PROPOSED RESIDENTIAL DEVELOPMENT

AT

LAND NORTH OF HUMBER DOUCY LANE,

IPSWICH

FOR

WO & PO JOLLY HOLDINGS LTD

FINAL
GEOTECHNICAL AND GEOENVIRONMENTAL INTERPRETATIVE REPORT
REPORT NUMBER 16118SI

NOVEMBER 2022

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Use and reliance
This report has been prepared for the sole internal use and reliance of WO & PO Jolly Holdings Ltd. This report shall not be relied upon by other parties without the express written authority of RSA Geotechnics Ltd. If an unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care and skill.
Authorisation
Authorisation for the investigation was given by Trevor Sparkes of Trevor Sparkes Consulting Limited, acting on behalf of the Client, WO & PO Jolly Holdings Ltd in an email dated 29/06/22.
Limitations
This report considers the proposals for the subject site at the time of issue of the report. Should the scheme change significantly then the implications regarding the geotechnical and geoenvironmental aspects will need consideration relative to the new proposals. This report is based on the results of the fieldwork and laboratory testing carried out and on an examination of the recovered samples. The possibility that different conditions may exist other than at the exploratory hole positions, or at greater depth, should not be ruled out. In particular, groundwater records apply only to the time and place of investigation, since wide variations may occur through seasonal or other causes. Advice and recommendations have been based on the findings of the investigation. It must be appreciated that not finding indicators does not mean that hazardous substances do not exist on the site. The site investigation only permits a small proportion of the site to be inspected. RSA Geotechnics Limited have based this report on the results of the desk study and recent intrusive investigation and the testing carried out, as well as the other sources detailed within the report, which are believed to be reliable. However, RSA Geotechnics Limited cannot and does not guarantee the authenticity or reliability of the third-party information that it has relied upon.

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Appendix 2: Risk assessment methodology and legislative background; Risk classification system; Published guidelines
Appendix 3: Screening values for 'residential' development.
Appendix 4: Landmark Envirocheck data search report.
Appendix 5: Landmark Ordnance Survey map extracts.
Appendix 6: Mining and Ground Stability Datasheet
Appendix 7: Third party report - Historic Land Drainage Plans & Historic Water Main Plans
Appendix 8: Location Surveys – Desktop Utilities Survey Report.
Appendix 9: Zetica Bomb Map – North Ipswich

EXECUTIVE SUMMARY

Desk Study	
Proposed development	The proposed scheme comprises of the construction of a low-rise residential development, with associated roads, parking, private gardens and landscaping.
Site location and description	The site was located to the north of Humber Doucy Lane in Rushmere, located approximately 3.5 km north west of Ipswich town centre. The site can be approximately located using National Grid Reference TM 186 467.
Current and historic site use	Historically the site has been occupied by open land parcels used for agriculture and has included ponds within the eastern part of the site and land drains in the south and along the site boundaries. Various ponds, some associated with land drains have been located around the periphery of the site.
Geology and hydrogeology	The geological maps for the area indicate the site is covered by a layer of superficial deposits comprising the Lowestoft Formation (Glacial Till) underlain by Glacial Sands and Gravels, both of the Anglian Glaciogenic Group, underlain by sands and gravels of the Kesgrave Catchment Subgroup – Dunwich Formation and the Red Crag Formation – Crag Group. Lowestoft Formation - Secondary Aquifer (undifferentiated). Red Crag Formation - Principal Aquifer.
Potential sources of contamination/ key geotechnical issues	Back filled ponds and land drains on site, around the periphery of the site and close to the site boundary. These features have been backfilled with unknown materials that could contain contaminants of concern and could contain degradable materials that could contribute to the production of ground gases. Land uses outside of the site boundary have included a yard adjacent to the north-east and a refuse tip and pet cemetery to the north-west. Fly-tipped garden and household waste on Allen's House access track. Heave and desiccation of cohesive till deposits, from seasonal desiccation due to crops, and in vicinity of mature trees and hedgerows surrounding the sites.

Site Investigation	
Fieldwork	The fieldwork comprised the drilling of three cable percussion boreholes (to target depths of 15 m), ten window sample holes, twenty-four trial pits (including six soakaway test pits) and twenty dynamic cone penetrometer (DCP) tests. The fieldwork was carried out between 10 August 2022 and 27 September 2022, with six subsequent monitoring visits for ground gas and ground water levels being undertaken between 30 September and 28 October 2022.
Ground conditions	Topsoil/Made Ground Lowestoft Formation
Geotechnical recommendation	Spread foundations extending to a minimum depth of 1.5 m and locally deepened to fully penetrate desiccated 'crust' and glacial clay within the range of influence of existing, felled and proposed trees. Fully suspended floors and full anti-heave precautions are recommended in all the dwellings. Flexible pavement construction. Deep soakaways discharging into the sands and gravels below the cover of clay.
Identified contaminants	None
Geoenvironmental recommendations	No remediation is required to protect the identified receptors. The assessment of the soils against Tier 1 screening values for a 'residential with homegrown produce' end use has not identified any exceedances based on the level of testing completed to date. A potential risk for asbestos to be present within the soils has been identified and it is recommended that a watching brief be carried out during the ground development work for any potential ACM, or other previously undiscovered contamination.

1. INTRODUCTION

Consideration is being given by WO & PO Jolly Holdings Ltd to the development of land to the north of Humber Doucy Lane, Ipswich. The proposed scheme comprises the construction of an extensive low-rise residential development with associated access roads, parking, private gardens and communal landscaping.

The layout of the proposed development considered in this report is illustrated on the current Draft Masterplan in drawing number 16118SI/1. It should be noted that the proposed sport pitches to the north of the residential development area and the land to the south-west of Humber Doucy Lane shown on the masterplan do not form part of the land parcel under assessment by this report and fall outside the agreed area for this scope of works.

This interpretative report describes a combined phase 1 desk study and preliminary phase 2 intrusive investigation to the directions of Mr Trevor Sparkes of Trevor Sparkes Consulting Ltd, the Consulting Engineer, acting on behalf of the Client, WO & PO Jolly Holdings Ltd. Instruction to proceed with the works was provided in an email dated 29 June 2022.

The scope of the works was as requested by Trevor Sparkes in his original email dated 24 May 2022 and outlined in RSA Geotechnics Limited quotation AJS/QUO/8173 dated 25 May 2022, and comprised the following:-

- Undertake desk study research based on historical and environmental data provided by Envirocheck and a reconnaissance survey of the site.
- Construct three cable percussion boreholes to target depths of 15 m, carry out a series of twenty-five targeted window sample holes to 4m and twenty dynamic cone penetrometer tests.
- Carry out six BRE 365 trial pit soakage test in accordance with BS 6297: 2007 to provide soil infiltration rates for drainage design.
- Install five wells to monitor groundwater levels (where groundwater is present) and to assess the risks from potentially hazardous ground gases and vapours.
- Carry out geoenvironmental chemical analysis to measure the concentration of a range of commonly occurring potential contaminants.
- Prepare an interpretive report regarding both geotechnical and geoenvironmental factors that may influence the development plans.

The purposes of the investigation were to determine ground conditions beneath the site and to provide initial geotechnical and geoenvironmental recommendations for use in the design of the project.

Due to fieldwork programming, some of the window sample borehole locations were replaced with machine excavated trial pits.

2. SITE SETTING

2.1 Site location

The site was located to the north of Humber Doucy Lane in Rushmere, located approximately 3.5 km north west of Ipswich town centre and can be approximately located using National Grid Reference TM 186 467. The site location is illustrated on drawing number 16118SI/1 and the extent is shown on the image on the front page of the report.

2.2 Site description

A reconnaissance visit was undertaken on 15 July 2022 by an engineer from RSA Geotechnics Ltd.

At the time of the site visit, both the main site, comprising a large arable field and a smaller triangular arable field immediately north, and the smaller secondary site, situated to the southeast, comprising in part a small arable field and part of one of the grass pitches to Ipswich Rugby Football Club (RFC), were cropped with barley.

Figure 1 – Main Field, North of Humber Doucy Lane – View NW

Figure 2 – Triangular Field to North of Lacey's Farm Access Track – View West

The main field (Figure 1) and triangular field (Figure 2) were bounded by a railway line in the north, Tuddenham Road to the northwest, and the grounds of Allen's House, Lacey's Farm, Tower House, part of Tuddenham Lane and the grounds of Ipswich Rugby Football Club to the east. Humber Doucy Lane and the grounds of Tuddenham Road Business Centre, Westerfield House,

Figure 3 – Small Field West of Seven Cottages Lane – View E

Westerfield House Farm and Westerfield House Cottage were to the southwest.

Immediately south of Ipswich Rugby Club, north of Humber Doucy Lane and west of Seven Cottages Lane, was the smaller secondary site, comprising an arable field (Figure 3) and part of a rugby pitch (Figure 4). The western section of the rugby pitch between the smaller site, eastwards to the access track to the rugby club, and bordering the main field to the west, was outside of the development boundary.

Two other land parcels forming part of the masterplan, located to the north of the railway line, and southwest of Humber Doucy Lane and Westerfield House, were outside the scope of this investigation.

Figure 4 – Small Field and Rugby Pitch, SE Corner of Development – View E

Figure 5 – Railway Line to North of Main Site

The northern boundary to the site, immediately north of the main small triangular field, was formed by an east-west trending railway line, running in a 4 to 5 m deep cutting (Figure 5) and crossed by two bridges in the vicinity of the site, Tuddenham Road to the west and Lacey's Farm to the northeast.

Figure 6 – Allen's House/Lacey's Farm Access Track - View West

Immediately south of the triangular field was an access track to Allen's House/Lacey's Farm, (Figure 6) trending eastwards from an entrance on Tuddenham Road by Tuddenham Road Business Centre. The lane turned south toward Allen's House in the northeast corner of the site. Partway along the access track in a verge/layby area was a pile of fly-tipped garden and household waste (Figure 7).

The largest field was bounded to the west by the grounds of Tuddenham Road Business Centre (Figure 8), Westerfield House Farm (Figure 9), Westerfield House Care Home (Figure 10) and Westerfield House Cottage (Figure 11). All these properties were accessed off either Tuddenham Road to the west or Humber Doucy Lane to the southwest and south (Figure 12).

Figure 7 – Fly-tipping on Access Track

Figure 8 – Tuddenham Road Business Centre

Figure 9 – Westerfield House Farm

Figure 10 – Westerfield House (Care Home)

Figure 11 – Westerfield House Cottage

Figure 12 – Humber Doucy Lane

The eastern boundary to the main field comprised the access track and grounds of Allen's House (Figure 13), Lacey's Farm, Tower House and the existing and derelict water towers (Figure 14); part of Tuddenham Lane opposite Millbank House (Figure 15); and the grounds and main floodlit pitches of Ipswich Rugby Football Club, accessed via Humber Doucy Lane. (Figure 16).

Figure 13 – Track to Allen's House

Figure 14 – Water Towers, NE Boundary of Site

Figure 15 – Tuddenham Lane/Millbank House

Figure 16 – Entrance to Ipswich RFC

A pedestrian footpath ran along the tree lined eastern boundary of the main field (Figure 17), within the grounds of the rugby club, via the club's entrance track and linking Humber Doucy Lane to Tuddenham Lane.

A second footpath crossed the smaller southeastern site (Figure 18), crossing from Humber Doucy Lane opposite Kinross Road and running up the eastern boundary to the rugby club to Tuddenham Lane, adjacent to Villa Cottage.

Figure 17 – Footpath running up eastern boundary to main field/western edge of grounds to Ipswich Rugby Football Club.

Figure 18 – Footpath crossing Rugby Pitch

Figure 19 – Seven Cottages Lane

The smaller second site, to the southeast of the main site, was bounded to the north by a mature tree lined hedgerow, backing onto the pavilion and car park of Ipswich RFC. To the south it was bounded by a mature hedgerow bordering Humber Doucy Lane and to the east by mature trees and hedgerows along Seven Cottages Lane (Figure 19).

3. DESK STUDY

3.1 Sources of information

Historical Ordnance Survey maps and data from a search of Public Registers were obtained from the Landmark Information Group Limited using their Envirocheck product (reference number 298514201_1_1). This included information from organisations such as the Environment Agency, Local Authority, British Geological Survey, Natural England and others. The maps included a range of historic and modern Ordnance Survey maps sourced at a range of scales.

It should be noted that the following text does not generally consider features beyond a search radius of 250 m, since based on their distance from the site, a risk from these features was not generally identified. However, for further details outside this 250 m radius a full list is given in Appendix 4.

3.2 Historical land use

The historical land use of the site and immediate surrounding area has been assessed by reference to the Ordnance Survey maps in the Envirocheck Report, as detailed in Table 3.2.

Table 3.2 – Historical land use

Date	On site	Surrounding area
1881-1882	The site is split into numerous land parcels used as agricultural land. Two footpaths were located within the south-eastern quarter of the site and a third ran across the northern part of the site. A road traversed the northern section of the site from the north-east to the west.	The surrounding land comprises open agricultural fields, footpaths and occasional houses. Some larger houses including Rushmere Villa and Westerfield House were located 250m to the east of the site and adjacent to the north western site boundary respectively. A potential Clay Pit was located 110m to the north-east of the site and a railway line ran adjacent to the northern site boundary.
1904	No significant changes.	Allotment Gardens were located 150m east of the site. Allen's Farm was located adjacent to the north-eastern site boundary. Two wells were located approx. 20m from the north-eastern site boundary. A small Pond was located adjacent to the eastern site boundary (due south of the Clay Pit).

Table 3.2 – Historical land use		
Date	**On site**	**Surrounding area**
1927	No significant changes.	A feature thought to represent a pond was located adjacent to the north-western site boundary (due east of Westerfield House) and two residential houses had been developed adjacent to the western site boundary. The buildings to the north-east located near the former Clay Pit are illustrated as Lacy's Farm. A Water Tower is present on the north-eastern site boundary.
1951	Land drains are located within the south-western and south-eastern parts of the site. Two Ponds were located within the eastern area of the site.	A residential housing estate had been developed along the south-western boundary of the site. A Pond and off-site land drain were also located approx. 10m from the site boundary at the northern end of the residential estate. An Electricity Substation within the housing estate was located approx. 50m south of the site boundary. Another Pond and off-site land drain were located adjacent to the south-western most part of the site with a second larger Pond located approx. 90m to the south at Rushmere Hall. A Playing Field was adjacent to the western site boundary near Westerfield House and a second water tower and a yard were adjacent to the north eastern site boundary.
1952-1967	No significant changes.	A Refuse Tip was located approximately 75m to the west of the northern part of the site. The former Clay Pit was now a pond and numerous other ponds were located in the vicinity of Lacy's Farm (between 60 and 100m to the north-east).

Table 3.2 – Historical land use		
Date	**On site**	**Surrounding area**
1970-1972	No significant changes.	Playing fields and Tennis Courts had been developed within the residential estate to the south-west. A Pavilion and Sports Ground had been developed just north of the south-eastern quarter of the site. Whykes Farm was located approximately 100m to the east of the site. The Yard associated with the Water Towers, adjacent to the north-eastern site boundary was annotated as Ipswich Corporation Yard.
1994	No significant changes.	Pound Meadow was located approximately 100m to the south-east of the site. One of the water towers along the eastern site boundary had been decommissioned.
1999	No significant changes.	No significant changes.
2000-2021	No significant changes.	Millennium Cemetery was located 240m to the west of the site.

3.3 Unexploded ordnance

Reference was made to the Zetica bomb map database (https://www.zetica.com) to carry out an initial risk assessment for unexploded ordnance in the general area of the proposed development.

The development area is located within a Low Risk area, but is close to a Moderate risk area (due south west) associated with Ipswich Town. Unexploded ordnance has been identified within a 5 km radius of the site, with one find being located approximately 3.6km to the south-west on Civic Drive in Ipswich and a second located 3.5km to the east in Kesgrave off Main Road (A1214).

The risk from UXO for the site and local area is illustrated on the Zetica bomb map included in Appendix 9

3.4 Public Register data

Public Register data and other information was received as part of the Envirocheck Report. This included information from the Environment Agency, Local Authority, British Geological Survey, Natural England and several other sources. A full list of the data obtained can be found in Appendix 4 of this report. It should be noted that the positions of symbols on the environment map supplied are not always very accurate and that judgement should be used in locating each item. It should also be noted that the following summary is generally

restricted to a search radius of 250 m on the basis that beyond this distance a low to negligible risk is identified. The environmental information is summarised in Table 3.4.

Table 3.4 – Summary of environmental data from Envirocheck Report			
Agency, authorisations & controls			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Discharge Consents	1	4	The on-site recorded consent is operated by The Kesgrave Trading Company at Tuddenham Road Business centre and relates to the discharge of Final/Treated effluent into a tributary of the River Fynn. The consent appears to still be in operation. A review of the maps indicates the location is off site approximately 10m to the west of the northern area of the site. Three of the four consents located within a 250m radius are all associated with the discharge of Final/Treated effluent at domestic properties into a tributary of the River Fynn. The Discharge Consent located approx. 65m to the north was for agricultural and surface water discharge (Trade Discharge) into groundwater.
Pollution Incidents to Controlled Waters	0	0	The two incidents recorded beyond a 250m radius were associated with the accidental leakage/spillage of organic chemicals approx. 690m away to the south on a road. The incident severity for both entries was recorded as Category 3 – Minor.
Waste			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Historical Landfill Sites	0	1	An historical landfill was recorded approx. 30m to the north-west of the site on Tuddenham Road. No further information was supplied. This entry is possibly associated with the Refuse Tip identified in this area on the 1952-1967 OS map.

Table 3.4 – Summary of environmental data from Envirocheck Report			
Waste			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Local Authority Recorded Landfill Sites	0	1	A Local Authority Recorded Landfill record exists for the same area as the historical landfill site referenced above, but provides little further information, other than to state a closure date of pre-1974.
Registered landfill site	0	0	The closest registered landfill site was located approx. 680m to the west and was operated by Cubbits Ltd at Church Lane, Westerfield for the acceptance of construction and demolition waste. The license for the site was recorded as lapsed/cancelled/defunct/not applicable/surrendered.
Potentially Infilled Land (Water)	0	0	An area of potentially infilled land (pond, marsh, river, stream, dock) was located approx. 640m to the west of the site and a second was located 680m to the east of the site.
Potentially Infilled Land (Non-Water)	0	0	Unknown filled ground (pit, quarry) located approx. 590m to the west.
Hazardous substances			
No information relating to the site or surrounding area was recorded under this section.			
Geological			
Subject	**Details/Remarks**		
BGS 1:50,000 Sheet 207 'Ipswich'	Site indicated to be underlain by Lowestoft Formation underlain by Red Crag.		
BGS Online Geology Viewer	Site indicated to be underlain by Red Crag (bedrock) described as a coarse grained, poorly sorted, cross bedded, abundantly shelly sand. Superficial Deposits were identified as Lowestoft Formation (Glacial Till) a chalky till containing outwash sands and gravels, silts and clays. The Till is characterised by its chalk and flint content.		
BGS Boreholes*	There were no publicly available borehole records on site; the closest borehole (TM14NE31) was listed approximately 80 m to the west of the site and revealed deposits considered to represent Glacial Till (Lowestoft Formation) to a depth of 21.6 m with the underlying Red Crag recorded beneath to a depth of 24.4m below ground level (bgl). A second off site borehole (TM14NE50 located 310m to the west) which was drilled to a depth of 63m bgl, confirmed similar geology, with the presence of London Clay, Lambeth Group and Upper Chalk beneath the Red Crag. This borehole recorded the presence of groundwater at approx. 40m bgl.		

Table 3.4 – Summary of environmental data from Envirocheck Report			
Geological			
Subject	**Details/Remarks**		
BGS Recorded Mineral Sites*	Allen's Farm Pit was recorded 125m to the north-east of the site and was recorded as an opencast sand and gravel mine. The status of the mine was recorded as Ceased.		
Coal Mining Affected Areas	The site was located within an area that might not be affected by Coal Mining.		
Mining instability	No data was recorded under these headings within a 1km radius of the site.		
Man-Made Mining Cavities			
Natural Cavities			
Non-Coal Mining Areas of Great Britain*	Rare to Unlikely risk		
Ground stability hazard potential*			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Collapsible Ground	Very Low	n/a	n/a
Compressible Ground	No Hazard	n/a	n/a
Ground Dissolution	No Hazard	n/a	n/a
Landslide	Low to Very Low	Low	n/a
Running Sand	Very Low	n/a	n/a
Shrinking or Swelling Clay	Low to No Hazard	n/a	n/a
BGS Urban Soil Chemistry Averages			
Subject	**Details/Remarks**		
Arsenic	13 mg/kg		
Cadmium	<1 mg/kg		
Chromium	39 mg/kg		
Lead	119 mg/kg		
Nickel	15 mg/kg		
Radon Potential – Radon Affected Areas (NGIS*)	Less than 1% of homes estimated to be at or above Action Level		

Table 3.4 – Summary of environmental data from Envirocheck Report			
BGS Urban Soil Chemistry Averages			
Subject	**Details/Remarks**		
Radon Potential – Radon Protection Measures (NGIS*)	No radon protection measures considered necessary (BGS)		
Hydrogeological, hydrological, flooding			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Water Abstractions (Groundwater/ Surface Water)	0	0	The nearest groundwater abstraction was located approx. 715m to the east and was associated with a public potable water supply operated by Anglian Water.
Source Protection Zones	1	1	The site is located within Zone III (Total catchment) of a Source Protection Zone. Zone II (Outer protection Zone) is located approx. 170 to the north-east of the site and Zone I (Inner Protection Zone) is located approx. 340m to the north-east.
Extreme Flooding or Flooding from Rivers or Sea without Defences	No	No	n/a
Areas Benefiting from Flood Defences?	No	No	n/a
Subject	**Details/Remarks**		
Groundwater Vulnerability	The datasheet entry records the superficial secondary aquifer (Glacial Till/Lowestoft Formation) as having high vulnerability.		
Bedrock Aquifer Designations	Principal Aquifer (Red Crag)		

Table 3.4 – Summary of environmental data from Envirocheck Report			
Hydrogeological, hydrological, flooding			
Subject	**Details/Remarks**		
Superficial Aquifer Designations	Secondary Aquifer [undifferentiated] (Glacial Till/Lowestoft Formation).		
Nearest Surface Water Feature	An on-site surface water feature (drainage ditch) was identified within the eastern area of the site.		
River Quality	No data within 500 m radius.		
BGS Groundwater Flooding Susceptibility	Limited potential for groundwater flooding to occur on site.		
Industrial land use			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Contemporary Trade Directory Entries	0	2	Ipswich Pet Cemetery was located 75m to the north-west and a domestic cleaning service was located 110m to the south-east. Both were recorded as Inactive.
Fuel Station Entries	0	0	None
Points of Interest - Commercial Services	0	1	A distribution and haulage service was located approx. 13m to the north.
Points of Interest - Education and Health	0	2	Both entries related to the Pet Cemetery 75m to the west.
Points of Interest - Manufacturing and Production	2	0	Both entries related to the business centre which is located off site to the west.
Points of Interest - Public Infrastructure	0	1	Related to the Pet Cemetery.
Points of Interest - Recreational and Environmental	0	0	Beyond 251m – The nearest entry was a playground located approx. 475m to the south-east.

