illegible]

19/10/94 MR LEWIS CALLED EXPLAINED OPTIONS. AMF

6748 3-8-95 MOVING TEMP SAFE LETTER SENT PB

15-11-95 Tank now made Temporary safe 7/Day LFT

1/12/95 ISSUE Temp Safe Licence

13/8/96 Still temporary safe

10/09/96 ISSUE TEMP SAFE LICENCE FOR 6 MONTHS

28/11/96 NUMBER P1 FIRE SAFETY GUIDANCE NOTE AND APPROVED CONTRACTORS FAXED.

28/2/97 Tank now permanent Safe, close file 7/Day

Installed 1975.

FILE SUMMARY SHEET

ADDRESS		Spalding Common, Spalding	
OCCUPANT	Parigo Horticultural Co. Ltd.	TRADE	Horticulture
LEGISLATION APPLICABLE	Petroleum (Consolidated)	TELEPHONE NO	3294 ~~2240~~.
	Oct 1928	MONTH	
		STATION AREA	62
DATE OF INITIAL APPLICATION:		DATE OF INITIAL SURVEY	1/10/75
DATE OF SCHEDULE:		EXPIRY DATE	
DATES(S) EXTENSION EXPIRES			
DATE CERTIFICATE ISSUED:		LICENCE/CERTIFICATE NO:	
DATE(S) OF AMENDMENTS:			

RECORD OF INSPECTIONS

DATE	REMARKS	
19/11/79	Satisfactory.	
21/10/80	One extinguisher to be removed. 6 required.	
19.10.81	Satisfactory.	
12.11.82	Satisfactory	
10 83	NS Inspected. Renewal Licence STL. Quarter Elec. cert received. Extend licence Quarter	
10.84.	NS Inspected. Issue STL E/C. Issue full licence	
9.85	NS Inspected. Issue	
14.10 84 ②	Recs Made ①	
30.9.87	Recommendations see F/U 83	F.N. Johnson
20.10.87	Satisfactory	FNJ

NO. 1489
(2340)

LINCOLNSHIRE COUNTY COUNCIL

PETROLEUM (REGULATION) ACTS 1928 & 1936

FIRE BRIGADE RECORD SHEET (To be completed and returned with application)

A. FULL NAME AND ADDRESS OF APPLICANT: PARICO HORTICULTURAL CO. LTD.
BOURNE ROAD
SPALDING

TELEPHONE NO. SPALDING 3294

B. ADDRESS OF INSTALLATION: J.A. RICHARDSON (MILLFIELD NURSERIES) LTD.
SPALDING COMMON, SPALDING

TELEPHONE NO. SPALDING 2240

C. PLEASE TICK (✓) ANY OF THE FOLLOWING STORED OR USED ON THE PREMISES

PETROLEUM SPIRIT (✓) PETROLEUM MIXTURES ( ) CALCIUM CARBIDE ( )
CALCIUM DISULPHATE ( ) COMPRESSED GASES ( ) OTHER INFLAMMABLE MATERIALS ( )

D. ARE ANY OF THE ABOVE SOLD TO THE PUBLIC? ~~YES~~/NO

E. HAS THE SITE PREVIOUSLY BEEN LICENSED? YES/~~NO~~

F. IS LICENCE REQUIRED FOR - PETROLEUM SPIRIT? YES/~~NO~~
PETROLEUM MIXTURES? ~~YES~~/NO

G. TOTAL STORAGE CAPACITY - PETROLEUM SPIRIT 1,000 GALLS
PETROLEUM MIXTURES ..... GALLS

H. NUMBER OF PETROLEUM SPIRIT TANKS: ONE
DATE OF INSTALLATION OF TANKS: AUG/SEPT 1975
DATE OF LAST TANK TEST IF ANY: .....
NUMBER OF PETROLEUM MIXTURE CABINETS: —
NUMBER OF PETROILERS: —

I. TYPE AND NUMBER OF PUMPS (HAND OR ELECTRIC): ONE — ELECTRIC

J. EXPIRY DATE OF EXISTING LICENCE: 30TH SEPTEMBER 1976

K. HAVE ANY ALTERATIONS BEEN CARRIED OUT SINCE APPLICATION FOR EXISTING LICENCE?

No.