Table 3.4 – Summary of environmental data from Envirocheck Report			
Sensitive land use			
Subject	**On site**	**Within 250 m**	**Details/Remarks**
Environmentally Sensitive Areas	0	0	The Suffolk River Valleys located approx. 340m to the north were recorded as environmentally sensitive areas.
Nitrate Vulnerable Zones	Yes - 4	-	Site located within nitrate vulnerable zones for Bucklesham Mill River, River Lark/Fynn and River Gipping (surface waters) and Sandlings and Chelmsford (groundwater).
* National Geoscience Information Service			

3.5 Environmental site reconnaissance visit

The site reconnaissance visit encountered the following potential contaminative sources:

- Occasional litter around site periphery, along Humber Doucy Lane, Nine Cottages Lane and localised fly-tipping along the access track to Lacey's Farm.
- agricultural vehicular use may have led to fuel and oil leaks and spills.
- crop spraying

3.6 Summary of desk study

A summary of the salient points from the desk study review is provided in Table 3.6.

Table 3.6 – Summary of key points identified by desk study research and site inspection

Subject	Relevant detail
Site History	Historically the site has been occupied by open land parcels used for agriculture and has included ponds within the eastern part of the site and land drains in the south and along the site boundaries. Various ponds, some associated with land drains have been located around the periphery of the site. An unnamed track/road has always crossed the northern part of the site providing access to Allen's House/Lacey's Farm located east of the site. The site has historically been surrounded by open farmland, farm buildings, a residential estate to the south-west, a yard and water towers to the east and a refuse tip to the north-west. More recently a small business park and Millennium Cemetery has been developed to the west of the northern area of the site.
Geological Units and Aquifer Designations	Lowestoft Formation (Glacial Till) – Secondary Aquifer – Undifferentiated. Red Crag – Principal Aquifer
Identified potential sources of on-site contaminants	Back filled ponds and land drains on site, around the periphery of the site and within close proximity to the site boundary. These features have been backfilled with materials of unknown origin that could contain contaminants of concern and contain degradable materials that could lead to the production of ground gas. Materials used to create tracks and foot paths across the site. Agricultural machinery operating on site and crop spraying.
Identified potential sources of off-site contaminants	Former refuse tip to the north-west of the site. Former yard located adjacent to eastern site boundary at the location of the water tower. Backfilled ponds and land drains located on and around the periphery of the site and on nearby land (includes former clay pit). Former Pet Cemetery and existing Millennium Cemetery to the northwest of the site. Occasional litter around site periphery, along Humber Doucy Lane, Nine Cottages Lane and localised fly-tipping along the access track to Lacey's Farm.
Other key information	The site is located within Zone III (Total catchment) of a Source Protection Zone I is located approx. 340m to the northeast of the site. The site was located within a Low risk UXO area, but close to a Moderate risk area and two UXO's have been identified within a 5 km radius of the site.

3.7 Outline conceptual model

3.7.1 Introduction

A conceptual model represents the characteristics of the site that show the possible relationship between sources (contaminants), pathways and receptors (or targets).

The following outline conceptual model has been based on the results of the desk study and environmental reconnaissance of the site. It has been used in the design of the intrusive investigation in order to effectively target the exploratory holes.

The outline conceptual model is developed later in the report, in the light of the results of the intrusive investigation, to produce the refined conceptual model given in subsection 7.4.

The proposed development comprises redevelopment for residential purposes, mainly low-rise residential housing. A 'residential with homegrown produce' end use category has therefore been adopted for the risk assessment of the site.

In order to classify the anticipated risk associated with the proposed development the classification system defined in Table A shown in Appendix 2 has been adopted (from CIRIA C552). The level of risk was determined by the product of the potential consequence (minor, mild, medium, severe) of the contaminant hazard and probability of it occurring (unlikely, low likelihood, likely, high likelihood). A risk level has been assigned to each possible pollutant linkage.

3.7.2 Potential sources, pathways and receptors

The potential sources, pathways and receptors identified by the desk study data are summarised in Table 3.7.2.

Table 3.7.2 – Potential sources, pathways and receptors	
Potential sources	
On site:	**Off site:**
Any made ground materials used to backfill ponds, ditches and land drains on site or used to create footpaths and tracks across the site. Any agricultural vehicular use on site that may have led to leaks and spills. Crop Spraying. Potential risk for UXO. Sulphate and acidic pH contents in the made ground and natural deposits.	Off-site migration of contamination from nearby current and historic land uses including yards and farm buildings Ground gas from made ground from backfilled off-site ponds and land drains. Possible ground gas migration from historical refuse tip. Leaching and migration of contaminants associated with former Pet Cemetery and current Millennium Cemetery located to the north-west of the site.
Potential pathways	
Direct contact Inhalation Ingestion Leaching and migration via groundwater Migration via permeable soils Uptake by plants.	
Potential receptors	
End users Groundworkers Controlled waters Off-Site receptors Building materials Vegetation.	

3.7.3 Potential pollutant linkages

The considered potential source-pathway-receptor linkages for the site and their perceived level of associated risk are summarised in Table 3.7.3A.

Table 3.7.3A – Potential relevant pollutant linkages

Source	Contaminants	Pathway	Receptor	Probability	Consequence	Risk classification	Comments
Localised made ground (used as backfill in ponds, ditches and land drains and to form tracks and footpaths)	Heavy metals, PAH, TPH	Direct contact Ingestion Inhalation	End users Groundworkers Off-site receptors	Low Likelihood Low Likelihood Low Likelihood	Mild Minor Minor	Low Very Low Very Low	Less of a risk considered to Groundworkers and off-site receptors due to limited exposure
		Leaching and migration via groundwater	Controlled Waters Off-site receptors	Unlikely Unlikely	Medium Minor	Low Very Low	The Red Crag located beneath the Lowestoft Formation is a Principal Aquifer, but local borehole logs suggest the overlying Lowestoft Formation is mainly cohesive and has a thickness of 21.6m locally.
		Plant uptake	Vegetation	Low likelihood	Minor	Very Low	Any made ground present on site is considered likely to be present in localised areas associated with backfilled features and access tracks/pathways. As a result a low likelihood is generally expected for the probability of receptors coming into potential contact with it.
		Direct contact	Building materials	Low Likelihood	Minor	Very Low	
	Ground gas, vapour	Inhalation	End users Groundworkers	Low Likelihood Low Likelihood	Mild Minor	Low Very Low	
	Sulphate and pH	Direct contact	Building materials	Low Likelihood	Minor	Low	
	Asbestos	Inhalation	End users Groundworker Off-site receptors	Low likelihood Low likelihood Low likelihood	Medium Medium medium	Moderate/Low Moderate/Low Moderate/Low	The risk posed to human site receptors from any asbestos present within localised made ground can be reduced by minimal disturbance, dampening down of soils and provision of appropriate PPE.

Table 3.7.3A – Potential relevant pollutant linkages

Source	Contaminants	Pathway	Receptor	Probability	Consequence	Risk classification	Comments
Agricultural vehicle movements on site (localised leaks and spills) and crop spraying	Hydrocarbons (TPH, PAH, BTEX, MTBE) Herbicides and pesticides.	Direct contact Ingestion Inhalation	End users Groundworkers Off-site receptors	Low Likelihood Low Likelihood Low Likelihood	Mild Minor Minor	Low Very Low Very Low	Less of a risk considered to Groundworkers and off-site receptors due to limited exposure
		Leaching and migration via groundwater	Controlled Waters Off-site receptors	Unlikely Unlikely	Medium Minor	Low Very Low	Generally cohesive nature of overlying Lowestoft formation and significant thickness will mitigate potential risk to Principal Aquifer.
		Direct contact	Building materials	Low Likelihood	Minor	Very Low	A potential risk would only be present where contamination was present within an area that coincided with building structures.
Off-site backfilled ponds and land drains, cemeteries, yards and farm buildings	Heavy metals, hydrocarbons (TPH, PAH, BTEX, MTBE), VOC, SVOC, pathogens, ground gases, vapours.	Leaching and migration via groundwater and permeable soils.	End users Groundworkers Building materials	Unlikely	Minor	Very Low	The geology in the local area comprises Lowestoft till which is typically of a cohesive nature, which will reduce the likelihood of potential contaminants migrating onto site from off-site sources.

Asbestos, invasive plant species and UXO is not compatible with the above risk assessment matrix, so these items have been given separate consideration in Table 3.7.3B.

Table 3.7.3B – Risk associated with asbestos, invasive plants and UXO	
Source/Contaminant	**Associated impacts/Issues**
Asbestos	Loose asbestos fibres or asbestos containing materials could be present within any made ground materials used as backfill to form pathways/tracks across the site. These features are localised, which will reduce the potential for exposure to site receptors and the risk can be further mitigated by the dampening down of soils during dry periods and providing groundworkers with asbestos awareness training and appropriate PPE. Should any asbestos be identified during the groundworks an assessment of the asbestos contamination should be undertaken by a geoenvironmental engineer to determine an appropriate course of action.
Invasive Plant Species	No obvious signs of invasive or problematic plant species such as Japanese Knotweed were noted during the site reconnaissance visit. Consideration could be given to undertaking a specialist survey to identify any invasive plant species on the site, or perimeter to minimise the risk of unexpected costs associated with treatment and removal at a later date.
UXO	The site is located within a Low Risk zone for UXO based on the information obtained from the Zetica database, but the site is located close to a Moderate risk area (the town of Ipswich) and two UXO's have been found within a 5 km radius of the site. It may be prudent to undertake a UXO desk study to provide further information on the status of the site and potential risks associated with UXO, especially with the site having been open farmland prior to, during and post WW2, with any bomb strikes potentially going unrecorded.

4. GROUND INVESTIGATION

4.1 Fieldwork

The investigation comprised the fieldwork summarised in Table 4.1A:

Table 4.1A – Summary of exploratory holes

Type of excavation	Exploratory hole numbers	Dates undertaken	Depths of exploratory holes (m)
Cable percussion boreholes	BH1 to BH3	31/08/22 to 27/09/22	15.0 m
Window samples	WS1 to WS10	10/08/22 to 11/08/22	2.80 to 4.00 m
Trial pits	TP1 to TP18	15/08/22 to 17/08/22	2.50 to 3.00 m
BRE DG365 Soakage Pits	TP195, TP205, TP215, TP225, TP235 & TP245	17/08/22 to 18/08/22	2.50 to 3.00 m
Dynamic cone penetrometer (DCP) tests	DCP1 to DCP20	11/08/22 to 25/08/22	0.81 to 0.88 m

The locations of the exploratory holes are illustrated on drawing number 16118SI/2. The locations of the exploratory holes were chosen by RSA Geotechnics to provide reasonable coverage of the site and to target areas of potential contamination sources identified during the desk study and site reconnaissance visit. The selected positions were set out using GPS equipment and the co-ordinates are presented on the exploratory hole logs.

The start of the fieldwork was delayed until after the barley crop had been harvested on the main field and smaller field to the southeast, to avoid damage to the crop from the site investigation equipment.

A utilities information park was obtained for the site (see Appendix 8) and surrounding area. No existing mains utilities were recorded to currently cross the site. However, historical information provided by the Client suggests that older metal water mains cross the site from the old water tower and to Lacey's Farm, but these are no longer in use, but may still be present. All of the exploratory hole locations were scanned with a cable avoidance tool (CAT) and the three cable percussion boreholes were commenced with a hand dug pit to 1.2 m depth. No services were encountered in the exploratory holes.

The methodology of undertaking the fieldwork is given in Appendix 1. Full details of the fieldwork and the ground conditions are shown on the logs and test reports.

Ground gas monitoring pipes were installed in five exploratory holes to monitor the presence of any ground gas and groundwater beneath the site. Details of the installations are shown in Table 4.1.B.

Table 4.1B – Response zones of installations			
Location	**Date of installation**	**Response zone (mbgl)**	**Strata**
WS4	10/08/22	0.50 – 3.90	Topsoil/Lowestoft Formation
WS5	10/08/22	0.50 – 4.00	Made Ground/Lowestoft Formation
BH1	01/09/22	0.50 – 3.50	Topsoil/Lowestoft Formation
BH2	22/09/22	0.50 – 3.50	Topsoil/Lowestoft Formation
BH3	27/09/22	0.50 – 3.50	Topsoil/Lowestoft Formation

The wells were monitored on six occasions, on 30 September and 11, 17, 20, 24 and 28 October 2022. The monitoring results are presented later in this report.

Full details of the fieldwork and the ground conditions are shown on the relevant exploratory hole logs later in this report.

4.2 Laboratory testing

Soil samples obtained from the investigation works were scheduled for the geotechnical and geoenvironmental laboratory testing as detailed in Tables 4.2A and 4.2B.

Table 4.2A – Summary of scheduled geotechnical laboratory analyses				
Test	**Number of tests in each stratum**			**Remarks**
	Topsoil/Subsoil	Made ground	Lowestoft Formation	
Water Content	1	-	52	
Plasticity Limit	-	-	12	
Undrained Triaxial	-	-	4	
Particle Size Distribution (PSD)	-	-	4	
pH and sulphate	-	-	9	

All the samples from the initial window sampling were screened with a photo-ionization detector (PID) to measure concentrations of volatile organic compounds (VOCs) prior to undertaking the environmental testing.

The geotechnical soil laboratory testing and PID screening was carried out between 19 August and 20 October 2022 at Soil Property Testing Ltd.'s UKAS accredited laboratory and RSA Geotechnics In-house laboratory. The testing was conducted in accordance with BS 1377: 1990, British Standard 'Methods of tests for soils for civil engineering purposes'.

Table 4.2B – Summary of scheduled geoenvironmental laboratory analyses				
Determinand	**Number of tests in each stratum**			**Remarks**
	Topsoil	Made Ground	Lowestoft Formation	
CLEA suite*	20	-	2	
Asbestos screen	10	-	-	
Organochlorine Pesticides	9	-	1	
Organophosphorus Pesticides	9	-	1	
Triazine Herbicides	9	-	1	
WAC leachate suite	3[1]	-	1[1]	2 Topsoil Composite, 1 Topsoil/Lowestoft Composite[1]
* Includes commonly occurring determinands including heavy metals, polycyclic aromatic hydrocarbons (PAH), phenol, cyanide, sulphate and pH				

The chemical contamination analyses were carried out between 16 and 26 August 2022, by DETS Ltd, which has UKAS, ISO 17025 and MCERTS accreditation. The Waste acceptance criteria (WAC) testing was undertaken between 15 and 22 September 2022 following review of the initial results on combined composite samples from across the site.

The results of the laboratory testing are given in the test reports later in this report.

5. GROUND CONDITIONS

5.1 British Geological Survey Data

The British Geological Survey (BGS) GeoIndex Onshore viewer and Sheet 207 'Ipswich, bedrock and Superficial Edition, 2006', indicated that the site was underlain by Diamicton (Boulder Clay) and Glacial Sand and Gravel of the Lowestoft Formation – Albion Glacigenic Group, underlain by the Kesgrave Catchment Subgroup of the Dunwich Group, the Red Crag Formation of the Crag Group and the London Clay Formation of the Thames Group. The geological map for the area indicated that the Red Crag pinched out to the northwest, west and northeast of the site, and Glacial Sand and Gravel was exposed in the railway cutting to the north of the site.

Lowestoft Formation (Albion Glaciogenic Group – Anglian Stage, 0.48 – 0.42 Ma)
Remapping and reclassification of the glacial deposits of East Anglia now subdivide the former Lowestoft Till into several different tills occurring over specific areas of East Anglia. However, the till beneath the site has not been classified on the updated map other than as Glacial Till of the Lowestoft Formation of the Albion Glacigenic Group.

The Lowestoft Formation forms an extensive sheet of chalky lodgement till, together with outwash sands and gravels, silts and clays. The lodgement till was deposited at the base of a glacier and its overconsolidated nature is due to the weight of the ice above. The tills are characterised by their chalk and flint content and the carbonate content of the till matrix is about 30%. The Lowestoft Formation unconformably overlies a large range of Mesozoic, Palaeogene, Neogene and early Pleistocene bedrock formations.

The Lowestoft Formation may comprise three main soil types. The first is the Lodgement Till which typically consists of overconsolidated clay that contains varying amounts of gravel and sometimes cobbles and boulders. Lodgement Till was deposited at the base of the glacier and its overconsolidated nature is due to the weight of the ice above. Some of the gravel, cobble and boulder materials can be transported great distances and can be completely different to the local geology.

The second soil type comprises glaciofluvial sand and gravel. These are soils that are deposited in a fluvial environment probably as outwash from the glacier. They predominantly comprise sands and gravels, but layers of silt and clay can also be present.

The third soil type comprises glaciolacustrine silts. These are soils that are deposited in a lake environment temporarily dammed by ice and also as a result of daily or seasonal outwash as the glacier retreats. The soils are predominantly silts with pockets and lenses of clay.

Kesgrave Catchment Subgroup (Dunwich Group – Pleistocene, 2.58 – 0.01 Ma)
The Kesgrave Catchment Subgroup (formerly Kesgrave Formation and Kesgrave Sands and Gravels) is a variable deposit found across east Essex and Suffolk, which encompasses fluvial, lacustrine and organic deposits of the pre-diversionary River Thames, and the pre-glacial soils developed on such deposits. Most of the surviving deposits are fluvial gravels, with sedimentary structures indicating deposition by a braided river. Lacustrine silts and clays and

organic peats are uncommon. The gravels are characterised by quartz and quartzite from the Triassic, Carboniferous and Devonian rocks of the West Midlands, Welsh Borderland and possibly southwestern Pennines, and by felsic volcanic rocks from northern Wales. The presence of mega-erratics and glacially-fractured sand grains indicate glacial erosion in the headwater regions of the river. The fluvial gravels occupy terrace levels, and formations and members are defined on the basis of altitude and pebble clast content. The members comprise bodies of cross-bedded and massive, moderately sorted sand and gravel. The aggradations are generally entrenched into bedrock with a difference in surface elevation of at least 5m. The upper part of the gravels which dominate the subgroup are commonly affected by pedogenesis.

Red Crag Formation (Crag Group – Late Pliocene to Early Pleistocene, 3.60 – 2.12 Ma)
The Red Crag is generally composed of iron-stained sands, often containing abundant shells. The sands are often coarse with occasional muddy or silty bands and range in colour from yellow to reddy brown when weathered and pale yellow to reddy brown and grey when unweathered. Gravel is not abundant within the Red Crag except at its base, but where present consists of angular to rounded flint and quartz, with occasional cobbles or boulders of igneous, metamorphic and sedimentary erratics. Phosphatic nodules are also present within the Red Crag along with derived Jurassic fossils including belemnites and sharks teeth.

London Clay Formation (Eocene – 56 – 47.8 Ma)
The London Clay Formation is an Eocene deposit, comprising overconsolidated illite rich clay, which can locally contain pockets and partings of silt and fine sand. Towards both the top and base of the stratum the London Clay is found to be increasingly silty and even sandy. When fresh the clay is found to be grey in colour but this weathers to a brown colour. It is usually found to be in a stiff or very stiff condition, but weathers to a firm to stiff, or firm consistency. It is generally fissured and locally is thinly laminated. The London Clay was deposited in a deep-sea environment.

5.1.1 BGS Borehole Data

Relevant BGS borehole logs for the surrounding area were reviewed as part of the desk study, including TM14NE32, TM14NE31, TM14NE50 and TM14NE55.

TM14NE32 – The Croft, Nr Westerfield (161 m North)

Topsoil	0.00 – 0.30 m
Brown CLAY with Chalk (Lowestoft Fm)	0.30 – 3.00 m
Fine to Medium SAND and Flint and Quartz GRAVEL (Lowestoft Fm)	3.00 – 24.30 m

TM14NE31 – Westerfield House (187 m West)

Topsoil	0.00 – 0.30 m
Brown CLAY with Chalk (Lowestoft Fm)	0.30 – 1.80 m
Medium clayey SAND and Flint, Quartz & Chalk GRAVEL (Lowestoft Fm)	1.80 – 12.80 m
Fine to Medium clayey SAND (Chillesford Sand)	12.80 – 18.30 m
Fine to Medium shelly clayey SAND (Red Crag)	18.30 – 24.40 m

TM14NE50 – Upper Lodge Cottage, Tuddenham Road (422 m West)

Topsoil	0.00 – 0.91 m
Yellow brown sandy CLAY with Chalk (Lowestoft Fm)	0.91 – 14.63 m
SAND and GRAVEL (Lowestoft Fm)	14.63 – 20.73 m
Shelly SAND (Red Crag)	20.73 – 25.30 m
CLAY (London Clay)	25.30 – 37.49 m
Green-grey SAND and GRAVEL (Lambeth Group)	37.49 – 41.76 m
CHALK (White Chalk Subgroup)	41.76 – >63.09 m

TM14NE55 – Hill Farm, Tuddenham (791 m East)

Topsoil	0.00 – 0.30 m
Brown sandy CLAY with Chalk (Lowestoft Fm)	0.30 – 7.00 m
Clayey SAND and Flint, Quartz and Chalk GRAVEL (Lowestoft Fm)	7.00 – 23.50 m
CLAY (London Clay)	23.50 – >23.80 m

5.2 Summary of ground investigation data

A summary of the ground conditions encountered during the exploratory investigation has been provided in Table 5.2.

Table 5.2 – Summary of ground conditions

Stratum	Min/Max depth of top of stratum (m)	Min/Max depth of base of stratum (m)	Min/Max thickness of stratum (m)
Topsoil/Subsoil	G.L	0.25 – 0.70	0.25 – 0.70
Possible Made Ground/Made Ground	0.40 - 0.50	0.75 - 1.30	0.35 - 0.80
Lowestoft Formation (Cohesive)	0.25 – 1.30	0.75 – 5.95	0.35 – 5.40
Lowestoft Formation (Granular)	0.75 – 5.95	>15.00*	>13.50*
Groundwater	No groundwater encountered during drilling		
	Perched Groundwater in WS5 at 2.43 to 2.86 mbgl during monitoring.		
*Not fully penetrated			

5.2.1 Topsoil/Subsoil and Possible Made Ground

Topsoil was encountered in every exploratory hole from ground level and was generally found to comprise firm to very stiff dark brown slightly silty to silty sandy clay and clayey to

very clayey medium to coarse sand with a little fine to coarse flint gravel, rootlets and plant debris.

A layer of subsoil was recorded in WS2 from 0.4 to 0.7 m depth, comprising very stiff dark brown slightly silty sandy clay with some fine to coarse flint gravel, rootlets and rare brick fragments.

Possible made ground was encountered in WS5 from 0.50 – 1.30 m depth, potentially associated with an historic backfilled pond. The deposit was found to comprise stiff dark brown slightly silty very sandy clay with some flint and chalk gravel and rare fine gravel sized brick fragments.

5.2.2 Lowestoft Formation

5.2.2.1 Cohesive Glacial Till (Diamicton)

The cohesive Lowestoft Formation was generally found to comprise firm to very stiff/hard occasionally dry and blocky, medium to extremely high strength mottled dark brown, red brown, orange brown, grey brown and grey slightly silty to silty sandy to very sandy clay. The clay contained a little to much angular to subrounded fine to coarse flint gravel and occasional to much angular to subangular fine to coarse chalk gravel and pockets of medium to coarse orange brown sand, with occasional cobble sized flint and chalk.

The cover of diamicton appeared to increase in thickness from north to south beneath the site.

The uppermost diamicton consisted of a 'crust' of dry, friable and desiccated intermediate plasticity clay with a medium volume change potential that typically extended to depths in the order of 1.5 m. Roots and rootlets were recorded to depths of 1.70 m within the cohesive till.

A layer of soft silty very sandy clay with some flint gravel was encountered from 0.45 to 0.70 m depth in WS6, 0.40 to 0.80 m in WS7 and 3.10 to 3.55 m in WS8.

A shallow layer of sand was encountered in WS10 from 0.45 to 1.25 m, underlain by firm high strength silty sandy clay with much fine to coarse flint and chalk gravel, with a lens of fine to medium sand encountered from 1.10 to 1.40 m in TP12.

5.2.2.2 Granular Glacial Sand and Gravel

The top of the granular Lowestoft Formation was encountered below the diamicton at depths ranging from 0.75 m at the northern end of the site, increasing to 5.8 m at the south-eastern end.

The granular Lowestoft Formation generally comprised medium dense to very dense orange-brown, red brown and pale brown silty clayey to very clayey fine to coarse sand with

occasional subrounded to subangular fine to coarse flint and chalk gravel. It occasionally contained pockets of soft to stiff high strength grey and brown sandy silty clay and medium dense to very dense slightly silty sandy subrounded to subangular fine to coarse flint gravel, with occasional flint cobbles.

5.2.3 Groundwater

Groundwater was not recorded in any of the exploratory holes during the fieldwork.

The groundwater levels in the five installations were measured on six return visits and the results are recorded in Table 5.2.3.

Table 5.2.3 – Monitored depths to groundwater

Location	Depth of well (m)	Depth to groundwater mbgl					
		30-09-22	11-10-22	17-10-22	20-10-22	24-10-22	28-10-22
WS4	4.00	Dry	Dry	Dry	Dry	Dry	Dry
WS5	4.00	2.70	2.76	2.78	2.43	2.46	2.86
BH1	3.50	Dry	Dry	Dry	Dry	Dry	Dry
BH2	3.50	Dry	Dry	Dry	Dry	Dry	Dry
BH3	3.50	Dry	Dry	Dry	Dry	Dry	Dry

5.2.4 Visual or olfactory evidence of contamination

Occasional litter was noted around the site periphery associated with the local roads, including an area of fly-tipping along the access track to Allen's House/Lacey's Farm.

Possible made ground in WS5 from 0.50 – 1.30 m depth, potentially associated with an historic backfilled pond, contained rare fine gravel sized brick fragments.

No odours or staining were recorded in the exploratory holes.

6. GEOTECHNICAL CONSIDERATIONS

6.1 The proposed scheme

The proposed scheme comprises of the construction of a low-rise residential development, with associated private gardens and areas of communal landscaping and served by access roads. The layout of the proposed development considered in this report is illustrated on the current Draft Masterplan in drawing number 16118SI/1.

The proposed sport pitches to the north of the residential development area and the land to the south-west of Humber Doucy Lane shown on the Draft Masterplan do not form part of the land parcel under assessment by this report.

6.2 Structural foundations

No foundations loads were provided at the time of preparation of this report, as the scheme was in a preliminary stage. Structural loads are expected to be low to moderate.

6.2.1 Shallow Foundations

It is anticipated that the new modestly loaded foundations may take the form of trenchfill foundations or individual pad/pier foundations spanned by ground beams bearing upon moisture stable Lowestoft Formation. For most of the development the bearing strata will comprise the firm to stiff gravelly clay. However, locally there may be pockets and lenses of sand and silt present within the shallow Lowestoft Formation that may be exposed at foundation level. Below the northern end of the site where the cohesive Lowestoft Formation is locally thin, the underlying glacial sands and gravels of the Lowestoft Formation will form the bearing strata.

The presence of roots and rootlets and the visual assessment of the recovered samples from the exploratory holes indicated that the shallow clays are significantly desiccated due to abstraction of soil moisture by the arable crops, the surrounding hedgerows and trees and the exceptionally hot and dry weather experienced during the summer of 2022. This conclusion is corroborated by comparison of the water contents with plasticity data derived from the laboratory testing and perusal of the plot of water content against depth presented on page 8 of 24 of the Soil Property Testing Limited's laboratory testing report presented after the exploratory hole logs later in this report.

The design of the new foundations should also consider the potential influence of the existing and proposed trees on the medium volume change potential bearing strata, especially for properties close to the perimeter of the site.

The topographic survey and any arboricultural surveys should be used to determine the location, species and height of existing and felled trees, on and around the site, to help estimate the likely foundation depths required to bear upon clays beyond the range of influence of the vegetation.

6.2.1.1 Desiccation and Heave

Guidance regarding the depth of new foundations within the zone of influence of trees may be taken from NHBC Standards Chapter 4.2, 'Building near trees', considering the plasticity of the clay, the species of each tree, its mature height and the distance between the tree and the proposed foundation.

Plasticity index testing on recovered samples show the Lowestoft Formation to be of intermediate plasticity with moderate volume change potential. Chart 2 in Chapter 4.2 is recommended for assessing the depths of spread foundations in the vicinity of former, existing, and proposed trees throughout the site. The presence of desiccation due to the arable crops grown on the fields also needs to be considered.

Chart 2 recommends a minimum foundation depth of 0.9 m be adopted for all new foundations bearing upon the moderate volume change potential clays. However, all foundations within the cohesive Lowestoft Formation should be locally deepened to fully penetrate the following materials: -

i) Topsoil, made ground and ground disturbed by the removal of former trees.

ii) Soft clays (defined as having shear strengths less than 40 kN/m^2 when measured with a calibrated shear vane). Clay soils may deteriorate further in strength at the base of foundation excavations if exposed to inclement weather and such material should be removed before casting foundation concrete.

iii) Clay soils containing significant roots and rootlets.

iv) Moisture deficient and desiccated clays that are liable to swell as the arable crops which have been extracting moisture from the shallow soils are no longer grown, or trees around the perimeter should die or be felled. Clays considered to be desiccated clays were widely recorded in most of the exploratory hole locations across the site regardless of their locations relative to the existing vegetation, where possible desiccation was revealed extending to depths in the order of 1.5 to 1.8 m.

v) Clays within the range of influence of former and existing trees and any new planting that may be included in the scheme, based upon Chart 2 of Chapter 4.2. All existing trees within at least 25 m of the building footprints should be considered. Locally foundation depths up to 2.0 - 2.5 m may be required for foundations close to the existing moderate to high water demand trees as well as the mature hedgerows present around the perimeter of the fields.

It should be borne in mind that the NHBC design charts are based upon the influence of a single tree growing in isolation. Where trees grow close to each other, or hedgerows are present and potentially are competing for the same soil moisture, the aggregate depth of influence of the trees/hedges may be greater than that predicted by Chart 2. Conversely, if the soils are saturated, or there is an alternative source of moisture, such as nearby ponds,

then trees may be less liable to attempt to abstract moisture from the deeper clays when moisture is more readily available, and Chart 2 may overestimate the depth of influence in these situations.

Beneath the northern end of the site, where locally the cover of Lowestoft Formation clay is thin, some structures will be founded on the granular Lowestoft Formation. However, because it would not be certain whether the sand and gravel exposed at shallow depth is the true glacial sand and gravel or a lense of granular soil within the clay, it would be prudent to take all foundation excavations to a minimum depth of 1.50 m.

Where foundation depths vary, they should be stepped in accordance with good building practice.

Given the presence of significant seasonal and crop related desiccation to at least 1.5 m depth revealed in most of the exploratory holes, it is recommended that vigilance should be exercised to identify any deeper desiccated soils at the time of the site works, and such soils should be fully penetrated by foundations, with reference to the NHBC Standards. To be confident of founding below any desiccated soils, inspection of foundation excavations by an experienced geotechnical engineer is recommended, especially if construction follows a period of prolonged hot dry weather.

Full anti-heave precautions should be incorporated into the foundation design for all structures.

6.2.1.2 Bearing Pressures

A lower bound shear strength of 100 kN/m^2 has been used in the calculation of nett allowable bearing pressures (NABP) for the site. This relatively conservative value of undrained shear strength reduces the risk of unacceptable settlement due to the imposed structural loads and allows for some seasonal loss of strength due to the shallow soils recovering moisture during the wetter times of year and when exposed during construction.

Limited soft clay was encountered during the fieldwork. However, should any soft clay, silt, made or ground disturbed by the installation of field drains be encountered at founding depth, it should be fully penetrated so that the foundations bear upon the underlying higher strength undisturbed deposits. If the groundworker is uncertain about the identity and strength of the bearing stratum, the base of the foundations should be inspected by an experienced geotechnical engineer for evidence of desiccation.

NABPs have been calculated for conventional spread foundations bearing at a minimum depth of 1.5 m, to fully penetrate any desiccated clay, and based upon restricting settlements to no more than 25 mm. NABP is the maximum permissible increase in vertical stress in excess of existing overburden pressure at foundation level. A soil density equal to 20 kN/m^3 may be assumed in the calculation of overburden pressures.

Consolidation settlement equivalent to about half of the predicted total settlements will take place over a period of months depending upon the presence of fissures and sand and silt layers that will promote the dissipation of excess pore pressures in the clay. Where foundations span a change in soil type from clay to sand, it is recommended that nominal reinforcement is placed at the base of the foundation, to limit the potential for differential settlement as the soils consolidate at contrasting rates.

The following table of nett allowable bearing pressures (NABP) may be adopted in the design of spread foundations resting upon the moisture stable cohesive Lowestoft Formation and the granular Lowestoft Formation. The nett allowable bearing pressures are based upon the undrained shear strengths and the standard penetration tests determined in the field.

Table 6.4.2 – Nett allowable bearing pressures for spread foundations

Foundation depth (m)	Foundation width (m)	Nett allowable bearing pressure (kN/m^2)	
		Strip	Pad
1.50	0.60	240	-
	1.00	220	-
	1.50	210	255
	2.00	-	245
	2.50	-	240
2.00	0.60	250	-
	1.00	230	-
	1.50	220	265
	2.00	-	255
	2.50	-	250

If the calculated foundation loads are not sufficient, then piled foundations could be considered, bearing onto the granular deposits encountered at depth.

6.2.2 Piled foundations

It is not envisaged that piled foundations will be required for the proposed low-rise development. However, should the final scheme be amended, and piled foundations are required, then information relating to pile design parameters can be provided.

6.3 Ground floors and anti-heave precautions

NHBC Standards Chapter 4.2 states that full anti-heave precautions, including suspended floors, should be adopted where made ground 0.6m or more in thickness is present or where foundations are within the range of influence of existing trees and foundation depths derived from the Chart 2 are greater than 1.5 m.

In view of the presence of the medium volume change potential shrinkable soils, and the presence of significant desiccation due to abstraction by the arable crop and seasonal moisture deficits, it is recommended that suspended floors and full anti-heave precautions

be adopted throughout all the dwellings. Anti-heave precautions should be designed and constructed in accordance with NHBC Standards, Volume 1, Chapter 5.2.

6.4 Access roads and areas of hardstanding

Inferred California Bearing Ratio (CBR) values of 13% to 36% were recorded at 0.50 m depth across the site based on the results of the dynamic cone penetrometer testing (DCP), averaging 21.5%. However, the inferred CBR values from G.L to 0.88 m depth ranged from 1.4 - 119%. The higher results are likely to be due to the presence of coarse gravel obstructing the drive cone, combined with the localised seasonal desiccation. It is considered that the high CBR values inferred from these in-situ tests are not representative of the normal site conditions and should be used with caution.

It is recommended that the design of access roads and hardstanding should be based upon equilibrium subgrade California Bearing Ratio (CBR) values, as the cohesive soils are likely to return to a wetter equilibrium water content in the long term, once covered by the road pavement.

A preliminary equilibrium subgrade California Bearing Ratio (CBR) design value of 4% is therefore recommended for the design of access roads and parking areas bearing onto the intermediate plasticity cohesive natural soils (Plasticity Indices = 21% to 31%). The CBR values are based upon the equilibrium CBR provided in Table C1 of TRRL Laboratory Report LR1132 'The structural design of bituminous roads, 1984' based upon the plasticity of the deposit and assuming a low water table, average construction conditions and a thin pavement construction.

A lower bound CBR value of 2% is recommended for the design of roads constructed on subgrades composed of disturbed and made ground, due to the variability of such deposits.

Consideration should be given to undertaking in-situ CBR measurements or plate bearing tests (PBT) on prepared formations to provide final pavement design parameters. Prepared formations will be prone to deterioration in periods of wet weather and should be protected by the prompt placing of the subbase layers.

It is recommended that all prepared subgrades are proof rolled with a heavy dead-weight roller and any 'soft' or 'loose' spots identified by the passing of the roller should be removed and replaced with locally thickened subbase materials. Root balls from previous trees and any obviously desiccated clays should be removed. A flexible form of pavement construction is recommended due to the potential for differential movement as the water content of the clay subgrade changes following construction.

6.5 Groundworks

All excavations requiring entry by site personnel will require temporary support or battering back to a stable angle in accordance with the requirements of Health and Safety legislation, to enable work to be carried out safely within them. Excavations should be considered

unstable irrespective of depth, although near vertical sidewalls cut in the shallow stiff to hard gravelly clay are liable to be stable in the short-term and may not require shuttering when pouring concrete. Any excavation requiring entry by site personnel should be supported or battered back to a safe angle of rest, for safety reasons. Collapse of unsupported excavations could be sudden and without warning, especially where field drains may extend behind excavations.

Slow ephemeral seepages may be encountered from perched water pockets within the soils. Water may also flow from field drains that are intercepted which will need to be permanently stopped up or intercepted before digging commences. The majority of excavations are expected to remain dry for the short time that they remain open based upon observations taken during the summer of 2022, but perched water may be present during the winter months. Dewatering temporary excavations in the short-term should be achievable by simple sump pumping.

Control of surface water run-off should be maintained during construction, to ensure that contaminated or silt laden run-off does not enter the drainage ditches or ponds, in the vicinity of the site.

6.6 Soakaway drainage

Shallow soakaway drainage is not considered suitable for most of the site due to the generally cohesive nature of the shallow site soils. This is borne out by the poor soil infiltration rates in Table 6.6 (shown in red) calculated from the soakage tests conducted in most of the trial pits.

However, due to the generally granular nature of the deeper site soils and better infiltration rates calculated from the soakage tests in the boreholes, and the trial pit soakage test pits that encountered granular soils (TP195 & TP205), deeper soakaway drainage is considered feasible for the site. These might take the form of deep trench or borehole soakaways installed into the granular soils above the deep groundwater table. If deep soakaways are not permitted by the Regulators, an alternative positive drainage system should be considered, linking to existing storm drainage on Tuddenham Road and Humber Doucy Lane.

Table 6.6 – Soakage test infiltration rates

Location	Depth (m)	Strata	Infiltration rate (m/s)		
			Test 1	Test 2	Test 3
TP195	3.00	Lowestoft Fm – Clay with sand at 2.85m	5.1×10^{-6}	10×10^{-6} (Ex)	4.7×10^{-6} (Ex)
TP205	3.00	Lowestoft Fm – Sand from 2 m	6.5×10^{-5} (Ex)	6.7×10^{-5}	6.4×10^{-5}
TP215	3.00	Lowestoft Fm - Clay	6.3×10^{-8} (Ex)	Subsequent Tests Not Undertaken Following Poor Infiltration of First Test Run	
TP225	2.50	Lowestoft Fm - Clay	3.9×10^{-8} (Ex)		
TP235	2.50	Lowestoft Fm - Clay	2.1×10^{-8} (Ex)		
TP245	2.50	Lowestoft Fm - Clay	1.9×10^{-7}		
BH1	4.50	Lowestoft Fm - Gravel	1.6×10^{-4}	6.5×10^{-5}	5.6×10^{-5}
BH2	7.00	Lowestoft Fm – Sand/Gravel	1.1×10^{-4}	1.2×10^{-4}	1.1×10^{-4}
BH3	6.00	Lowestoft Fm – Sand/Gravel	6.7×10^{-5}	5.7×10^{-5}	6.1×10^{-5}
NB: (Ex) = Extrapolated Result					

Allowance should be made in the design of soakaways for the soil infiltration rate to deteriorate over time as the sands around the soakaway chamber, trenches or deep borehole 'silt up'.

Soakaways should be located at least 5 m away from foundations and settlement sensitive external pavements due to the potential for localised settlement around soakaways due to repeated inundation of the ground.

7. GEOENVIRONMENTAL CONSIDERATIONS

7.1 Introduction

This section describes the chemical analyses carried out and assesses the implications of any proven contamination. The results of the chemical analyses have been reviewed against the appropriate guidelines in use at the time of the preparation of this report.

The proposed scheme comprises of the construction of low-rise housing with private gardens, associated roads, parking and communal landscaping. Consequently a 'residential with plant uptake' end use has been adopted for initial assessment.

A qualitative risk assessment has been carried out in terms of a source – pathway – receptor analysis. The risk assessment analyses the significance of any contamination that has been identified on the proposed development and the local environment. The methodology for the risk assessments and legislative background is discussed in Appendix 2.

7.2 Published guidelines

The results of the chemical analyses have been interpreted by comparing them with the various published guidelines that are currently used for land quality risk assessments. The references used in the following assessment of the site have been summarised in Appendix 2.

7.3 Generic qualitative risk assessment by receptor

The following subsections review the results of the chemical laboratory analyses carried out on samples retrieved from the site, with respect to the potential receptors outlined in subsection 3.7.

To quantify risk and assign a qualitative risk category the classification system adopted in Appendix 2 has been adopted.

7.3.1 End users

The risk to end users of the development has been considered by comparing the results of the chemical analyses with the Tier 1 Human Health Screening Values as summarised in Appendix 3. As part of the general suite of contamination testing carried out, organic matter was measured. A conservative SOM value of 2.5% was adopted for the topsoil and made ground, where screening values are sensitive to organic matter contents. For natural soils a value of 1% was adopted.

7.3.1.1 Inorganic contaminants

Twenty-two selected soil samples were screened for a range of potential inorganic contaminants, including heavy metals and cyanide.

The recorded concentrations within the samples were considered relatively low and all fell below the adopted screening values for a 'residential with homegrown produce' end use.

A negligible risk to end users was therefore considered appropriate.

7.3.1.2 Organic contaminants

i) Phenol and Polycyclic Aromatic Hydrocarbons (PAH)

Phenols and PAH concentrations were measured in twenty-two samples collected from across the site, but recorded concentrations all fell below the adopted Tier 1 screening values for a 'residential with homegrown produce' end use.

A negligible risk from these potential contaminants was concluded.

ii) Total Petroleum Hydrocarbons (TPH)

Prior to scheduling the samples were screened using a photo-ionisation detector (PID) to check for the potential presence of volatile organics, which can indicate the presence of contaminants such as petroleum hydrocarbons, volatile and semi-volatile organic compounds (TPH/VOC/SVOC)

The PID recorded relatively low readings. This coupled with the absence of any reported odours and staining within the soils informed the decision to not undertake any hydrocarbon testing, as a potential risk was not identifiable from the data available to date.

iii) Pesticides and Herbicides

Due to the historical use of the land for agriculture, selected shallow samples from across the site were submitted for analysis of organo-chlorine and organo-phosphorous pesticides and a suite of potentially occurring herbicides.