FORM S.63 (NB. Fire Brigade Officer to make line drawing of site overleaf.)

T311.

F.1035 (Rev 1/92)

LINCOLNSHIRE FIRE BRIGADE No. 16442 / (94) 1489

Petroleum (Regulation) Acts 1928 and 1936

LICENCE TO KEEP PETROLEUM SPIRIT AND PETROLEUM MIXTURES

LINCOLNSHIRE COUNTY COUNCIL in pursuance of the powers conferred on them by or under the Petroleum (Regulation) Acts 1928 and 1936

HEREBY LICENCE

PARIGO HORTICULTURAL CO LTD
SPALDING COMMON
SPALDING
LINCOLNSHIRE
PE11 3AU

(hereinafter called "the licensee") to keep —

4,546 litres of petroleum spirit,

..... litres/kilos of petroleum mixtures,

on the premises situated at SPALDING COMMON, SPALDING, LINCOLNSHIRE

.....

(hereinafter called "the licensed premises")

for the period of twelve months until 30 SEPTEMBER 1995

This licence is granted subject to the conditions set out in parts 'A' AND 'B1' of the Schedule of Conditions.

Date 1 October 1994

(Actual Date of Issue 08/12/94)

.....
for County Fire and Emergency Planning Officer

NOTES

1. *Any person to whom a Petroleum Spirit Storage licence is granted or transferred who contravenes any condition of the licence is guilty of an offence and liable on summary conviction to a fine not exceeding the statutory minimum, or on conviction on indictment to a fine of unlimited amount. (Petroleum (Consolidation) Act 1928, Section 1(3); Health & Safety at Work etc. Act 1974, Section 33(3))*
2. *Whenever any accident which occasions loss of life or personal injury occurs by explosion or fire in or about or in connection with any licensed premises, the occupier of the premises shall, if the explosion or fire involved petroleum spirit, forthwith send or cause to be sent to the Health & Safety Executive, 1 Chepstow Place, Westbourne Grove, London W2 4TF, notice of the accident and of the loss of life or personal injury. (Petroleum (Consolidation) Act 1928, Section 13(1).)*

MEMORANDUM OF TRANSFER OF LICENCE

This Licence is hereby transferred on the date hereunder mentioned to

.....

of .....

.....

DATED this day of 19

.....
for County Fire and Emergency Planning Officer

GeoDyne

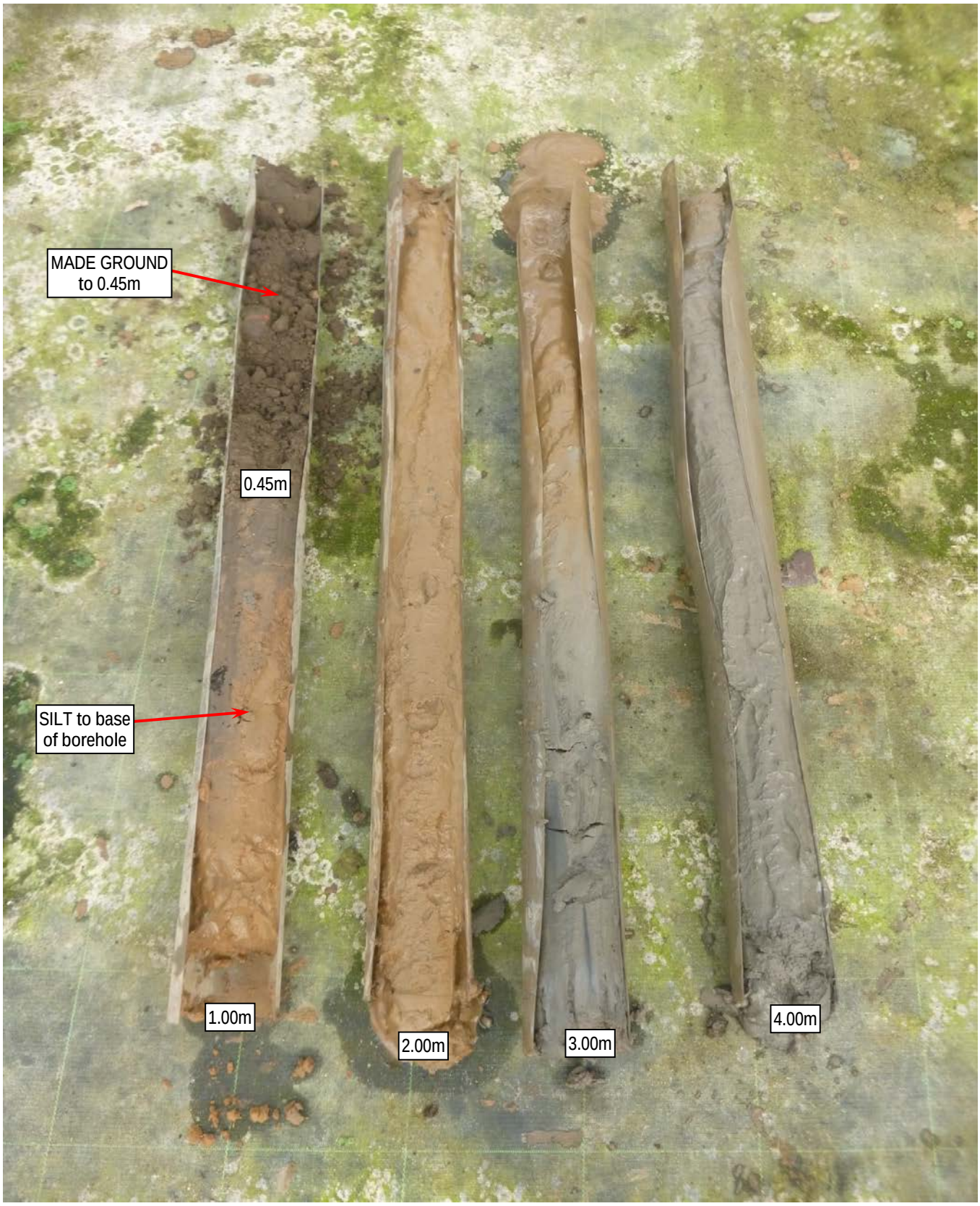
APPENDIX XII

Plates



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS1	Rev.	
		Plate No.	1

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS3	Rev.	
		Plate No.	2