The analysis undertaken did not record any measurable concentrations above the low limits of detection of the test methods. Hence a negligible risk was determined to end users from these potential contaminants.

7.3.1.3 Asbestos

Ten shallow soil samples were submitted for screening for the presence of asbestos. Asbestos was not identified in any of the samples screened.

It should be appreciated that the investigation works only uncover a very small proportion of the ground during the investigation works, and it is not uncommon to uncover asbestos in agricultural soils where materials have been imported to lay tracks and backfill features within the land. Made ground has been identified within localised areas of the site, suggesting potential backfilling or re-profiling of the surface in such areas. Given the variable nature of made ground materials and the size of the site, it is not possible to completely rule

out the potential for asbestos to be present and a potential ongoing risk has been identified, which is discussed further in section 7.5.1.

7.3.1.4 Ground gas

Ground gas monitoring wells have been installed in two window sample holes (WS4 and WS5) and within the deeper boreholes (BH1, BH2 and BH3) and are to be monitored on six occasions between 30 September and 28 October 2022.

The findings of the gas monitoring are summarised in Table 7.3.1.4.

Table 7.3.1.4 - Gas Monitoring Summary

Recorded Data	Minimum	Maximum	Initial Trigger Value	Number > Trigger Value	Location of Worst-Case Concentration
Methane (% v/v)	0.1	0.2	1[1]	0	
Carbon Dioxide (% v/v)	0.1	1.9	5[1]	0	
Oxygen (% v/v)	19.2	20.7	<17[2]	0	BH2
Hydrogen Sulphide (ppm)	<1	1	5[3]	0	BH1
Carbon Monoxide (ppm)	<1	2	30[3]	0	
Gas Flow (l/hr)	<0.1	0.2	-	-	

[1] CIRIA 665
[2] Safe work in confined spaces' (HSE ACoP L101, 2014)
[3] Long Term Workplace Exposure Limit (8 hour TWA)

The initial trigger value of 1% v/v for methane was not exceed in any of the monitoring wells over the six rounds, with concentrations ranging from <0.1 to 0.2 % v/v.

The initial trigger value of 5% v/v for carbon dioxide was not exceeded in any of the monitoring wells over the six rounds, with concentrations ranging from <0.1 to 1.9 % v/v.

Oxygen levels recorded on site ranged between 19.2 and 20.7 % v/v and were consistently above the trigger value of 17% in all the monitoring wells. While concentrations in borehole wells are not necessarily indicative of concentrations likely to be experienced in areas such as foundation or service trench excavations, it should be noted that any oxygen depletion below normal levels can be dangerous to personnel working in such conditions.

No significantly elevated concentrations of hydrogen sulphide (maximum 1 ppm) or carbon monoxide (maximum 2 ppm) were recorded. Flow rates were generally very low during all the investigation, with a maximum of 0.2 l/hr recorded.

Barometric pressures were generally moderate, ranging between 1002 to 1028 mb during the monitoring periods, with falling, rising and steady trends.

The results of the ground gas monitoring were reviewed against both the NHBC 'Traffic Light' system and the modified Wilson and Card classification system for 'Situation A – All development types except low rise housing with gardens', as set out in the CIRIA document C665, 2007. The gas results were also compared against the revised BS8485: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, 2015 + A1 :2019.

Adopting the highest recorded value for methane of 0.2 % v/v, carbon dioxide of 1.9 % v/v and a flow rate of 0.2 l/hr (the maximum recorded flow rate), a maximum gas screening value (GSV) of 0.0004 l/hr was determined for methane and 0.0038 l/hr for carbon dioxide, for the site overall. Note that the GSV are calculated adopting the 'worst-case' concentrations of gases and the highest recorded flow regardless of the location.

The GSV for methane and carbon dioxide place the site in the NHBC 'Green' and Wilson & Card Characteristic Situation 1 (CS-1) categories, for which no anti-ground gas precautions are required for residential development.

Reference was also made to BS8485: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, 2015 + A1, 2019. This document presents a matrix of different building types against CIRIA Characteristic Situations that provides indicative scores for gas protection. The proposed private houses (Building Type A) by reference to Table 4, require a gas protection score of zero for a CS1 classification, for which no protective measures are required.

Reduced oxygen concentrations could pose a risk to groundworkers in confined spaces such as service trenches and foundation excavations. Monitoring of atmospheres should be undertaken prior to and during works on a precautionary basis, for ground gases and vapours, with safe systems of work in place.

Vigilance will need to be maintained throughout the site works for any degradable materials, such backfill to former ponds, that could be potential sources of ground gas and/or vapours.

7.3.1.5 Conclusion of end user risk assessment

Table 7.3.1.5 – Summary of identified risks to end users

Contaminants of concern	Level of associated risk	Identified active pathways
Asbestos	No definitive risk identified, however potential for ACM in made ground cannot be discounted. Moderate to high potential risk assumed.	Inhalation of fibres from disturbance of soils in soft landscaping areas.

7.3.2 Groundworkers

Construction workers and especially groundworkers could come into direct contact with the soils. Significant concentrations of potential contaminants have not been identified within the soils on site, but the potential for the presence of ACM within the ground, or undiscovered contamination cannot be fully discounted. The risk to groundworkers is mitigated by limited exposure and normal usage of personal protective equipment), although a Moderate risk from the presence of asbestos would still be identifiable should ACM be present.

No significant sources of ground gas or oxygen depletion were identified.

7.3.3 Controlled Waters

Table 7.3.3A – Site sensitivity in relation to Controlled Waters

Hydrological and hydrogeological information	Direction and distance from site	Sensitivity rating
Nearest Surface Water Feature	Field drain on site.	Low
Aquifer Classifications	Superficial deposits – Secondary A – undifferentiated. Bedrock – Principal Aquifer	Low High
Source Protection Zones (SPZ)	Site located within Zone 3, with Zone 2 located 170 to the NE and Zone 1 340m to the NE.	Moderate
Water Abstractions	Nearest was 715m to the E and was a potable water abstraction operated by Anglian Water.	Low to Moderate
Groundwater Flow Direction (known or anticipated)	Anticipated to be towards the E towards the SPZ zone I and abstraction.	
Key Controlled Water Receptor?	Groundwater located within the Principal Aquifer beneath the site (The Crag).	

Based on the information pertained from the desk study, a potential risk to Controlled Waters in the form of groundwater within the underlying Principal Aquifer was determined.

The investigation works undertaken on site have confirmed the presence of the Lowestoft Formation to depths more than 15 m. The upper deposits of the Lowestoft Formation are typically cohesive in nature. Isolated layers of more granular materials are present within the Till but are limited in their continuity. The till is underlain by granular glacial sands and gravels. The thickness of the cohesive deposits recorded on most of the site are considered to provide sufficient cover to mitigate any risk of contaminants at surface migrating down and impacting upon deeper groundwater within the Crag Principal Aquifer.

In addition to the above, the desk study and investigation works to date have not identified any significant sources of contamination on site, or within the soils that could be considered

to pose a potential risk. A negligible risk to Controlled Waters has therefore been determined for the site.

7.3.4 Off-site human and property receptors

Neighbouring properties are considered to be at negligible risk from mobile and potential leachable contaminants migrating from the site, because of the generally low concentrations of contamination identified within the soils.

Off-site receptors could be subjected to impact from windblown dust and soil attached to the wheels of vehicles leaving the site during groundworks and disturbance of the shallow site soils. Consequently, precautions will need to be taken in order to prevent the potential for contamination to impact off-site receptors. A potential Low risk was determined.

Due to the generally very low permeability of the underlying Lowestoft Formation, surface run-off should also be managed appropriately during site works to prevent potentially contaminated run-off flowing downslope into the drainage ditches that cross the site boundary or are located around the site periphery.

7.3.5 Building materials

7.3.5.1 Below ground concrete

Twenty samples of topsoil and two samples of Lowestoft Formation were tested for water-soluble sulphate content and pH value as part of the contamination analysis. In addition, nine samples of the shallow Lowestoft Formation were tested as part of the geotechnical testing scheduled to date. The current results were compared with the guidelines outlined in BRE Special Digest 1 (SD-1), 2005, 'Concrete in Aggressive Ground'. This publication attributes a Design Sulphate Class and an Aggressive Chemical Environment for Concrete (ACEC) class for the site under consideration, based upon the nature of the site, sulphate concentrations, pH values and mobility of groundwater.

The results are summarised in Table 7.3.5.1.

Table 7.3.5.1 – Water soluble sulphate and pH assessment for buried concrete

Stratum	pH		Water soluble sulphate (mg/l)		DS class	ACEC class
	Range	Characteristic Value	Range	Characteristic Value[1]		
Topsoil	6.3-8.3	7.4	<10 – 16	<10	DS-1	AC1[2]
Lowestoft Formation	8.0-8.4	8.2	<10	<10	DS-1	AC1[2]

[1] Value is rounded to 100mg/l
[2] assumes worst case of mobile groundwater

The variable nature of the Lowestoft Formation means that the deposit often includes sandy granular layers and pockets amongst what is generally described as cohesive deposits containing fragments of chalk and flint. These more granular layers can contain perched water, although no groundwater was recorded within the window sample holes and trial pits during the investigation works.

7.3.5.2 Potable water pipes

Organic determinands, and the more volatile organic compounds, can potentially affect and permeate plastic pipework. The investigation has not identified significant concentrations of organic contaminants within the soils and the site is essentially considered to represent a greenfield site.

Guidance on the selection of water pipe material is contained within the UK Water Industry Research (UKWIR) report reference 10/WM/0321, 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites'. The report recommends specific investigation of the proposed pipeline route and level, with laboratory analysis and associated risk assessment to determine the specification for the pipework, once the proposed route and level is confirmed.

Based upon the current data, standard plastic supply pipework should be permissible for the supply of potable water for the development. However, liaison with the local potable water supplier should be undertaken at an early stage to confirm their requirements, if any, for pipework and backfill materials.

7.3.6 Vegetation

Nickel, copper and zinc are phytotoxic and could therefore inhibit plant growth or establishment. In order to assess the risk posed to vegetation on site from these potentially phytotoxic contaminants the concentrations of copper, zinc and nickel were compared against values given in the British Standard BS 3882: 2015, 'Specification for topsoil'.

Adopting a pH value of >7, screening values for nickel, copper and zinc are 110 mg/kg, 200 mg/kg and 300 mg/kg, respectively. No exceedances were recorded for copper, nickel or zinc indicating a negligible risk to vegetation on site from phytotoxic contaminants.

A survey for invasive plant species such as Japanese Knotweed, or other problematic plant species, was not included in the remit for the works, although none were recorded during the fieldwork. This aspect should be assessed by a suitably qualified specialist prior to commencement of siteworks.

7.4 Refined conceptual model

7.4.1 Introduction

The refined conceptual model represents the characteristics of the site that show the relevant pollutant linkages as defined by the results of the intrusive investigation. Negligible and discounted risks have not been included.

7.4.2 Plausible relevant pollutant linkages

Asbestos has been identified as a potential contaminant risk on site.

Table 7.4.2 – Risk associated with asbestos

Source/Contaminant	Associated impacts/Issues
Asbestos	No asbestos has been detected during the screening of selected samples of shallow topsoil/made ground. However, made ground is an inherently variable material, and it is not uncommon to uncover asbestos in agricultural soils where materials have been imported to lay tracks and backfill features within the land. A potential moderate to high risk was identified to site receptors including end users and ground workers from any remnant asbestos in shallow site soils.

7.5 Recommended remediation strategy

The investigation and testing carried out have recorded very limited impact to site soils from former uses of the site. For initial assessment purposes soil results were reviewed against screening values for a 'residential with homegrown produce' end use, taking into consideration the proposed residential end use of the development. No exceedances were recorded.

Asbestos containing materials (ACM) have not been identified within the soils submitted for screening but the potential presence of asbestos in shallow site soils cannot be discounted based on the testing completed to date.

It should also be appreciated that site investigation permits the inspection of only a very small proportion of site soils, and that the investigation to date may not have recorded the highest concentrations of contaminants that may be present beneath the site. Consequently, vigilance will need to be maintained throughout the development for indicators of the potential presence of contamination; and where identified further assessment will be required.

7.5.1 Contaminated land

Based on the investigation and assessment to date the concentrations of potential contaminants recorded within the soils are considered to pose a negligible risk to end users of the proposed residential development.

Asbestos has not been positively identified during screening of selected samples of shallow site soils, however it is not unusual to find buried asbestos materials within agricultural soils where such material may have been incorporated into track ways for machinery or are mixed up in made ground materials used to backfill features such as ponds and land drains. As a result, the presence of asbestos within shallow soils cannot be fully discounted. A watching brief should be maintained to identify any such materials during the groundworks, as covered in Section 7.5.4.

The topsoil recorded on site could potentially be suitable for re-use within the proposed development, subject to appropriate storage and further testing. The topsoil should be stripped and segregated from the subsoil (Lowestoft Formation) and stockpiled in an area separate from waste soil materials, to avoid mixing and cross contamination.

The topsoil stockpiles should be maintained and monitored through-out the development of the site to ensure the quality of the materials are suitable for use within landscaped areas, which are normally placed during the later stages of the development works. Guidance on stripping, handling and preparing topsoil for use is provided in Annex A of BS3882:2015. Topsoil stockpiles should not exceed the maximum heights recommended in the British Standard to avoid over-compaction.

To characterise the grade of topsoil and its potential suitability for its proposed end use the stockpiled topsoil should undergo quality testing, in accordance with BS3882:2015 to assess the soils physical and chemical composition.

Guidance in BS3882: Topsoil, suggests that the thickness of placed topsoil should not normally exceed 300 mm. The advice of the landscape architect/soil scientist for the scheme should be sought to determine the soil type and thickness requirements for the proposed soft landscaping areas included in the scheme. Greater thicknesses may be necessary for tree pits and shrub planting if present.

7.5.2 Groundworkers and off-site receptors

The soils sampled and analysed from site have not identified the presence of significant contamination, but there is always the potential for as yet undiscovered contamination to be encountered.

To prevent direct contact with the soils, groundworkers should wear protective clothing, in accordance with Health and Safety Regulations, during any groundworks. Workers should be properly equipped with dust masks, safety boots, gloves, hard hats and overalls, and where appropriate, respiratory equipment. Adequate washing and welfare facilities should

be provided, and their use should be enforced. All site workers should wash their hands before eating, drinking, or smoking. Site visitors should be supervised and protected, as necessary.

Siteworks must be undertaken without adverse impact to onsite and offsite receptors. On a precautionary basis, soils should be dampened down to prevent the generation of any dust during the works. Measures will need to be taken to prevent the migration of soils off site via the road wheels of vehicles exiting the site, and it is recommended that stockpiles be dampened down and covered, as necessary.

Consideration could be given to personal and boundary air monitoring, to confirm that the measures adopted to prevent the spread of dust are effective, and that risks are being suitably mitigated, and in the event of encountering asbestos within the soils such monitoring would be recommended.

All operatives should be trained in working with asbestos, such that they can identify such materials and are aware of the potential risks, the need to prevent the generation of dust, the requirements for PPE/RPE, and the duty of care requirements.

7.5.3 Ground gas

Based upon the absence of any significant sources of gas in the exploratory holes and the results of the monitoring, ground gas is not considered to pose a credible risk to the development and no ground gas precautions are required in the design.

7.5.4 Watching brief and discovery

A watching brief or discovery strategy should be maintained throughout the groundworks to identify any previously undiscovered contamination, as it is possible that the highest concentrations of contaminants may not have been discovered by the investigations to date. The potential for undiscovered contamination to be encountered on site should be communicated to site workers at induction stage, together with the requirement to report such impact to the site manager.

Detailed records should be kept of any contamination found. Should any suspected contaminated soils be identified, works should cease in the affected area, and the geoenvironmental engineer contacted to allow for appropriate assessment of the contamination. Examples of indicators of contamination include staining of soils, unusual colouration, odours, and filming on groundwater. Vigilance should also be maintained for potential asbestos containing materials (ACM).

7.6 Waste disposal

The development of the site could create soils that require disposal. Excess soils could be disposed of to a waste treatment or recycling facility or an appropriately licenced landfill. Under the Waste Regulations there are three main categories of waste: Inert, Non-Hazardous and Hazardous. The Inert category is a subgroup of Non-Hazardous.

Waste soils are first categorised as Hazardous or Non-Hazardous using the calculations in the EA document 'Guidance on the classification and assessment of waste' Technical Guidance WM3, Ver 1.2 GB, October 2021. Waste acceptance criteria (WAC) testing is then required on Hazardous waste soils to determine if they need any additional treatment before they can be received at a Hazardous waste landfill, or if they can be taken to a Non-Hazardous landfill which has cells to receive 'Stable Non-Reactive Hazardous' waste. WAC testing of Non-Hazardous soils is required to determine if it can be received at an Inert landfill. Non-Hazardous waste does not require WAC testing as there are no limits set for the various determinands. However, in reality, most landfills request WAC test results to ensure that the waste complies with their licence requirements.

The chemical analyses of the soils completed to date indicates that the soils could be classed as Non-Hazardous for waste disposal purposes. Based on the WAC analyses undertaken on three composite samples from across the site, the shallow soils can be further classified as Inert for waste disposal purposes.

Uncontaminated natural soils are typically classified as Inert for waste disposal purposes, unless they contain a high proportion of organic materials.

Additional Waste Acceptance Criteria (WAC) analyses should be carried out once soils destined for removal off site as waste have been clearly identified, to confirm if the inert classification is representative of the waste soils. Early liaison with the proposed receiving facility is recommended to confirm their requirements.

During the redevelopment programme a 'watching brief' should be maintained to identify any untoward or overtly contaminated soils intended for disposal off-site, which should be segregated and tested to confirm requirements for waste disposal.

Should any soils containing ACM be present on site, they are generally classified as Hazardous Waste and therefore will be subject to the consignment note procedures given in the Hazardous Waste Regulations. Asbestos containing materials will generally be considered as 'Stable Non-Reactive Hazardous' (SNRH) waste and will therefore need to be disposed of at a Hazardous landfill or a Non-Hazardous landfill which has separate cells to take SNRH waste. However, if the amount of asbestos present as fibres within the soils constitutes less than 0.1% by weight, and there are no visible fragments present, the soils can potentially be classed as not Hazardous for waste disposal, subject to agreement of the receiving facility.

Copies of all waste transfer notes for waste soils removed off site should be kept on file by the appointed contractor for inspection at the end of the project, to confirm that all soils

removed off-site have been done so using a licensed waste haulage company and have been disposed of to a suitably licensed waste disposal facility or recycling depot.

Further advice can also be sought from the local waste regulatory authority, who should also be able to offer advice on which landfills are available to accept the waste.

8. CONCLUSIONS

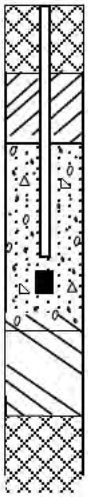
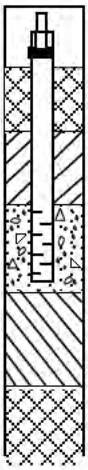
This report should not be regarded as the conclusion of the geotechnical or geoenvironmental involvement of the proposed scheme. It is recommended that a continuing overview of this aspect is maintained throughout the scheme.

Samples from the investigation will be retained for a period of three weeks from the date of this report, unless instructions to the contrary are received.

All recommendations made in this report need to be agreed with the Planning Department and Environmental Health Department at the Local Authority, before being undertaken.

INSTRUMENTATION DETAILS

LIST OF SYMBOLS

Symbol	Description
	Groundwater Monitoring
	19 mm diameter standpipe piezometer installed through backfilled material or cement/bentonite grout upper seal Standpipe piezometer installed through permeable sand of gravel filter medium Depth of porous Casagrande piezometer tip shown in bold Cement/bentonite grout lower seal Backfilled material beneath installation
	Gas Monitoring
	Gas valve and protective vandal proof lockable cover installed at ground level over each position Plain 50/25 mm diameter HDPE/PVC pipework installed through backfilled materials or cement/bentonite grout upper seal Slotted or perforated pipework installed through permeable sand or gravel filter medium Cement/bentonite grout lower seal Backfilled material beneath installation

LABORATORY TEST RESULTS

LIST OF SYMBOLS

Symbol	Type of Test	Unit
	Classification Tests	
<425	Mass of oven dried soil passing 425 μm BS Test Sieve	%
w	Natural Water Content, oven dried method	%
w_p	Plastic Limit	%
w_L	Liquid Limit	%
I_p	Plasticity Index	%
LS	Linear Shrinkage	%
NP	Non-plastic	
Prep	Method of Preparation; N: Natural State, W: Wet Sieved	
Temp	Drying Temperature	°C
	Undrained Shear Strength	
Type	Type of test and nominal diameter of test specimen Ts - single point test on 100 mm nominal diameter Tm - multistage test on 100 mm nominal diameter T38 - single point tests on 38 mm diameter specimens	
ρ	Bulk density of specimen	Mg/m^3
w	Water content of specimen after test	%
σ_3	Cell Pressure	kN/m^2
σ_1-σ_3	Deviator Stress	kN/m^2
c	Apparent Undrained Cohesion	kN/m^2
	Chemical Tests	
pH Value	pH Value, electrometric method	
Total	Total Sulphate as percentage of oven dried mass, expressed as SO_4	%
2:1 Extract	Sulphate Content of 2:1 water:soil extract, expressed as SO_4	g/litre
Groundwater	Sulphate content of groundwater, expressed as SO_4	g/litre

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 31/08/2022 - 01/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618640.00 N247220.00
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH1	CP		JMK	1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	Water Added =2050 l	0.50	D		0.60			Topsoil (Firm dark brown silty sandy clay with a little subrounded-subangular fine-coarse flint gravel and rare rootlets)
		1.00	D					Firm orange brown silty sandy CLAY with a little subrounded-subangular fine-coarse flint gravel. (Lowestoft Formation)
		1.50 - 1.95	UT		1.50			Orange brown silty clayey fine-coarse SAND with occasional subrounded-subangular fine-coarse flint gravel. (Lowestoft Formation)
		2.00	D					
		2.50 - 2.95	B					
		2.50	SPT	50 (50 for 125mm/50 for 10mm)	2.80			Very dense orange brown silty sandy subrounded-subangular fine-coarse flint GRAVEL. (Lowestoft Formation)
		3.00	D					
		3.50	SPT	50 (2,38/50 for 75mm)				
		4.00	D					
		4.50	SPT	N=20 (1,4/4,5,5,6)				*- becoming medium dense at 4.50m approximately*
		5.00	D					
		5.50	SPT	N=50 (1,3/50 for 275mm)				*- becoming very dense at 5.50m approximately*
		6.00	D		6.00			Very dense orange brown slightly silty medium-coarse SAND with occasional subrounded-subangular fine-coarse flint gravel. (Lowestoft Formation)
		7.00	D					
		7.00	SPT	50 (1,4/50 for 220mm)				
		8.00	D					
		8.50	SPT	50 (2,5/50 for 215mm)				
		9.00	D					
		10.00	D					

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00					

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 4.00m. Pipework capped and protected with raised lockable cover.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 31/08/2022 - 01/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618640.00 N247220.00
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH1	CP		JMK	1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.00	SPT	N=46 (1,5/7,10,11,18)				Very dense orange brown slightly silty medium-coarse SAND with occasional subrounded-subangular fine-coarse flint gravel. (Lowestoft Formation)
		11.00	D					
		11.50 - 11.95	B					
		11.50	SPT	N=50 (1,4/50 for 295mm)				
		12.00	D					
		13.00	D					
		13.00	SPT	50 (2,5/50 for 165mm)				
		14.00	D					
		14.50	SPT	50 (2,6/50 for 155mm)				
		15.00	D		15.00			End of Borehole at 15.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00					

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 4.00m. Pipework capped and protected with raised lockable cover.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 21/09/2022 - 22/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH2	CP		JMK	1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	Water Added =1400 l							Topsoil [Dark brown sandy]
		0.50	D		0.40			Very stiff orange-brown slightly sandy silty CLAY with a little subrounded-subangular fine-coarse flint gravel and rare rootlets and possibly desiccated. (Lowestoft Formation)
		1.00	D		0.75			Very stiff very high strength light orange-brown and light grey slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel and rare rootlets. (Lowestoft Formation)
		1.50 - 1.95	UT					*- possibly desiccated to approximately 1.00m*
		2.00	D					
		2.50	SPT	N=29 (1,3/5,7,7,10)				
		3.00	D					
		3.50 - 3.95	UT					
		4.00	D					*- containing no rootlets with depth*
		4.50	SPT	N=23 (1,1/3,5,6,9)	4.50			Medium dense orange-brown silty fine-coarse SAND with occasional subrounded-subangular fine-coarse flint gravel, rare fine-medium gravel sized quartzite gravel and fine-medium gravel size pockets of soft brown silty sandy clay. (Lowestoft Formation)
		5.00	D					
		5.50 - 5.95	UT					
		6.00	D					*- containing more gravel with depth*
		7.00	D		6.50			Very dense brown and grey sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded fine-medium quartzite gravel. (Lowestoft Formation)
		7.00	K					
		7.00 - 7.45	B					
		7.00	SPT	50 (2,14/50 for 225mm)				
		8.00	D					
		8.50	SPT	50 (5,34/50 for 55mm)				
		9.00	D					
		10.00	D					

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00	Hand excavated				

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 3.50m. Pipework capped and protected with raised lockable cover. Falling head soakage tests at 7.00m.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 21/09/2022 - 22/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH2	CP		JMK	1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.00	SPT	50 (3,8/50 for 165mm)				Very dense brown and grey sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded fine-medium quartzite gravel. (Lowestoft Formation)
					10.50			Very dense orange-brown slightly silty very sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded fine-course quartzite gravel. (Lowestoft Formation)
		11.00	D					
		11.50 - 11.95	B					
		11.50	SPT	50 (1,5/50 for 200mm)				
		12.00	D					
		13.00	D					
		13.00	SPT	50 (5,15/50 for 150mm)				
		14.00	D					
		14.50	SPT	50 (2,7/50 for 195mm)				
		15.00	D		15.00			End of Borehole at 15.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00	Hand excavated				

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 3.50m. Pipework capped and protected with raised lockable cover. Falling head soakage tests at 7.00m.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 26/09/2022 - 27/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH3	CP		JMK	1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	Water Added =1800 l							Topsoil [Sandy]
		0.50	D		0.40			Made Ground (Very stiff brown silty very sandy clay with occasional subrounded-subangular fine-medium flint gravel, rare fine gravel sized brick fragments and rootlets.
		1.00	D		0.75			Very stiff very high strength orange-brown and brown slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel, rare pockets of black silt. (Lowestoft Formation)
		1.50 - 1.95	UT					
		2.00	D					*- possibly desiccated to approximately 2.00m*
		2.50	SPT	N=22 (1,1/3,5,6,8)				
		3.00	D					
		3.50 - 3.95	UT					
		4.00	D					
		4.50	SPT	N=23 (1,1/4,5,6,8)				
		5.00	D					
		5.50 - 5.95	UT					*- becoming sandy/very sandy from approximately 5.50m*
		6.00	D		5.95			Very dense orange-brown slightly silty sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded-rounded fine-medium quartzite gravel. (Lowestoft Formation)
		6.00	K					
		7.00	D					
		7.00 - 7.45	B					
		7.00	SPT	50 (1,3/50 for 205mm)				
		8.00	D					
		8.50	SPT	50 (2,5/50 for 190mm)				
		9.00	D					
		10.00	D					

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00					

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 3.50m. Pipework capped and protected with raised lockable cover. Falling head soakage tests at 6.00m.

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RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 26/09/2022 - 27/09/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	
Project No. : 16118SI	Crew Name: NI	Drilling Equipment: Dando 2000

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH3	CP		JMK	1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.00	SPT	52 (1,6/52 for 190mm)				Very dense orange-brown slightly silty sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded-rounded fine-medium quartzite gravel. (Lowestoft Formation)
		11.00	D					
		11.50	SPT	38 (2,12/38 for 95mm)				
		12.00	D		12.00			Very dense orange-brown slightly silty fine-coarse SAND with rare subrounded-subangular fine-coarse flint gravel. (Lowestoft Formation)
		13.00	D					
		13.00 - 13.45	B					
		13.00	SPT	41 (2,9/41 for 105mm)				
		14.00	D					*- containing more gravel at approximately 14.00m*
		14.50	SPT	40 (4,14/40 for 85mm)				
		15.00	D		15.00			End of Borehole at 15.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
15.00	150	15.00	150	0.00	1.20	01:00					

Remarks

No groundwater encountered. 50mm diameter HDPE pipe installed to 3.50m. Pipework capped and protected with raised lockable cover. Falling head soakage tests at 6.00m.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618360.00 N247240.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS1	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty very clayey medium-coarse sand with some angular-subrounded fine-coarse flint gravel and occasional rootlets and plant debris)
		0.50	D		0.40			Very stiff dark-brown slightly silty very sandy CLAY with some angular-subrounded fine-coarse flint gravel and occasional angular-subangular fine-medium chalk gravel and occasional rootlets (Lowestoft Formation)
		0.90	D		0.60			Very stiff mottled grey and brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel (Lowestoft Formation)
		1.40	D					
		1.90	D					*- colour is predominantly brown, becoming more grey below 2.0m*
		2.40	D					
		2.75	D		2.80			End of Borehole at 2.80m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Window sample refused at 2.80m

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618460.00 N247200.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS2	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty very clayey medium-coarse sand with some angular-subrounded fine-coarse flint gravel and occasional rootlets and plant debris)
		0.50	D		0.40			Subsoil (Very stiff -hard dark-brown slightly silty sandy clay with some angular-subrounded fine-coarse flint gravel and occasional rootlets and rare fine gravel sized brick fragments)
		0.90	D		0.70			Very stiff high strength mottled brown and grey slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel and occasional rootlets and occasional pockets of orange brown medium-coarse sand. (Lowestoft Formation) *- rootlets found between 0.75-0.90m* *- sand pockets found below 1.60m*
		1.70 1.80	D	HVP=140.0				
		2.50	D		2.40			Orange-brown slightly silty very clayey medium-coarse SAND with pockets of stiff grey and brown slightly silty slightly sandy clay and some angular-subrounded fine-coarse flint and chalk gravel. (Lowestoft Formation)
		2.90	D		3.10			End of Borehole at 3.10m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Poor sample recovery between 1.00-1.55m. Window sample refused at 3.10m.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618560.00 N247240.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS3	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty very clayey medium-coarse sand with some angular-subrounded fine-coarse flint gravel and occasional rootlets and plant debris)
					0.40			
		0.50	D					Very stiff dark-brown slightly silty very sandy CLAY with some angular-subrounded fine-coarse flint gravel and occasional angular-subangular fine-medium chalk gravel and occasional rootlets (Lowestoft Formation)
					0.75			
		0.90	D					Orange-brown slightly silty clayey coarse SAND with some angular-subrounded fine-coarse flint and chalk gravel and occasional pockets of grey and brown slightly silty clay with angular-subrounded fine-medium chalk gravel. (Lowestoft Formation)
		1.40	D					*- clay pockets found between 0.75-1.00m and 1.90-2.20m*
		1.90	D					
		2.40	D					
					2.65			Pale-brown slightly silty coarse SAND with much angular-subangular fine-coarse flint gravel and some angular-subrounded fine-medium chalk gravel (Lowestoft Formation)
		2.90	D					
					3.00			End of Borehole at 3.00m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Poor sample recovery between 2.00-3.00m. Unable to drill below 3.00m due to broken tube.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618500.00 N246840.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS4	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Very stiff dark-brown slightly silty very sandy clay with some angular-subangular fine-coarse flint gravel and occasional plant debris)
					0.55			
		0.70	D					Very stiff high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and occasional angular-subangular fine gravel to cobble sized flint fragments and occasional pockets of orange-brown/grey medium-coarse sand. (Lowestoft Formation)
								- one flint cobble approximately 12cm length found at base of first tube (1m)
		1.80 1.80	D	HVP=140.0				
		2.30 2.30	D	HVP=140.0				
								- sand pockets occurred below 2.50m depth
		2.80 2.80	D	HVP=140.0				
					3.35			
		3.40 3.40	D	HVP=108.0				Very stiff high strength brown slightly silty sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel and occasional pockets of orange-brown medium-coarse sand. (Lowestoft Formation)
								- layer is not as stiff as layer above
		3.90 3.90	D	HVP=133.0				
					4.00			End of Borehole at 4.00m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Poor sample recovery between 1.00-1.50m. 25mm pipe was installed to 4.00m. Pipework capped and protected with a raised lockable cover.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618760.00 N246760.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS5	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	D		0.50			Topsoil (Very stiff dark-brown slightly silty very sandy clay with some angular-subangular fine-coarse flint gravel and occasional plant debris)
		0.80	D					Possible Made Ground (Stiff dark-brown slightly silty very sandy clay with some angular-subrounded fine-coarse flint gravel and some angular-subrounded fine-medium chalk gravel and occasional rootlets and rare fine gravel sized brick fragments)
		1.40	D		1.30			Very stiff high strength mottled brown and grey slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel. (Lowestoft Formation)
		1.80		HVP=140.0				*- colour becomes more predominantly grey throughout layer*
		1.90	D					
		2.30		HVP=140.0				
		2.40	D					
		2.80		HVP=140.0	2.70			Very stiff dark-grey slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel and occasional pockets of orange-brown medium-coarse sand. (Lowestoft Formation)
		2.90	D					
		3.30		HVP=140.0				
		3.40	D					
		3.80		HVP=136.0				
		3.90	D					
					4.00			End of Borehole at 4.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. 25mm pipe was installed to 4.00m. Pipework capped and protected with a raised lockable cover.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 10/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618840.00 N246520.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS6	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty clayey medium-coarse sand with some angular-subangular flint gravel and occasional rootlets)
		0.50	D		0.45			Soft brown slightly silty very sandy CLAY with some angular-subrounded fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
		0.90	D		0.70			Very stiff high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
								- large amount of flint gravel found at 1.00m in original location
		1.70	D					
		1.80		HVP=140.0				
		2.30	D					
		2.30		HVP=140.0				
		2.80	D					
		2.80		HVP=136.0	2.90			*- evidence of large flint cobble at base of 3m tube*
								End of Borehole at 2.90m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Initial hole refused at 1.10m, hole moved 1m away from hedge and redrilled. Boulder clay came in at 0.90m on initial hole, other layers the same in both. Poor sample recovery between 1.00-1.55m. Window sample refused at 2.90m

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 11/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618860.00 N246420.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS7	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty clayey medium-coarse sand with some angular-subangular flint gravel and occasional rootlets)
		0.50	D		0.40			Soft brown slightly silty very sandy CLAY with some angular-subrounded fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
		0.90	D		0.80			Very stiff high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel. (Lowestoft Formation)
		1.30		HVP=140.0				
		1.40	D					
		1.80		HVP=140.0				
		1.90	D					
		2.30		HVP=140.0				
		2.40	D					
		2.95	D		2.85			Pale-brown slightly silty very clayey coarse SAND with occasional pockets of soft mottled grey and brown clay and much angular-subrounded fine-coarse chalk gravel and occasional angular-subangular fine-medium flint gravel. (Lowestoft Formation)
		3.30	D					
		3.70		HVP=95.0	3.45			Firm high strength mottled grey and brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and occasional angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
		3.80	D					*- high concentration of flint gravel found between 3.70-3.80m*
					4.00			End of Borehole at 4.00m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 11/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E618960.00 N246480.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS8	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty clayey medium-coarse sand with some angular-subangular flint gravel and occasional rootlets)
					0.40			
		0.50	D					Hard brown slightly silty very sandy CLAY with some angular-subrounded fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
					0.75			
		0.90	D					Very stiff brown slightly silty slightly sandy CLAY with some angular-subangular fine-medium flint and chalk gravel and occasional rootlets. (Lowestoft Formation)
					1.05			
		1.20		HVP=140.0				Very stiff high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
		1.40	D					*- large concentration of flint gravel between 1.00-1.20m*
		1.80		HVP=118.0				
		1.90	D					
					2.25			
		2.40	D					Firm high strength brown slightly silty very sandy CLAY with some pockets of orange-brown medium-coarse sand and some angular-subrounded fine-medium flint and chalk gravel. (Lowestoft Formation)
		2.50		HVP=117.0				
					2.65			Stiff mottled grey and brown slightly silty sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel. (Lowestoft Formation)
		2.90	D					
					3.10			*- pocket of orange-brown sand between 2.80-2.95m*
		3.40	D					Soft brown slightly silty very sandy CLAY with some angular-subrounded fine-medium flint and chalk gravel. (Lowestoft Formation)
		3.50		HVP=112.0				
					3.55			Stiff high strength brown slightly silty sandy CLAY with some angular-subrounded fine-coarse chalk and flint gravel. (Lowestoft Formation)
		3.90	D					
					4.00			End of Borehole at 4.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered.

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 11/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E619140.00 N246440.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS9	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty slightly clayey medium-coarse sand with some angular-subrounded fine-coarse flint gravel and occasional rootlets and plant debris)
					0.40			
		0.50	D					Firm-soft brown slightly silty very sandy CLAY with some angular-subangular fine-coarse flint and chalk gravel and occasional rootlets. (Lowestoft Formation)
					0.70			Firm brown slightly silty slightly sandy CLAY with occasional angular-subangular fine-coarse flint and chalk gravel. (Lowestoft Formation)
		0.90	D		0.95			*- signs of lamination present throughout layer*
		1.30	D					Very stiff high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
		1.50		HVP=125.0				*- large amount of flint gravel observed between 1.20-1.45m*
		1.80	D					
		1.90		HVP=139.0				
		2.30	D					
		2.80	D					
					2.90			End of Borehole at 2.90m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered. Window sampler refused at 2.90m, tube went off line significantly. Poor sample recovery between 2.00-2.40m

AGS

RSA GEOTECHNICS LTD

Percussion Drilling Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 11/08/2022
Location: Ipswich, Suffolk	Contractor: Borehole Services / RSA Geotechnics	Co-ords: E619140.00 N246340.00
Project No. : 16118SI	Crew Name: MR & LG	Drilling Equipment: Percussive window sampler

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS10	WS		MR	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					Topsoil (Dark-brown slightly silty slightly clayey medium-coarse sand with some angular-subrounded fine-coarse flint gravel and occasional rootlets and plant debris)
		0.50	D		0.45			Brown slightly silty very clayey medium-coarse SAND with some angular-subangular fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
		0.90	D		0.75			Brown slightly silty very clayey medium-coarse SAND with some angular-subangular fine-coarse flint gravel and rare rootlets. (Lowestoft Formation)
		1.40 1.40	D	HVP=79.0	1.25			Firm high strength brown slightly silty CLAY with some angular-subangular fine-medium flint gravel and rare angular-subangular fine chalk gravel. (Lowestoft Formation) *- signs of lamination found throughout layer*
		1.90 1.90	D	HVP=88.0	1.75			Firm high strength brown slightly silty slightly sandy CLAY with some angular-subangular fine-coarse flint and chalk gravel and rare pockets of orange-brown medium-coarse sand. (Lowestoft Formation) *- sand pockets found throughout layer*
		2.40 2.40	D	HVP=68.0	2.25			Firm-stiff medium to high strength brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
		2.90 2.90	D	HVP=79.0				*- layer gets progressively stiffer between 3.00-4.00m*
		3.40 3.50	D	HVP=138.0				
		3.90	D		4.00			End of Borehole at 4.00m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No collapse. No groundwater encountered.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP1	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.15	D					Topsoil
				0.35			Very stiff-hard dry blocky red brown very sandy silty CLAY with rootlets and occasional fine-coarse chalk and flint gravel. (Lowestoft Formation)
	0.70	D					
				0.85			Very stiff-hard dry blocky grey brown very sandy silty CLAY with frequent fine-coarse chalk gravel and some rootlets, fine-coarse flint gravel and chalk and flint cobbles. (Lowestoft Formation)
	1.00	D					
	1.50	D					
				1.70			Loose wet orange brown sandy SILT/CLAY with rare fine chalk gravel (Lowestoft Formation)
	2.00	D					
				2.40			Loose wet orange brown silty SAND with frequent fine-medium flint gravel and some flint cobbles. (Lowestoft Formation)
	2.60	D					
	3.00	D					
				3.20			End of Trial Pit at 3.20m

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse.		

Remarks

No groundwater encountered. Coordinates 618420 mE 247100 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP2	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.50			Topsoil
	0.70	D		0.90			Very stiff dry blocky red brown very sandy silty CLAY with fine-coarse chalk and flint gravel and rootlets. (Lowestoft Formation)
	1.40	D					Very stiff dry friable grey brown sandy silty CLAY with frequent fine-coarse chalk gravel and some flint and chalk cobbles. (Lowestoft Formation)
	1.80	D					
	2.30	D		2.60			
	2.80	D					Medium dense coarse red brown SAND with occasional fine-medium flint gravel. (Lowestoft Formation)
	2.90	B		3.20			
							End of Trial Pit at 3.20m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618520 mE 247160 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP3	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20	D					Topsoil
				0.40			
	0.60	D					Very stiff dry blocky mottled grey and red brown very sandy silty CLAY with fine-coarse chalk and flint gravel and some cobbles. (Lowestoft Formation)
				0.80			
	1.20	D					Very stiff extremely high strength dry friable brown grey sandy silty CLAY with frequent fine-coarse chalk gravel and some flint and chalk cobbles. (Lowestoft Formation)
							- sandlense at 1.30m red brown sand, approximately 0.30m x 0.60m
	1.70	D					
	1.80	PP	4.40				
	2.20	D					
	2.80	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618640 mE 247160 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP4	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.50			
	0.70	D					Very stiff dry blocky brown silty sandy CLAY with fine-coarse chalk and flint gravel and rootlets. (Lowestoft Formation)
				1.20			
	1.40	D					Very stiff dry blocky brown grey silty CLAY with frequent fine-coarse chalk gravel and some chalk and flint cobbles. (Lowestoft Formation)
	1.90	D					
	2.50	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618540 mE 247060 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP5	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.40			Topsoil
	0.65	D		0.80			Very stiff-hard dry blocky grey brown very sandy silty CLAY with some fine-coarse chalk gravel and rootlets. (Lowestoft Formation)
	0.95	D					Very stiff-hard dry blocky light brown grey very sandy silty CLAY with frequent fine-coarse chalk gravel and some chalk and flint cobbles. (Lowestoft Formation)
	1.70	D					
	2.30	D					
	2.90	D		3.10			End of Trial Pit at 3.10m

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618660 mE 247080 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP6	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.45			Topsoil
	0.70	D					Very stiff dry blocky grey brown silty sandy CLAY with fine-coarse flint and chalk gravel and some rootlets. (Lowestoft Formation)
							- red brown sandy lense at 0.75m approximately 0.20 x 0.50m
	1.30	D					
							- an increase in chalk and flint cobbles beyond 1.50m
	1.80	D					
	2.40	D					
	2.80	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse.		