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS5	Rev.	
		Plate No.	3

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS6	Rev.	
		Plate No.	4

GeoDyne



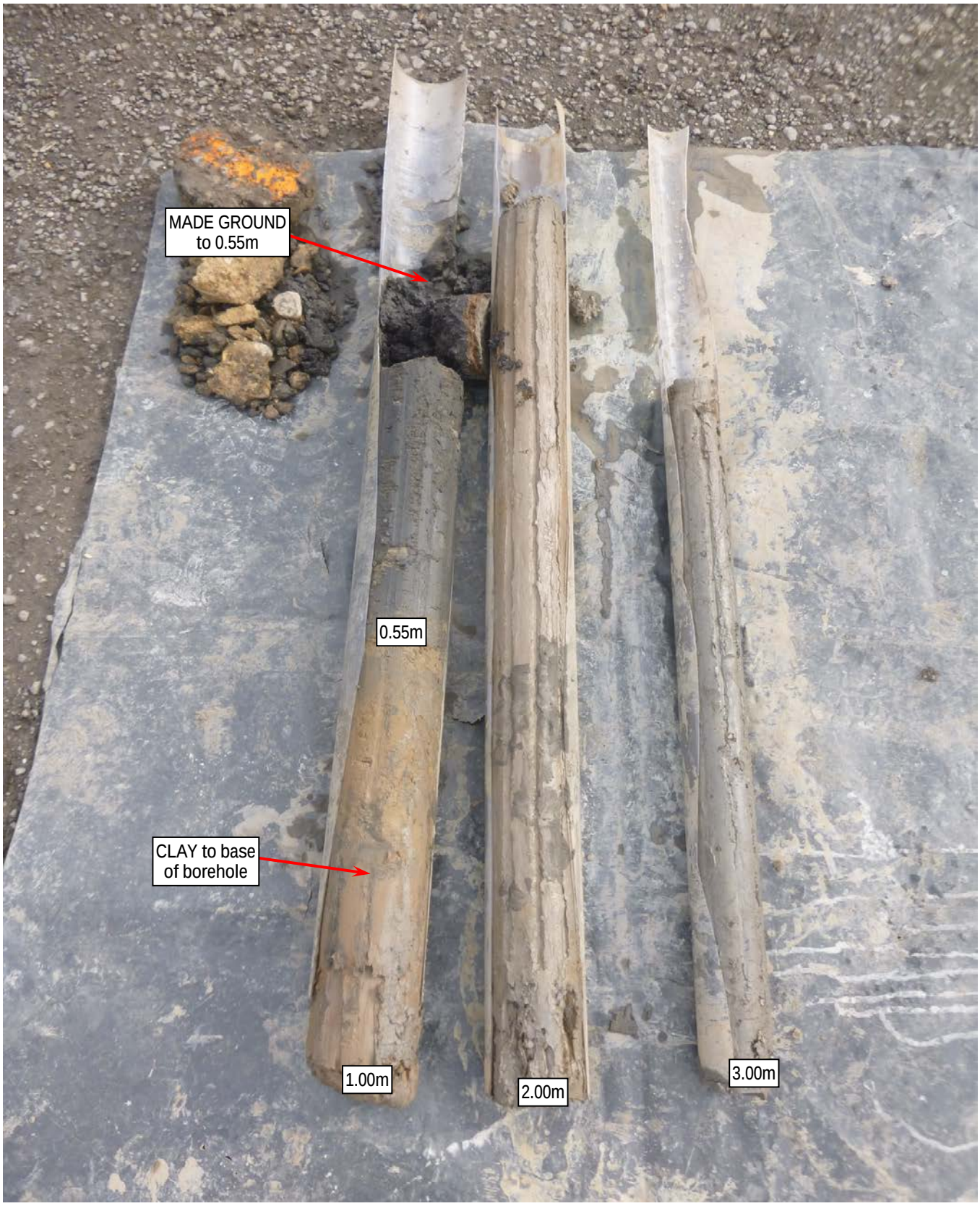
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Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS7	Rev.	
		Plate No.	5