Remarks

No groundwater encountered. Coordinates 618580 mE 246960 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP7	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20	D					Topsoil
				0.35			Very stiff dry blocky mottled brown and grey brown silty sandy CLAY with fine-coarse chalk gravel and some fine-coarse flint gravel and cobbles. (Lowestoft Formation)
	0.60	D					
				0.90			Very stiff dry blocky brown grey silty CLAY with frequent fine-coarse chalk gravel and occasional chalk and flint cobbles. (Lowestoft Formation)
	1.20	D					*- small red brown sandy lense at 1.20m roughly 10cm x 15cm*
	1.80	D					
	2.30	D					
				2.80			Very stiff blocky dark brown grey silty CLAY with some fine-coarse chalk and flint gravel and rootlets. (Lowestoft Formation)
	2.90	D		3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618700 mE 246980 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP8	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.40			Topsoil
	0.60	D					Very stiff dry blocky brown silty sandy CLAY with fine-coarse chalk and flint gravel and occasional flint cobbles. (Lowestoft Formation)
				0.75			*- a lense of red brown clayey SAND approximately 0.20m x 0.30m*
							Very stiff extremely high strength mottled grey brown and orange brown silty sandy CLAY with frequent fine-coarse chalk gravel and occasional flint gravel and cobbles. (Lowestoft Formation)
	1.40	D					
	2.00	D					
	2.00	PP	4.15				
	2.30	D					
				3.10			End of Trial Pit at 3.10m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618620 mE 246860 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP9	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.25			
	0.40	D					Very stiff dry blocky slightly sandy CLAY with occasional fine-medium flint and chalk gravel and some fine rootlets. (Lowestoft Formation)
				0.55			
							Very stiff dry mottled light grey and grey brown slightly sandy CLAY with some subrounded fine-medium chalk gravel and occasional subangular flint gravel with traces of rootlets and occasional flint nodules. (Lowestoft Formation)
	1.30	D					
	1.50	PP	4.50				
	2.00	D					
							- becomes slightly moist below 2.30m
	2.70	D					
	2.80	PP	4.50				
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618720 mE 246860 mN. Pea gravel surrounded land drain trending approximately N-S at 0.60m. TP relocated 3m to NE to avoid.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP10	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.50			Topsoil
	0.60	D					Very stiff-hard dry blocky brown sandy CLAY with some fine-medium flint gravel and rootlets. (Lowestoft Formation)
				0.90			Stiff to very stiff friable grey brown silty sandy CLAY with frequent fine-coarse chalk gravel and occasional flint gravel. (Lowestoft Formation)
	1.10	D					
							- more mottled from 1.50m grey brown and orange brown
	1.70	D					
	2.20	D					
				2.85			
	2.90	D					Very stiff extremely high strength moist friable light orange brown sandy very silty CLAY with some fine-medium chalk gravel and pockets of silty sand. (Lowestoft Formation)
	2.95	PP	4.50	3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618440 mE 246740 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP11	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.35			
	0.50	D					Very stiff dry blocky brown silty sandy CLAY with some fine-medium flint and chalk gravel and roots. (Lowestoft Formation)
				0.80			
	0.90	D					Very stiff dry friable grey brown sandy silty CLAY with fine-medium chalk gravel and occasional flint gravel and cobbles. (Lowestoft Formation)
	1.30	D					
	1.90	D					
				2.00			Stiff orange brown silty sandy CLAY with some fine-coarse flint gravel and cobbles. (Lowestoft Formation)
	2.40	D					
	2.95	D					
				3.10			End of Trial Pit at 3.10m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618450 mE 246740 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP12	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.45			Topsoil
	0.70	D					Very stiff-hard dry blocky red brown very sandy CLAY with roots and occasional flint cobbles. (Lowestoft Formation)
				1.10			
	1.20	D					Lense of irregular shaped moist red brown slightly clayey fine-medium SAND. (Lowestoft Formation)
				1.40			
	1.50	D					Very stiff extremely high strength friable damp mottled grey and orange brown slightly sandy CLAY with some fine-medium rounded-subrounded chalk gravel, occasional flint gravel and gravel size pockets of red brown clayey sand. (Lowestoft Formation)
	1.50	PP	4.50				
	2.20	D					
	2.80	PP	4.13				
	2.90	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.40	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618640 mE 246740 mN.

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP13	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.15	D					Topsoil
				0.30			
	0.50	D					Very stiff-hard dry friable red brown sandy CLAY with occasional subrounded flint gravel and rootlets with pockets of red brown silty sand. (Lowestoft Formation)
				0.60			
	1.00	D					Very stiff extremely high strength dry friable light grey and greenish brown sandy CLAY with some fine-medium subrounded chalk gravel and occasional angular flint gravel and cobble size nodules with traces of rootlets. (Lowestoft Formation)
	1.00	PP	4.50				
	1.80	D					*- becoming slightly damp at 1.80m*
							- occasional chalk cobbles
	2.40	D					*- becoming stiff below 2.40m approximately*
	2.50	PP	3.00				
	2.90	PP	3.75				
	3.00	D		3.00			End of Trial Pit at 3.00m

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.50	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618860 mE 246780 mN.

AGS

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP14	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.30	D		0.40			Topsoil
	0.50	D					Very stiff dry mid brown sandy silty CLAY with some fine-medium chalk gravel and occasional flint cobbles. (Lowestoft Formation)
	0.90	D		0.80			Very stiff dry friable light brown sandy silty CLAY with frequent fine-medium chalk and flint gravel occasional flint cobbles and rootlets. (Lowestoft Formation)
	1.50	D					*- less chalk from 1.30m*
	2.10	D					*- becomes moist from 1.90m*
	2.80	D		2.90			End of Trial Pit at 2.90m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618560 mE 246620 mN.

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechancial excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP15	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.25			Topsoil
	0.40	D					Very stiff-hard dry friable blocky brown slightly sandy CLAY with occasional fine flint gravel and rootlets. (Lowestoft Formation)
	0.80	PP	4.50	0.70			Very stiff-hard extremely high strength dry friable grey brown and grey slightly sandy CLAY with some subrounded fine-coarse chalk and occasional flint gravel with traces of rootlets. (Lowestoft Formation)
	1.10	D					
	1.40	PP	4.50				
	1.60	D					
	2.20	D					*- becoming moist below 2.10m*
	2.40	PP	4.50				
	2.80	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618680 mE 246640 mN.

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP16	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.25			Very stiff extremely high strength dry friable brown slightly sandy silty CLAY with occasional flint gravel and rootlets. (Lowestoft Formation)
	0.60	D					
	0.60	PP	4.50				
				0.80			Very stiff extremely high strength dry friable light grey and greenish brown sandy CLAY with some fine-medium subrounded chalk gravel and occasional medium-coarse flint gravel and cobble size nodules. (Lowestoft Formation)
	1.00	PP	4.50				
	1.30	D					
				1.70			Very stiff friable fissured light grey and brown sandy CLAY with some flint gravel and cobbles. (Lowestoft Formation)
	1.80	D					
							- becoming locally very sandy below 2.10m
	2.30	D					
				2.40			Very stiff friable mottled grey brown, orange brown and occasional dark grey slighty sandy CLAY with much subrounded-rounded fine-medium chalk gravel. (Lowestoft Formation)
	2.80	D					
	2.80	PP	4.50				
				3.00			End of Trial Pit at 3.00m

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.40	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618780 mE 246660 mN.

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 15/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP17	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.25			
	0.40	D					Very stiff-hard dry brown slightly sandy silty CLAY with some fine-medium subangular flint gravel and rootlets. (Lowestoft Formation)
				0.70			
	0.80	D					Very stiff-hard dry friable light brown sandy silty CLAY with some fine-medium chalk and flint gravel with occasional flint cobbles and traces of rootlets. (Lowestoft Formation)
	1.00	PP	4.50				
				1.40			
	1.50	D					Very stiff friable light brown sandy silty CLAY with some fine-medium chalk gravel and occasional fine-medium flint gravel and flint cobbles and rootlets. (Lowestoft Formation)
							- becoming moist with depth
	2.00	D					
	2.50	D					
				3.00			End of Trial Pit at 3.00m

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.50	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 618700 mE 246520 mN. Digger ripping through ground down to 1.40m. Able to dig below 1.40m

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 16/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP18	TP		PAG/RB	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10	D					Topsoil
				0.40			
	0.60	D					Very stiff-hard dry blocky red brown very sandy silty CLAY with rootlets and fine-coarse flint gravel. (Lowestoft Formation)
				0.85			
	1.10	D					Very stiff-hard extremely high strength dry blocky grey brown silty sandy CLAY with frequent fine-coarse chalk gravel and rootlets, fine-coarse flint gravel and occasional flint cobbles. (Lowestoft Formation)
	1.40	PP	4.50				
							- small lense of coarse red brown sand at 1.50m approximately 20cm x 15cm
	1.80	D					
	2.50	D					
	2.90	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.30	0.60	No collapse		

Remarks

No groundwater encountered. Coordinates 619128 mE 246415 mN.

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Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 17/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP195	TP		MR	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20	D					Topsoil (Very stiff dark-brown slightly silty very sandy clay with some angular-subangular fine-medium flint gravel and occasional rootlets and plant debris)
				0.40			
	0.50	D					Very stiff orange-brown slightly silty very sandy CLAY with some angular-subangular fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
				0.70			
	0.90	D					Very stiff mottled grey and brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
							- pocket of sand observed in sidewalls of pit at 0.95-1.15m, minimal sand found in main pit
	1.50	D					
	2.00	D					
							- rare cobble sized flint fragments found between 2.20-2.60m
	2.50	D					
				2.85			
	2.90	D					Orange-brown silty slightly clayey medium-coarse SAND with occasional angular-subrounded fine-medium flint and chalk gravel. (Lowestoft Formation)
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.50	0.80	No collapse		

Remarks

No groundwater encountered. Pit backfilled to 0.85m with stone and vertical monitoring pipe - BRE Digest 365 soakage tests undertaken. Coordinates 618470mE, 247130mN

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 18/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP205	TP		LG	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.40	D					Topsoil (Dark brown slightly sandy clay with some flint gravel and occasional rootlets)
	0.80	D		0.70			Stiff brown slightly silty sandy CLAY with some angular-subrounded flint gravel. (Lowestoft Formation)
	1.20	D		1.00			Firm light grey sandy CLAY with occasional sub-rounded fine flint and chalk gravel. (Lowestoft Formation)
	1.60	D		1.40			Stiff dark brown slightly sandy CLAY with occasional angular-subrounded flint gravel. (Lowestoft Formation)
	2.30	D		2.00			Orange silty SAND with occasional flint gravel. (Lowestoft Formation)
	2.80	D		2.60			Light brown and orange silty SAND with occasional fine angular-subrounded flint and chalk gravel. (Lowestoft Formation)
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
		No collapse		

Remarks

No groundwater encountered. Coordinates 618620mE, 247200mN

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 17/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP215	TP		MR	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20	D					Topsoil (Very stiff dark-brown slightly silty very sandy clay with some angular-subangular fine-medium flint gravel and occasional rootlets and plant debris)
				0.45			
	0.55	D					Very stiff orange-brown slightly silty very sandy CLAY with some angular-subangular fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
				0.65			
	0.90	D					Very stiff mottled grey and brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel and occasional rootlets. (Lowestoft Formation)
							- rootlets found between 0.65-1.15m
	1.40	D					
	1.90	D					
	2.40	D					
	2.90	D					
				3.00			End of Trial Pit at 3.00m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.80	0.80	No collapse		

Remarks

No groundwater encountered. Pit backfilled to 0.95m with stone and vertical monitoring pipe - BRE Digest 365 soakage tests undertaken. Coordinates 618620mE, 247030mN

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 17/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP225	TP		MR	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20	D					Topsoil (Very stiff dark-brown slightly silty very sandy clay with some angular-subangular fine-medium flint gravel and occasional rootlets and plant debris)
				0.40			
	0.50	D					Very stiff orange-brown slightly silty very sandy CLAY with some angular-subangular fine-coarse flint gravel and occasional rootlets. (Lowestoft Formation)
				0.65			
	0.90	D					Very stiff mottled grey and brown slightly silty very sandy CLAY with pockets of orange-brown slightly silty medium-coarse sand and much angular-subrounded fine-coarse chalk gravel and some angular-subangular flint gravel. (Lowestoft Formation)
							- large sand pockets found between 0.70-1.20m, mainly found in NW side wall of pit.
				1.30			
	1.50	D					Very stiff mottled grey and brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
	2.00	D					
	2.40	D					
				2.50			End of Trial Pit at 2.50m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.40	0.75	No collapse		

Remarks

No groundwater encountered. Pit backfilled to 0.90m with stone and vertical monitoring pipe - BRE Digest 365 soakage tests undertaken. Coordinates 618585mE, 246740mN

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 17/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP235	TP		MR	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.30	D					Topsoil (Dark-brown slightly silty very sandy clay with some angular-subangular fine-medium flint gravel and occasional rootlets and plant debris and occasional medium-coarse gravel sized brick fragments)
				0.60			
	0.80	D					Very stiff mottled brown and grey slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine gravel to cobble sized flint fragments and occasional rootlets. (Lowestoft Formation) *- rootlets found between 0.60-1.20m* *- colour is predominantly brown at top of layer and gradually becomes more grey at base of layer* *- large flint cobbles found between 1.10-1.20m and 1.65-1.75m*
	1.30	D					
	1.80	D					
	2.30	D					
				2.50			End of Trial Pit at 2.50m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.10	0.70	No collapse		

Remarks

No groundwater encountered. Pit backfilled to 0.80m with stone and vertical monitoring pipe - BRE Digest 365 soakage tests undertaken. Coordinates 618630mE, 246570mN

AGS

RSA GEOTECHNICS LTD

Trial Pit Log

Project Name: Land North of Humber Doucy Lane	Client: PO & WO Jolly Holdings Ltd	Date: 17/08/2022
Location: Ipswich, Suffolk		
Project No. : 16118SI	Equipment: Wheeled mechanical excavator	

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP245	TP		MR	1:25	Sheet 1 of 1

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.30	D					Topsoil (Dark-brown slightly silty very sandy clay with some angular-subangular fine-medium flint gravel and occasional rootlets and plant debris and occasional medium-coarse gravel sized brick fragments)
				0.60			
	0.80	D					Very stiff brown slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subrounded fine-coarse flint gravel. (Lowestoft Formation)
							- one cobble sized flint fragment found at approximately 1.25m
				1.40			
	1.50	D					Very stiff mottled grey and brown slightly silty very sandy CLAY with pockets of orange-brown medium-coarse sand and some angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-coarse flint gravel. (Lowestoft Formation)
				1.75			
	1.90	D					Very stiff grey silty slightly sandy CLAY with pockets of off-white silt and some angular-subrounded fine-coarse chalk and flint gravel. (Lowestoft Formation)
							- contains a large pocket of silt between 2.20-2.30m
	2.30	D					
				2.40			
				2.50			Very stiff grey slightly silty slightly sandy CLAY with much angular-subrounded fine-coarse chalk gravel and some angular-subangular fine-medium flint gravel. (Lowestoft Formation)
							End of Trial Pit at 2.50m

1 2 3 4 5

Dimensions		Trench Support and Comment		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks
2.40	0.70	No collapse		

Remarks

No groundwater encountered. Pit backfilled to 1.20m with stone and vertical monitoring pipe - BRE Digest 365 soakage tests undertaken. Coordinates 619080mE, 246430mN

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TEST REPORT

ISSUED BY

RSA GEOTECHNICS LTD

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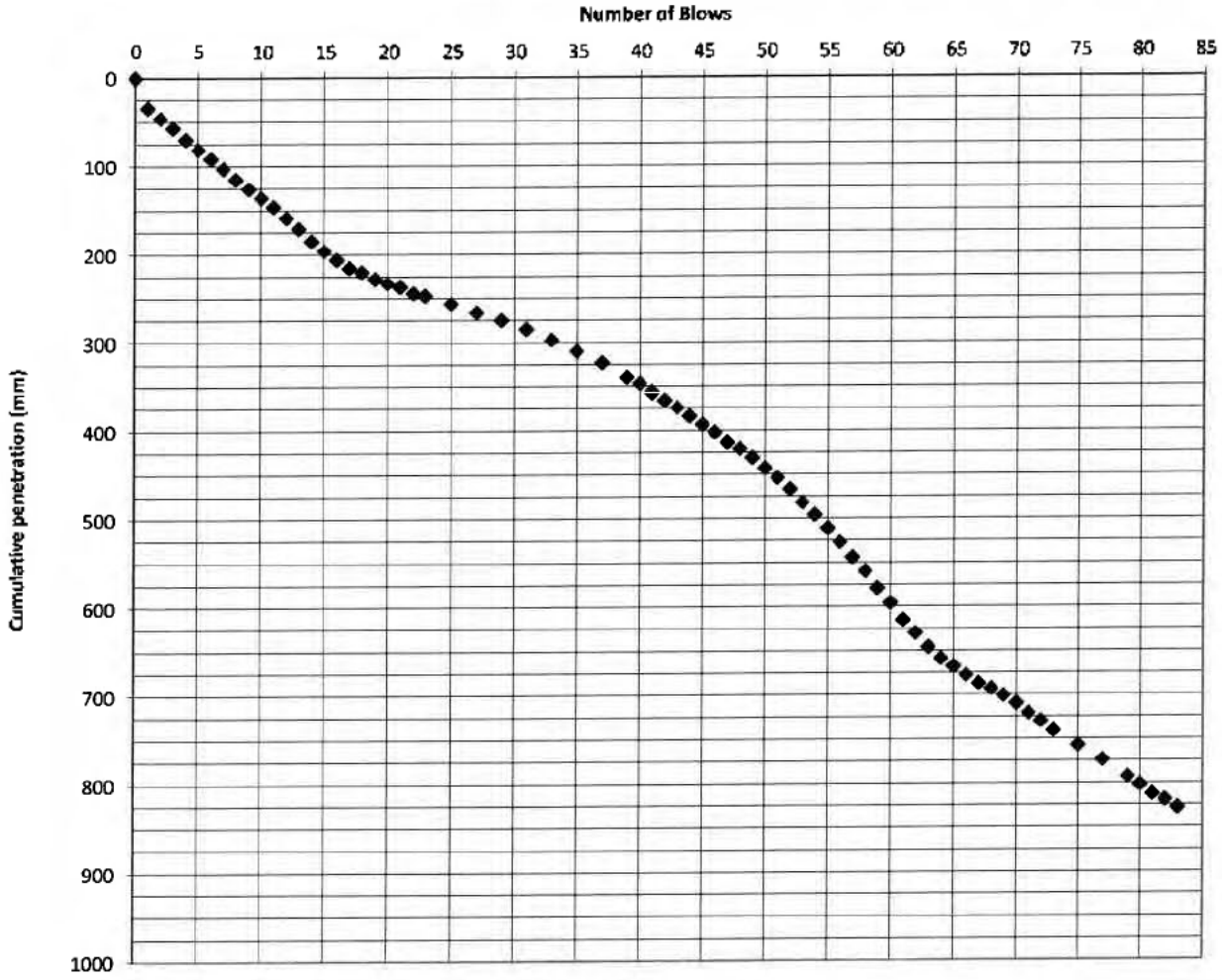
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.23	22
0.23	0.34	50
0.34	0.50	25
0.50	0.65	15
0.65	0.83	29

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP1**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

TEST REPORT

ISSUED BY

RSA GEOTECHNICS LTD

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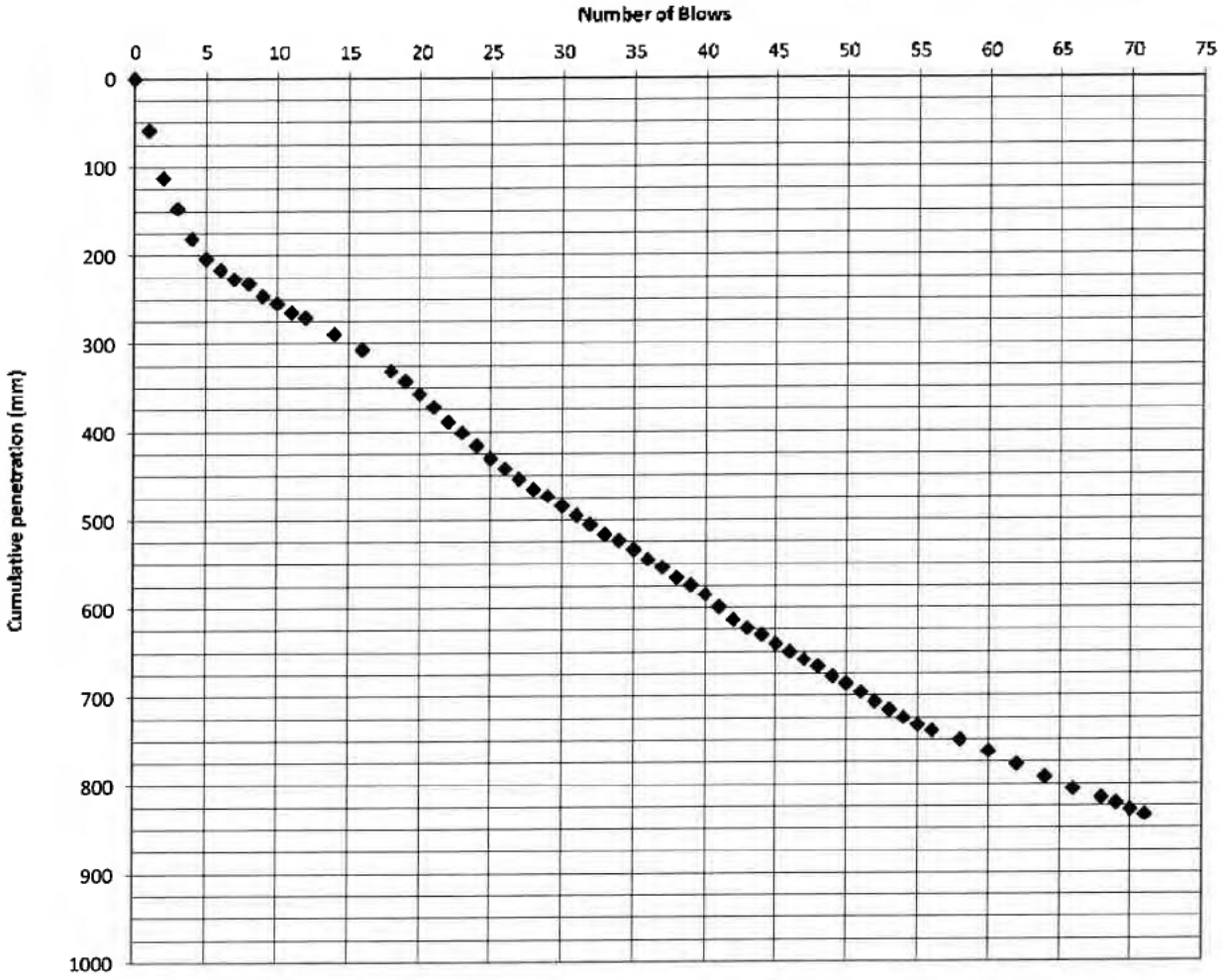
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.20	2.3
0.20	0.33	34
0.33	0.43	18
0.43	0.74	26
0.74	0.84	43

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP2**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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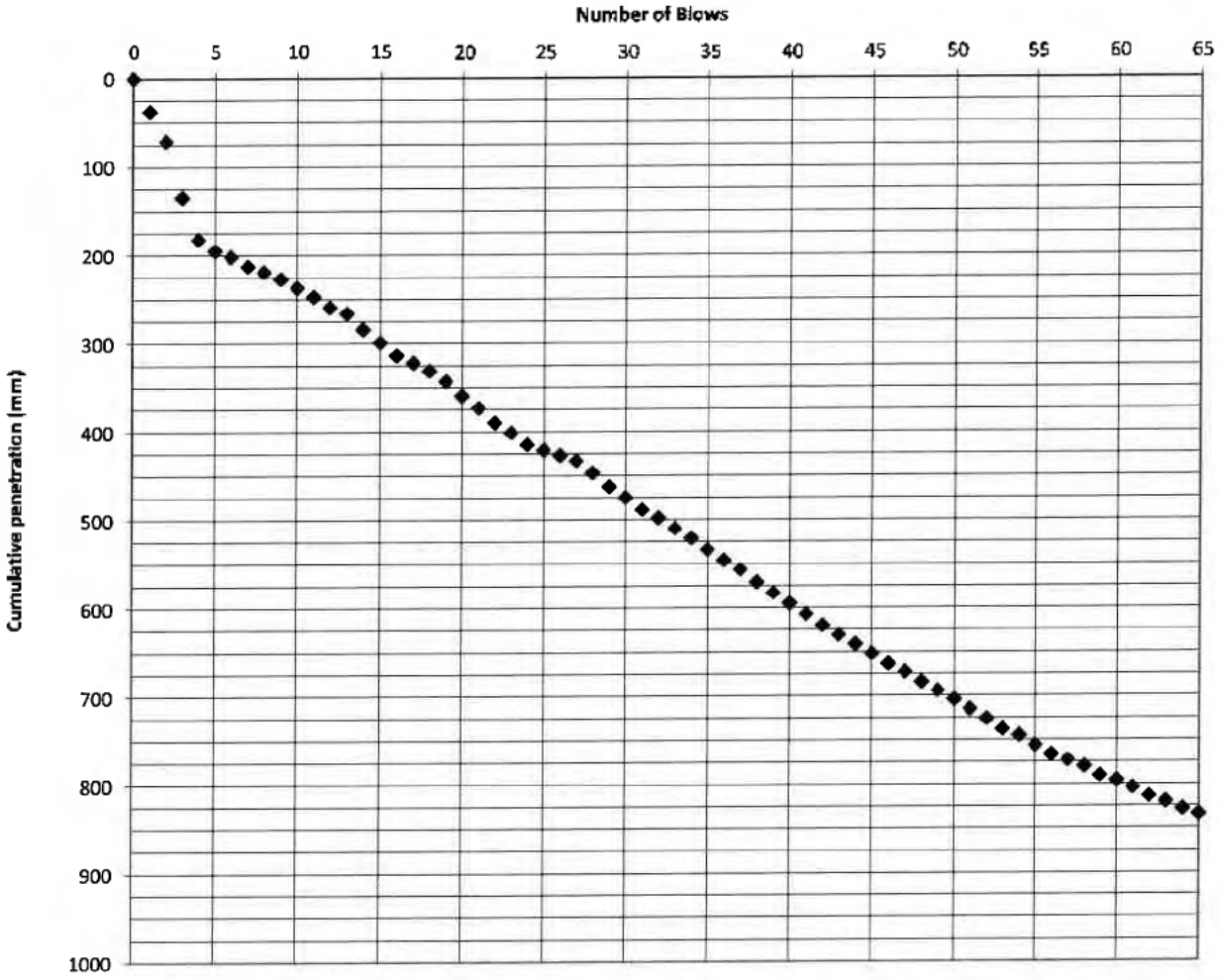
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.18	5.3
0.18	0.42	23
0.42	0.43	45
0.43	0.77	23
0.77	0.83	35

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP3**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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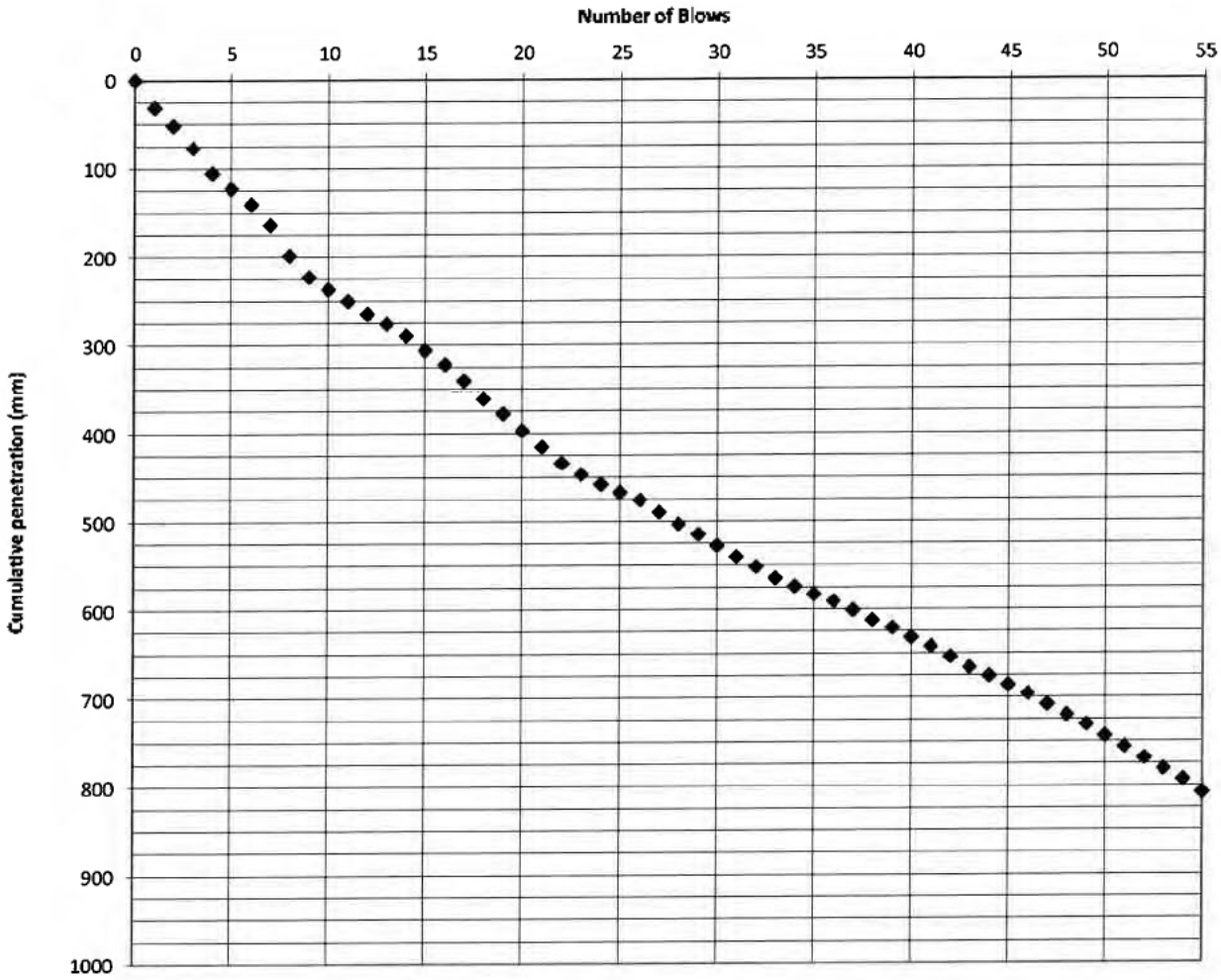
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.16	11
0.16	0.24	10
0.24	0.32	18
0.32	0.45	14
0.45	0.81	23

Operative: MR/JF

Calculated: JMK

Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP4**

Start Depth: **0.00 m**

Date of Test: **24/08/2022**

Job No. **16118SI**

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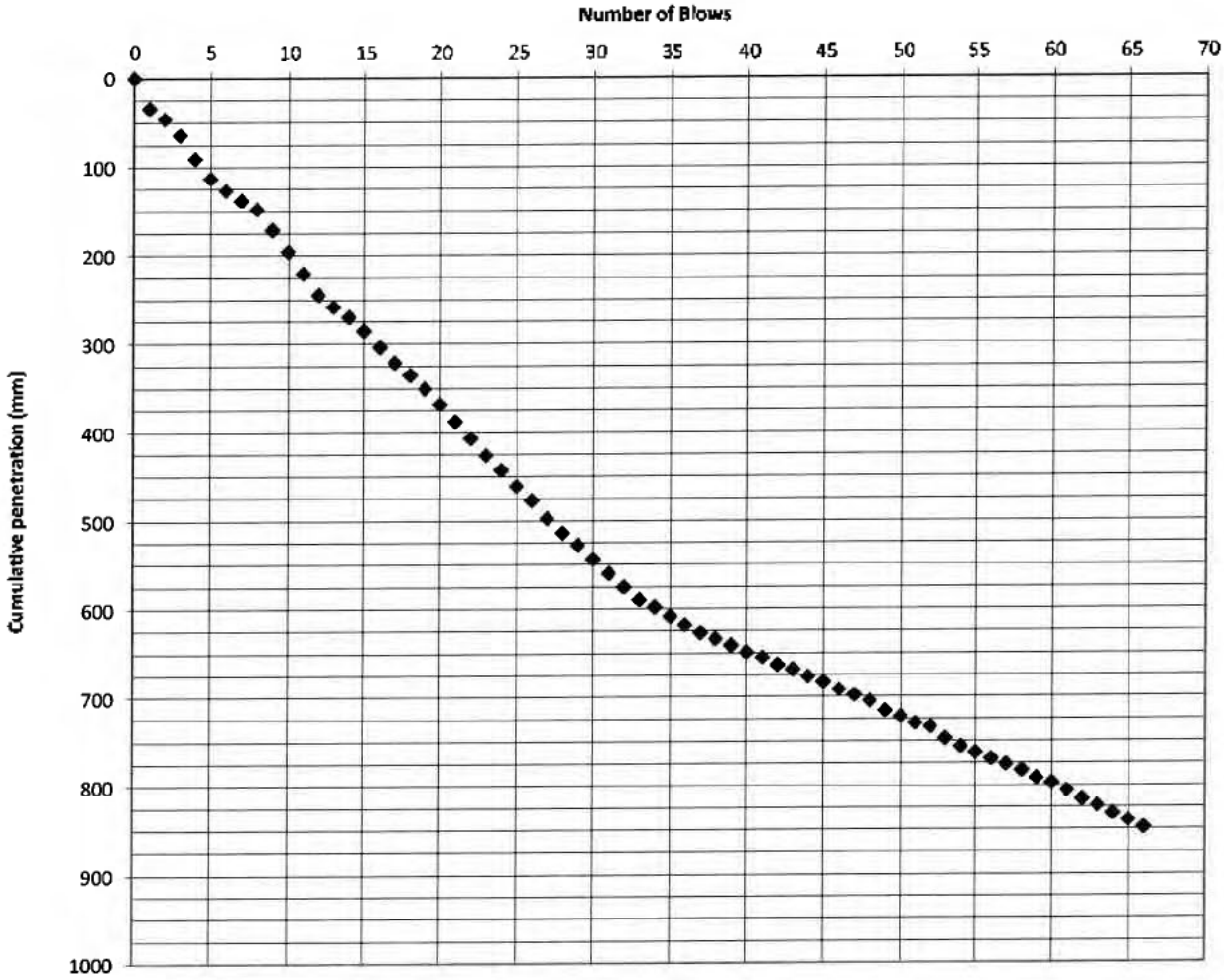

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.13	12
0.13	0.15	25
0.15	0.24	10
0.24	0.60	16
0.60	0.85	34

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP5**
Start Depth: **0.00 m**
Date of Test: **24/08/2022**
Job No. **16118SI**

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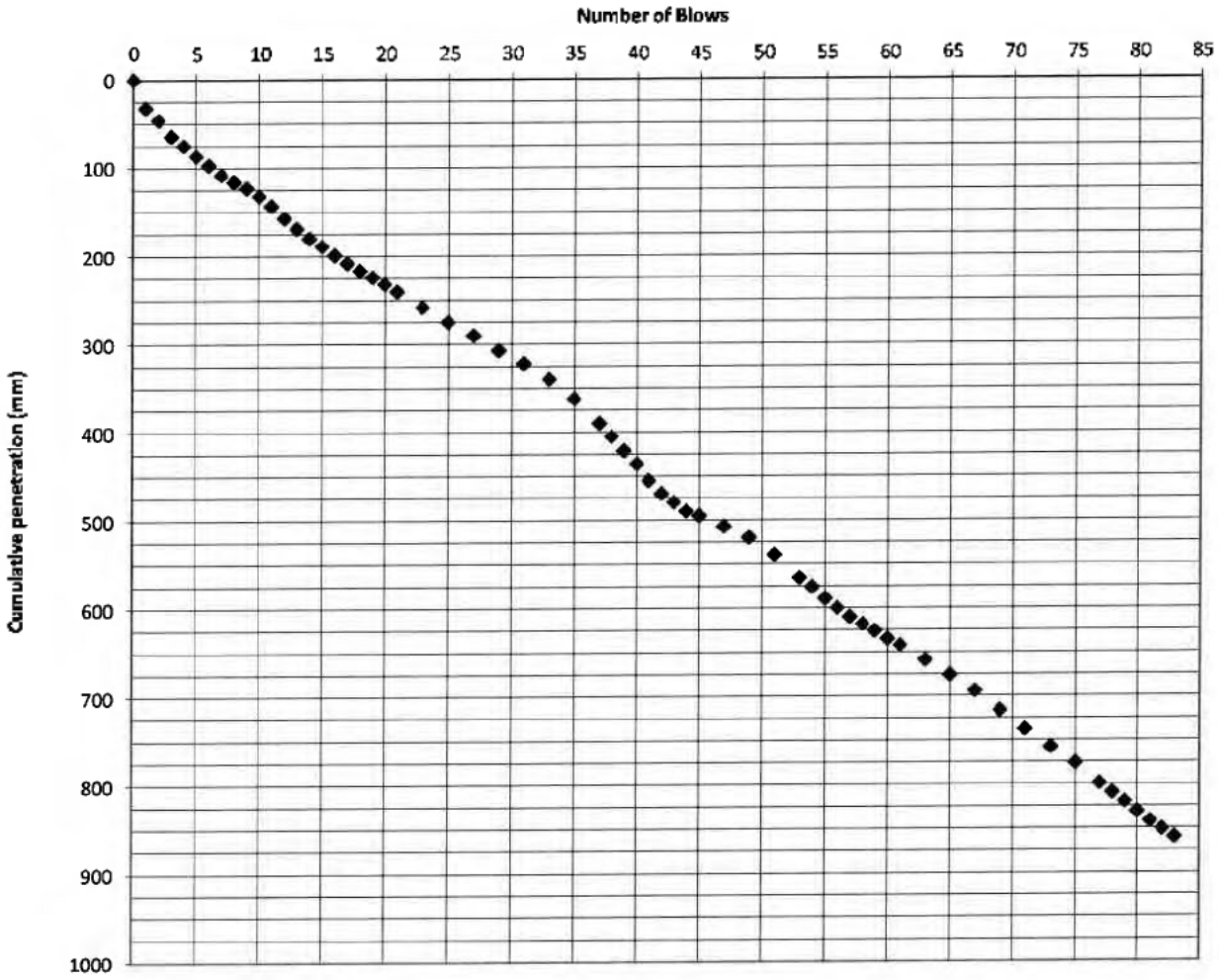
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.36	26
0.36	0.47	17
0.47	0.54	36
0.54	0.66	26
0.66	0.86	26

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP6**
Start Depth: **0.00** **m**
Date of Test: **24/08/2022**
Job No. **16118SI**

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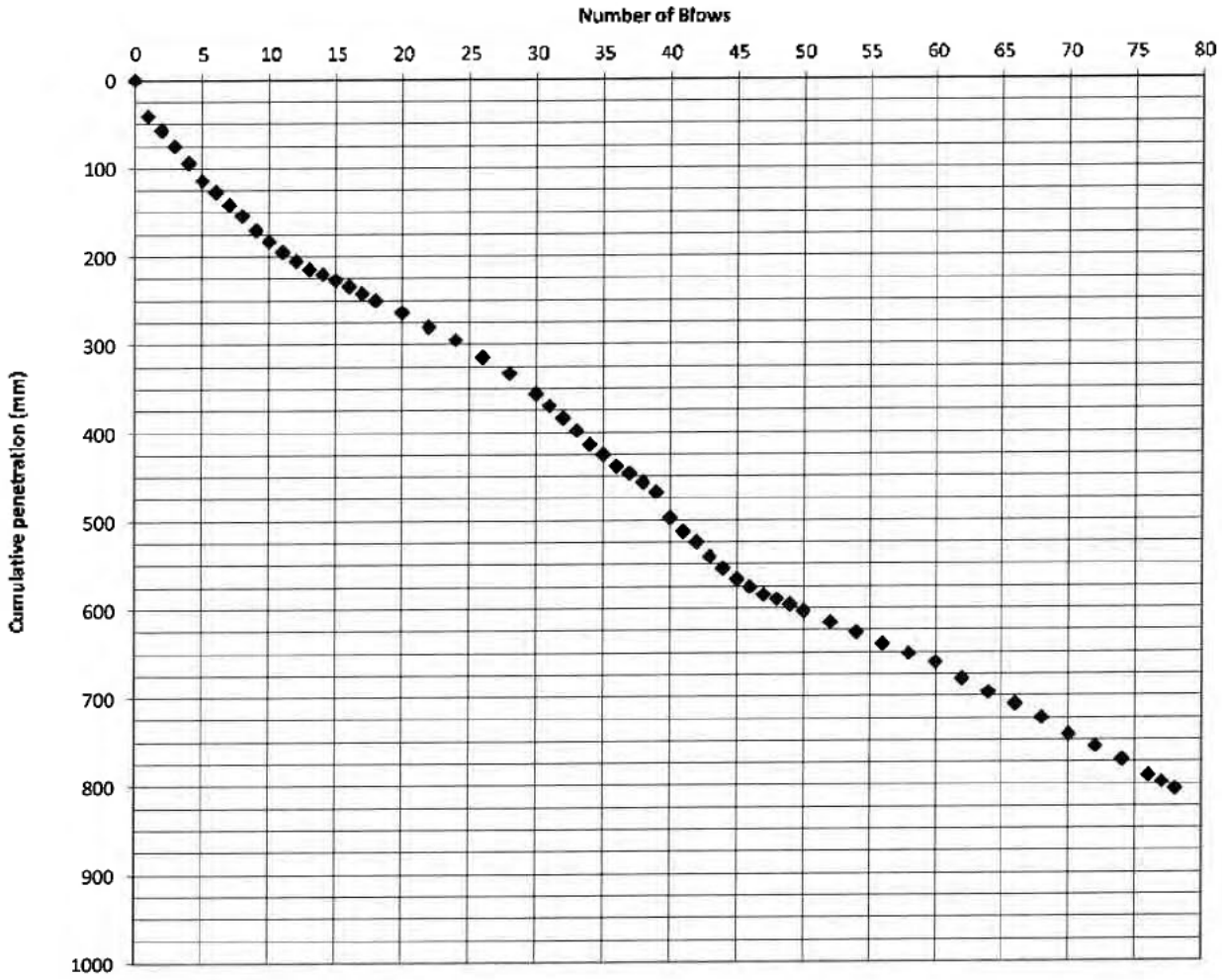

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.21	15
0.21	0.33	34
0.33	0.47	21
0.47	0.58	17
0.58	0.81	38