GeoDyne



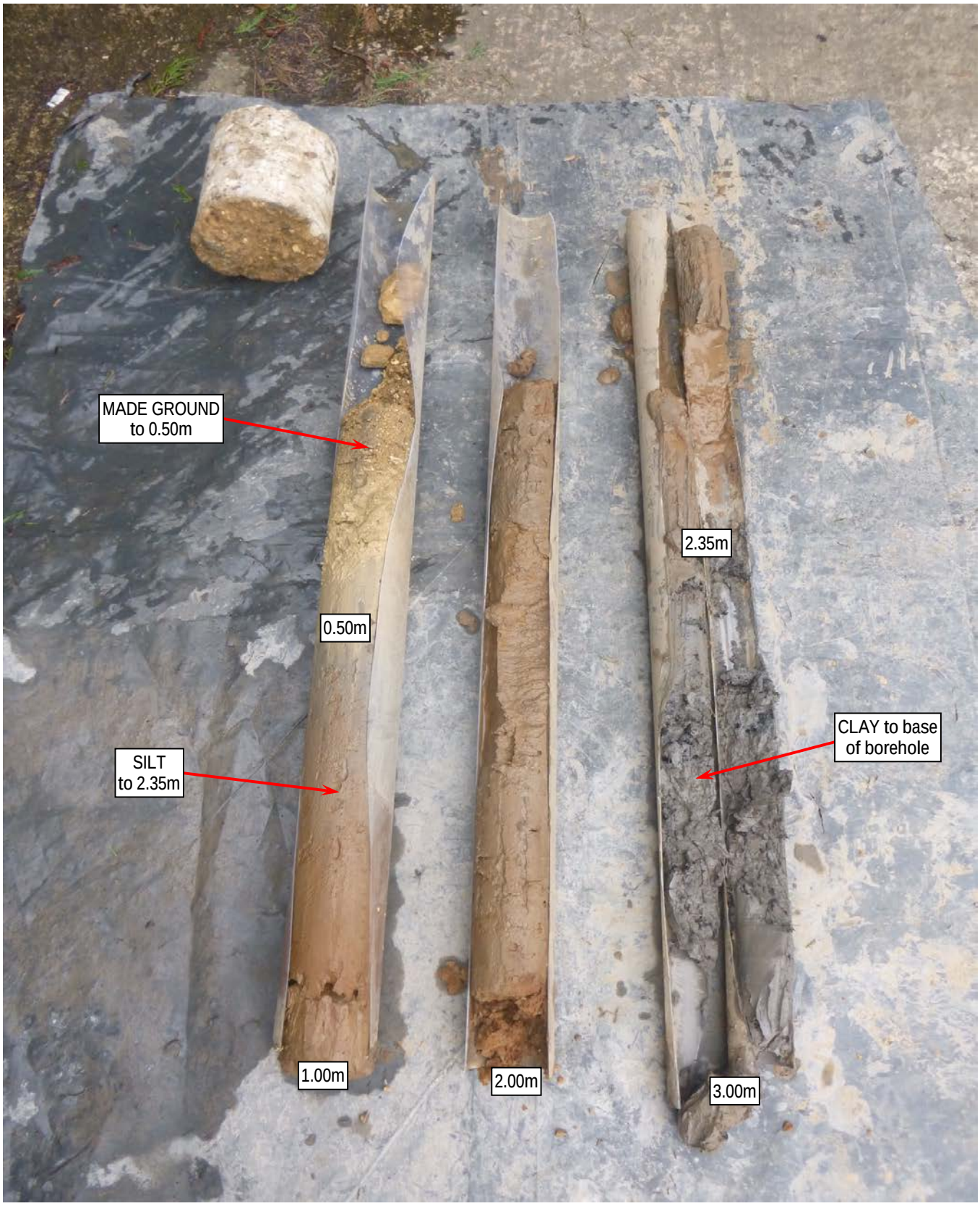
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Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS9	Rev.	
		Plate No.	6

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS11	Rev.	
		Plate No.	7

GeoDyne



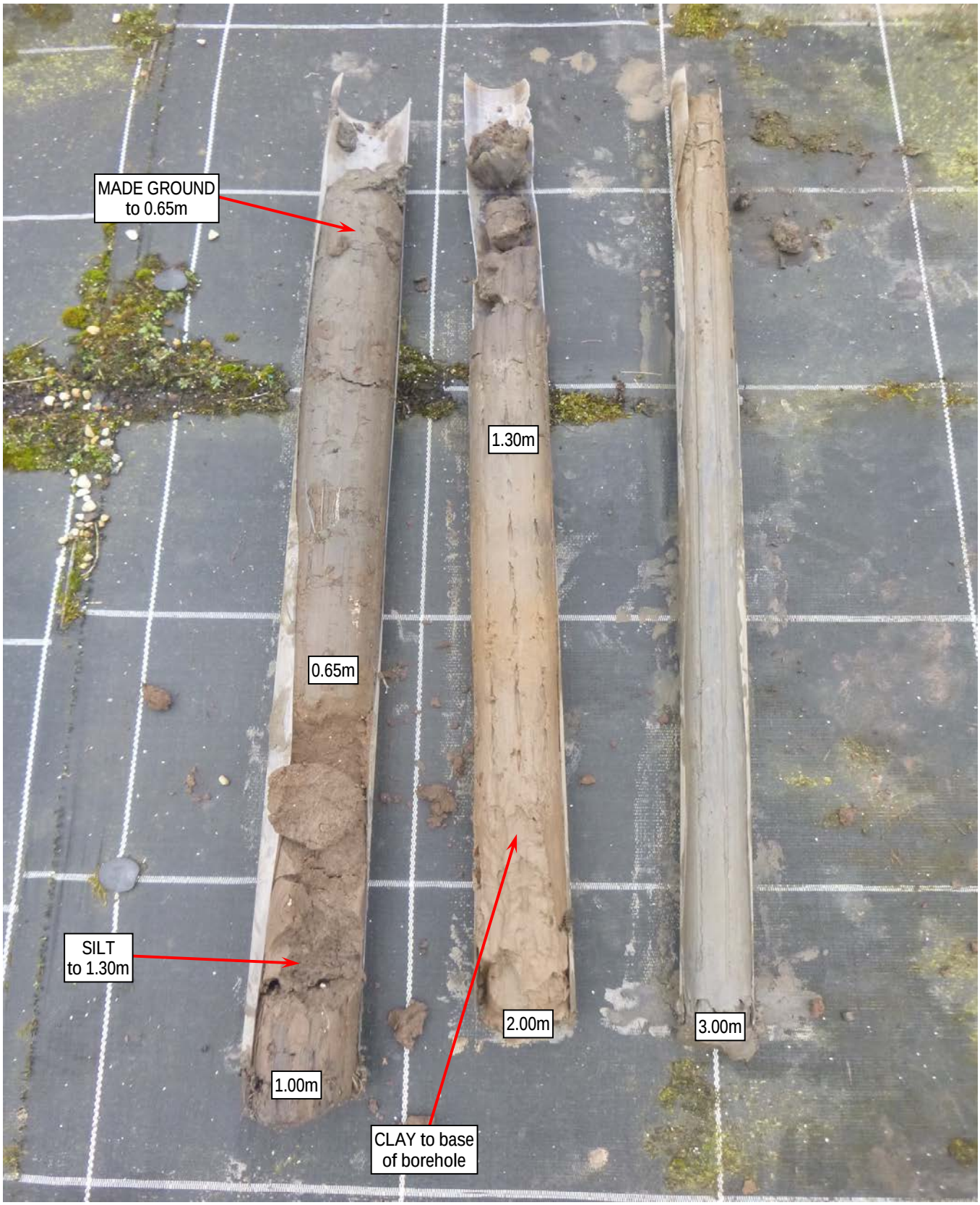
Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS13	Rev.	
		Plate No.	8

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS14	Rev.	
		Plate No.	9

GeoDyne



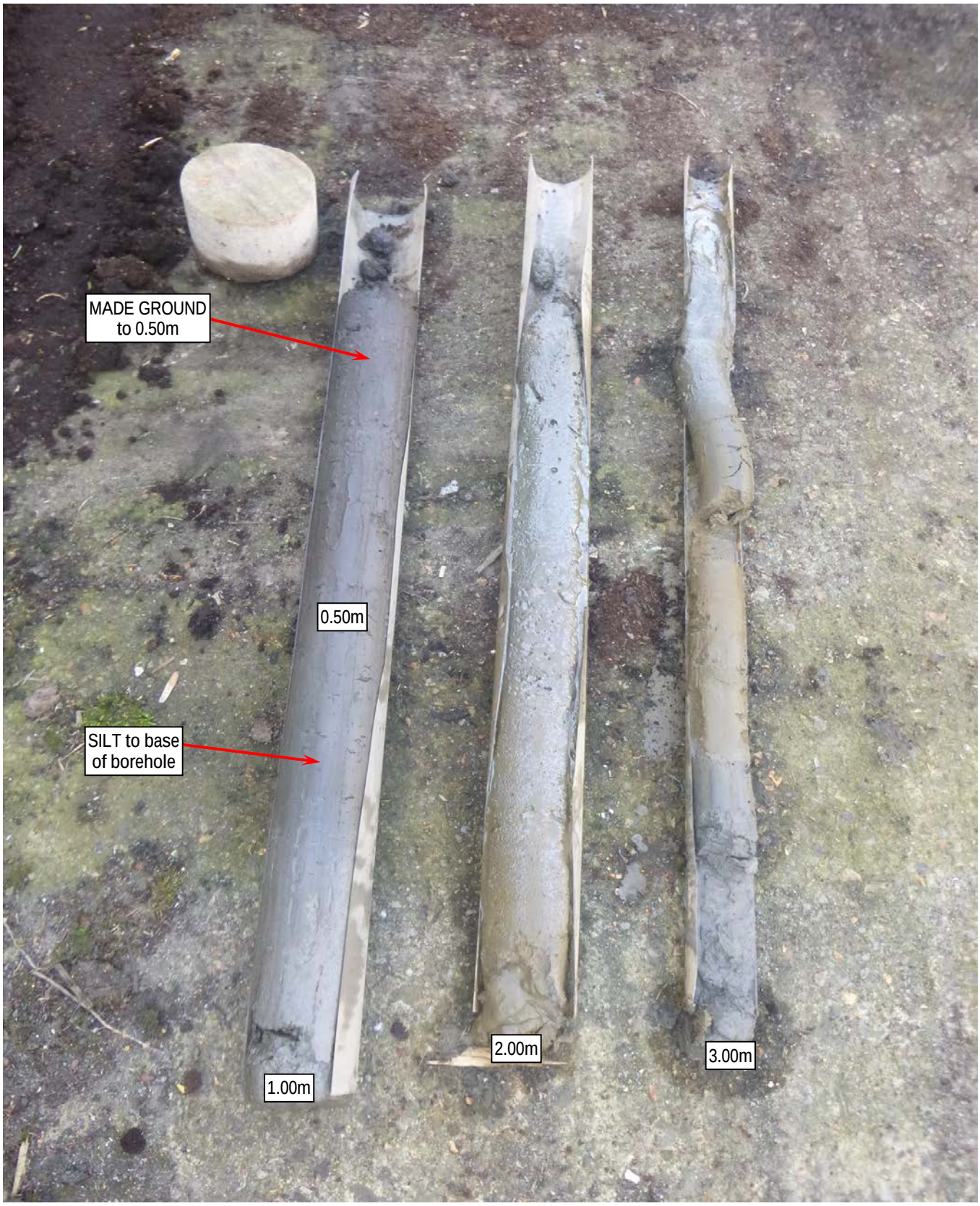
Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS16	Rev.	
		Plate No.	10

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS18	Rev.	
		Plate No.	11

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS20	Rev.	
		Plate No.	12

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS21	Rev.	
		Plate No.	13

GeoDyne



Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	Recovered Cores from WS23	Rev.	
		Plate No.	14

GeoDyne



Above Ground Fuel Storage Tank (AST) in Southwest of Site

Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	General Site Views	Rev.	
		Plate No.	15

GeoDyne





Infrastructure associated with anticipated former ASTs (both pictures)

Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	General Site Views	Rev.	
		Plate No.	16

GeoDyne



Derelict Windmill in Northwest of Site

Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	General Site Views	Rev.	
		Plate No.	17

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Mature Conifers Surrounding Much of the Site

Project No.	D38185	Drawn	SS
Client	Seagate Homes	Checked	PK
		Approved	PK
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
Title	General Site Views	Rev.	
		Plate No.	18

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APPENDIX XIII

Development Proposals Plan
(Figure No. D38185/06)



DO NOT SCALE

REPRODUCED FROM THE STUDIO 11 ARCHITECTS DRAWING 'SKETCH SITE LAYOUT', DWG NO. 456.SK.01, REVISION A, DATED OCTOBER 2018. SUPPLIED BY, AND USED WITH PERMISSION OF, THE CLIENT.

Project No.	D38185	Drawn	SJ
Client	Seagate Homes	Checked	*PK*
		Approved	*PK*
Project	Millfield Nursery, Spalding	Scale	NTS
		Date Drawn	02/05/2019
		Rev.	
Title	Development Proposals Plan	Figure No.	D38185/06

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APPENDIX XIV

Conditions & Limitations

Conditions & Limitations

Phase I Desk Studies

1. Works undertaken to provide the basis of the Phase I Desk Study report comprise a review of information available from a number of sources/parties (potentially also including the Client) together with a walk over of the site (where applicable and included within the quotation). The opinions given in the Phase I Desk Study are based on the information available from third parties/sources that has been obtained within the available timeframe. GeoDyne Limited assumes all third party information to be true and correct and therefore cannot accept liability for the accuracy of such information supplied.

2. Should additional information become available that may affect the comments and opinions made within the Phase I Desk Study, GeoDyne Limited reserves the right to review such information and make modifications to comments/opinions as appropriate.

3. It should be borne in mind that a Phase I Desk Study collates available information to generate a conceptual model of the site. The actual geotechnical and environmental considerations can only be fully quantified by intrusive investigation works to confirm the accuracy of the conceptual site model.

Phase II Intrusive Investigations

1. Our quotation assumes that access to the site will be arranged by others at no cost to ourselves.

2. We have assumed that free access is available throughout to the entire site and that works can be undertaken during a single mobilisation. Where restricted access is encountered, or where additional unscheduled mobilisations are required, additional costs may be incurred to the client.

3. We have assumed that all available information relating to buried services will be supplied by the Client at no cost to ourselves. No responsibility will be accepted for damage to underground services that have not been brought to our prior attention by the Client.

4. All excavations/boreholes will be backfilled with compacted arisings upon completion, with any excess arisings left proud of ground levels. Excess arisings will not be removed from the site unless specifically requested by the Client. Where we are requested to remove excess arisings, all associated costs will be passed to the Client.

5. We will attempt to leave the site in a clean and tidy state, however, it must be understood that some disturbance of the site is unavoidable during intrusive works.

6. Exploratory holes are positioned approximately on site by GeoDyne Limited. Should the client require precise locations of all exploratory points, additional fees will be incurred. It must be borne in mind that backfilled trial pits can create ‘soft spots’, therefore, should the Client wish to designate ‘no dig’ zones, for example under the footprint of proposed structures, these must be brought to our attention prior to commencement of works.

7. Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions or seasonal variation.

8. Trial pits and boreholes examine only a small proportion of the total site area. No liability can be accepted for conditions not revealed in exploratory holes, particularly between positions. All extrapolations of available data are given in good faith.

Payment

1 Payment terms are strictly 28 days from the invoice date.

2 Prior to commencement of works, we require receipt of formal written instruction from the party accepting full financial responsibility for the work. In the absence of such an instruction, we would expect the instructing Consulting Engineers/Architects to accept full financial responsibility for the works.

3 Receipt of instruction to commence work shall be taken as acceptance and compliance of the foregoing conditions.

Liability

1. GeoDyne Limited offer £5,000,000.00 Professional Indemnity Insurance (in aggregate over the year). This shall be the limit of our liability for works undertaken. No individual liability shall be implied to, or accepted by, any employee for works undertaken for and on the behalf of GeoDyne Limited.