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP7**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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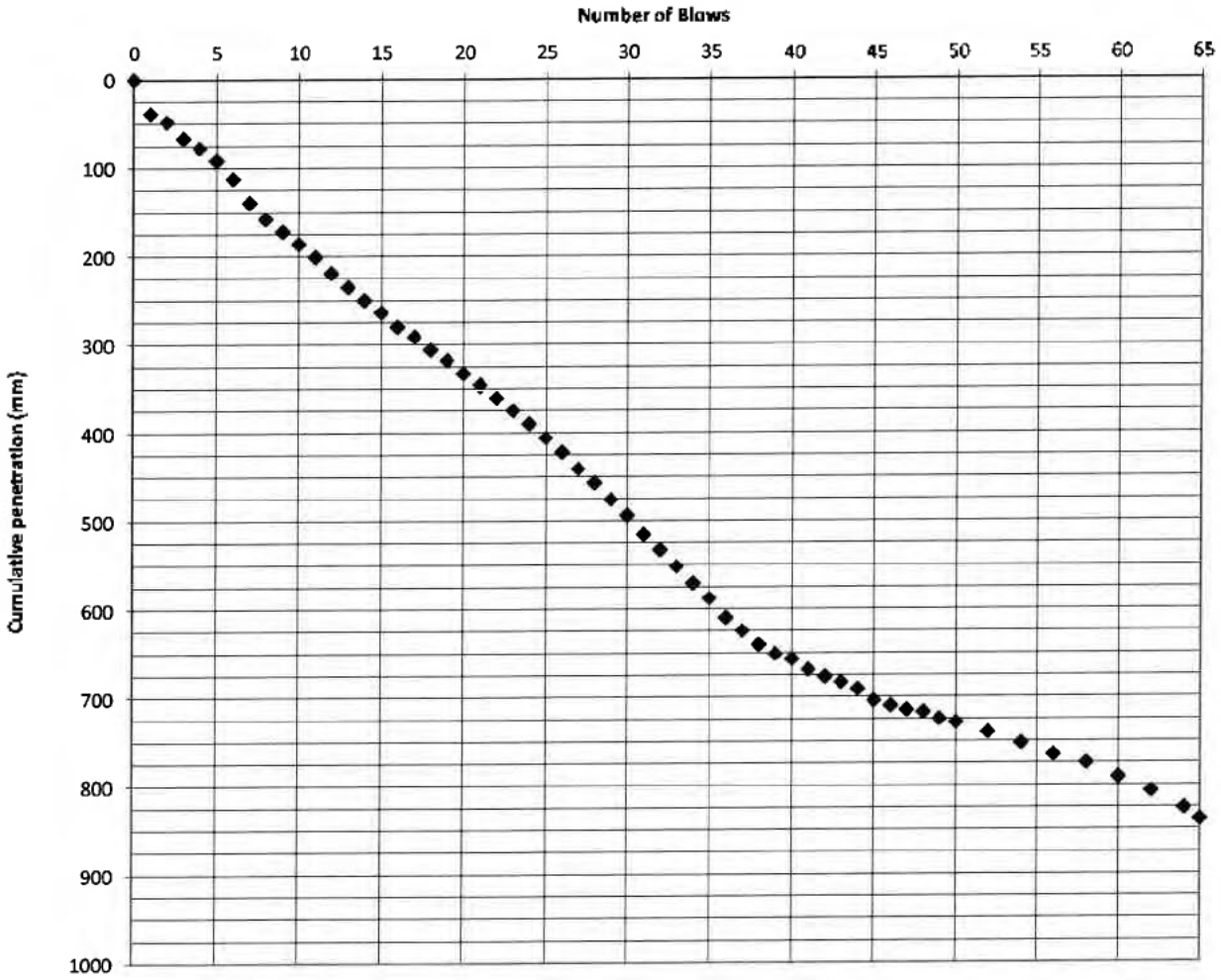

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.04	6.6
0.04	0.39	17
0.39	0.65	15
0.65	0.78	42
0.78	0.84	29

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP8**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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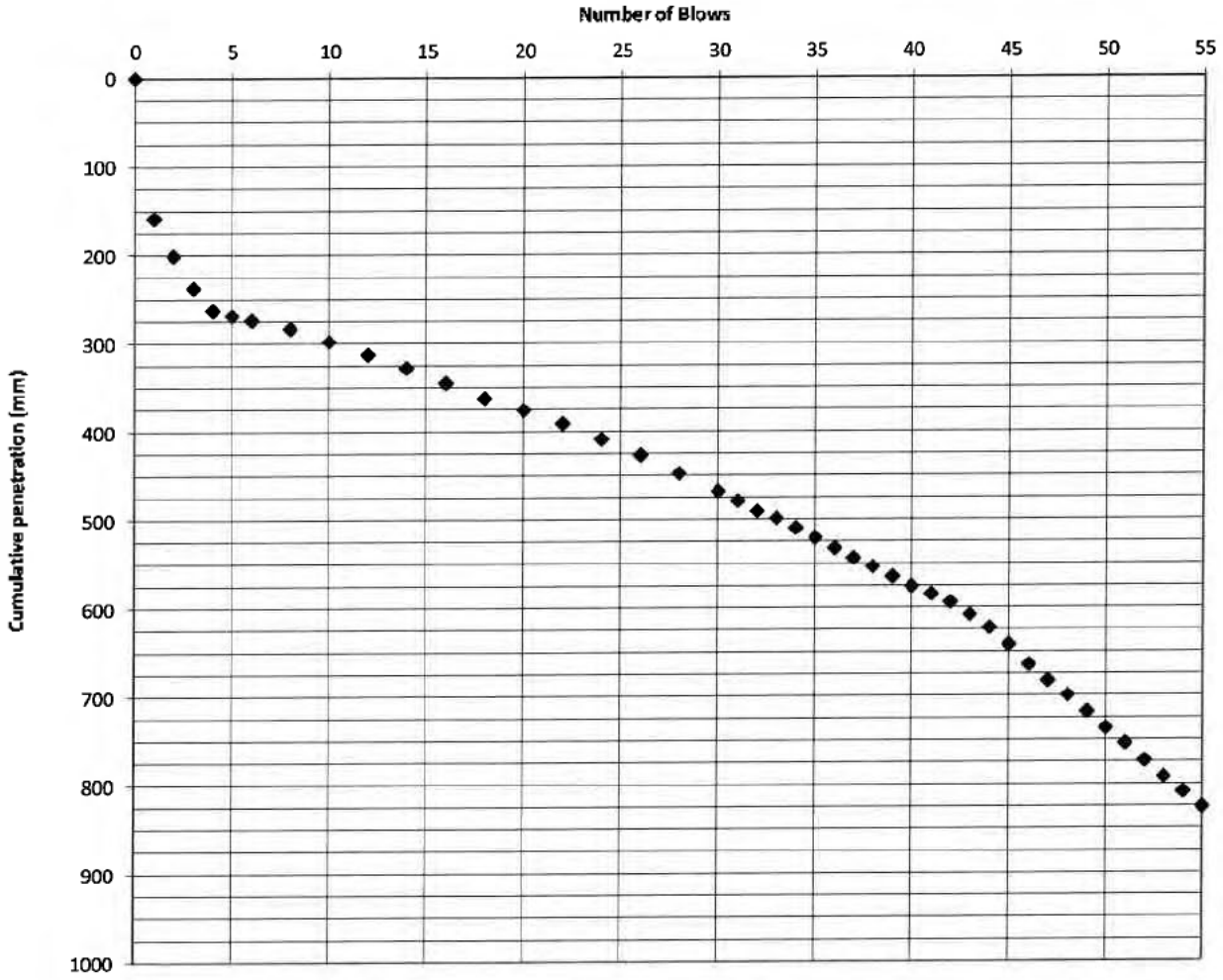

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.16	1.4
0.16	0.26	7.3
0.26	0.47	34
0.47	0.61	24
0.61	0.83	14

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP9**
Start Depth: **0.00** m
Date of Test: **25/08/2022**
Job No. **16118SI**

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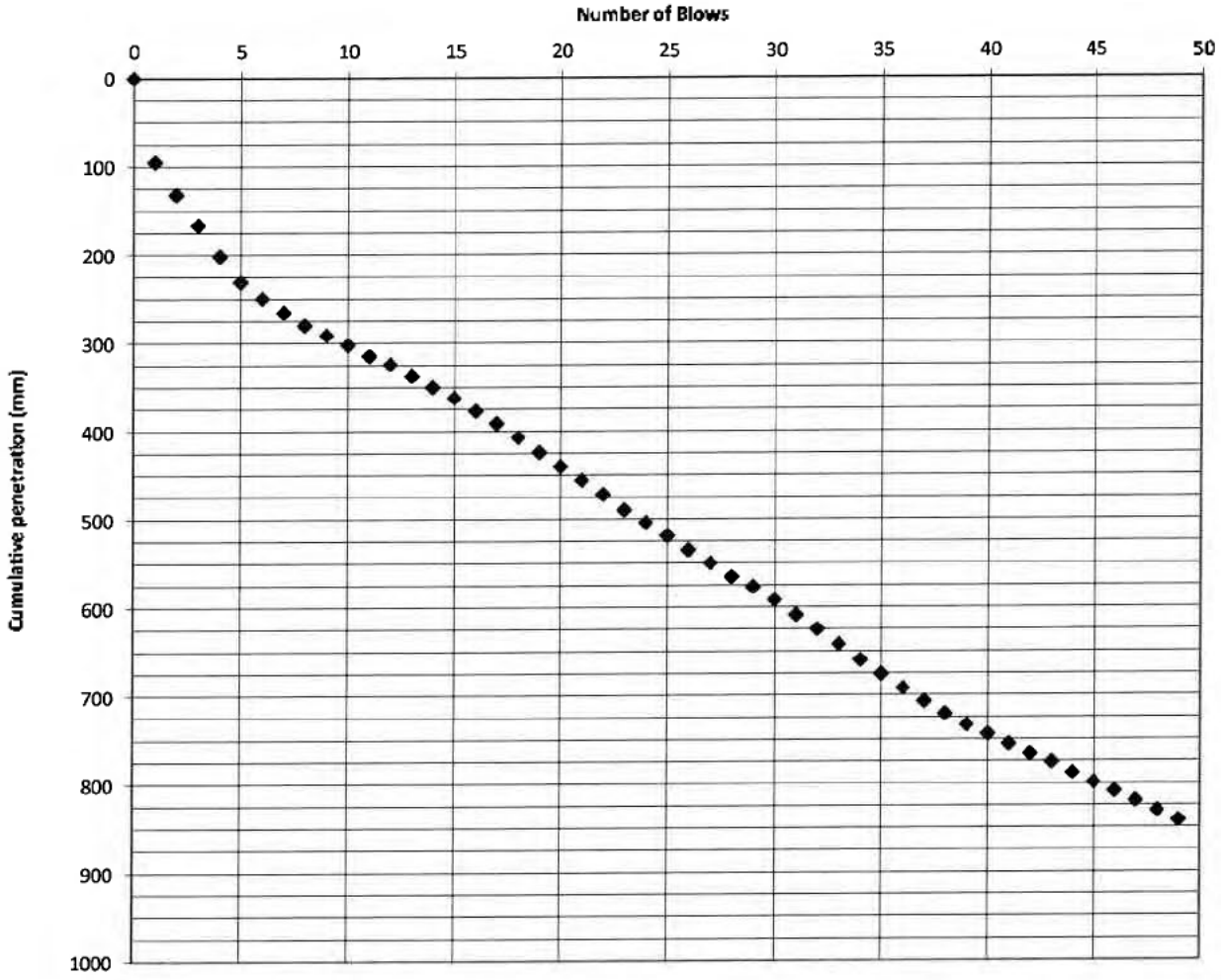

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.10	2.5
0.10	0.23	7.3
0.23	0.36	20
0.36	0.72	17
0.72	0.84	24

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP10**
Start Depth: **0.00 m**
Date of Test: **25/08/2022**
Job No. **16118SI**

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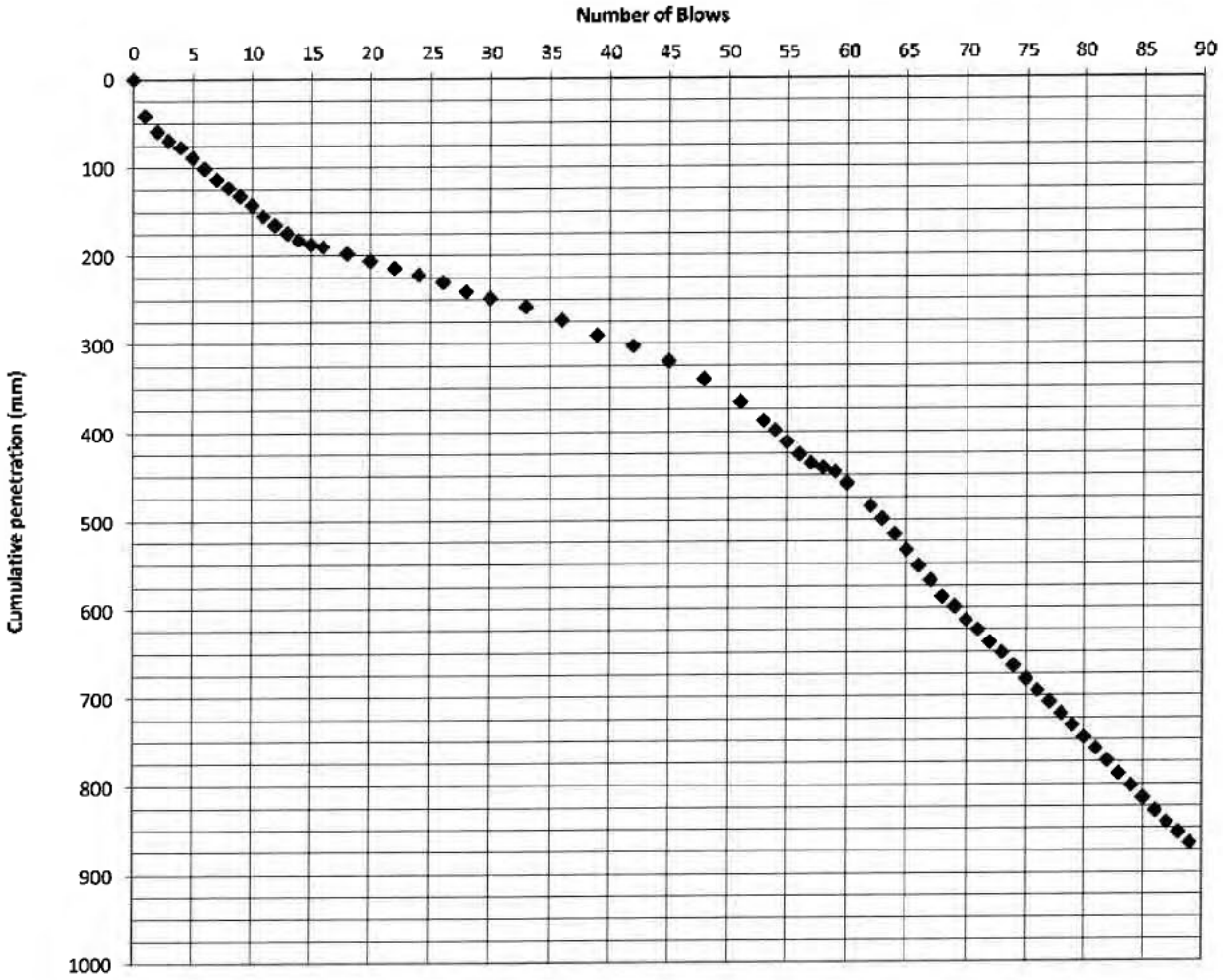

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.04	6.0
0.04	0.19	25
0.19	0.34	60
0.34	0.44	24
0.44	0.45	55
0.45	0.87	19

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP11**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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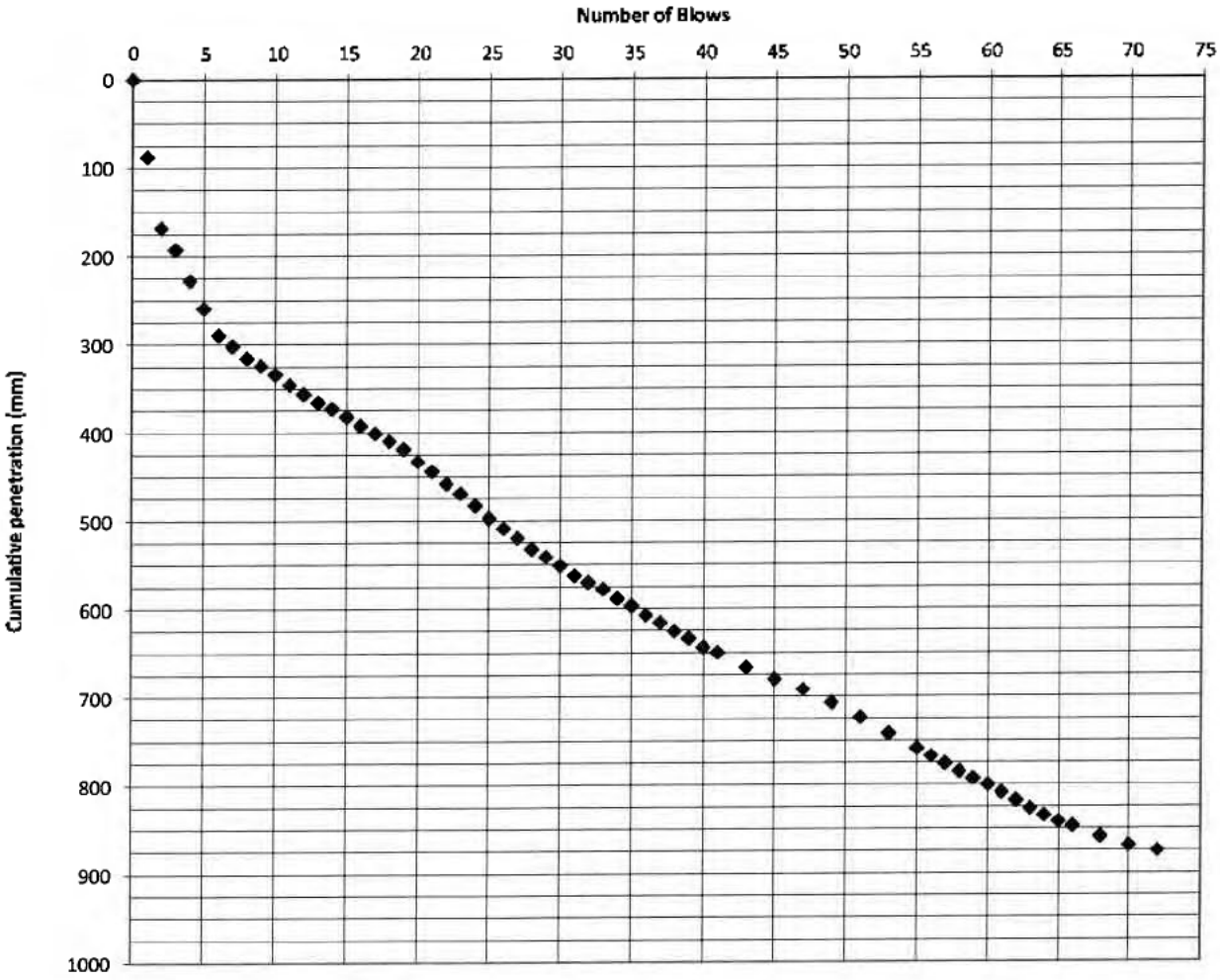

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.17	2.8
0.17	0.30	9.3
0.30	0.42	27
0.42	0.54	21
0.54	0.85	32
0.85	0.88	59

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP12**
Start Depth: **0.00** m
Date of Test: **25/08/2022**
Job No. **16118SI**

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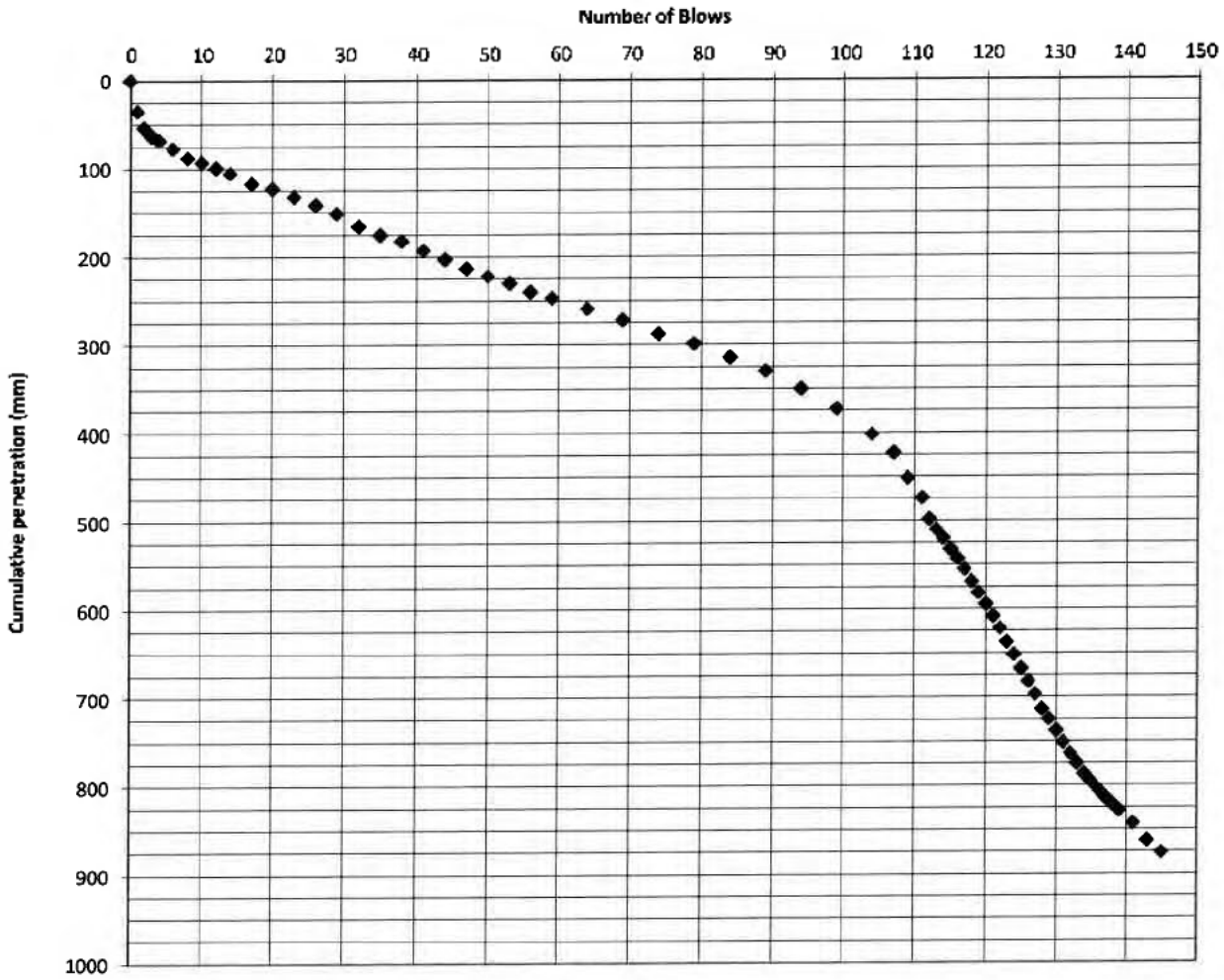

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.06	12
0.06	0.40	84
0.40	0.79	20
0.79	0.88	33

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP13**
Start Depth: **0.00** m
Date of Test: **25/08/2022**
Job No. **16118SI**

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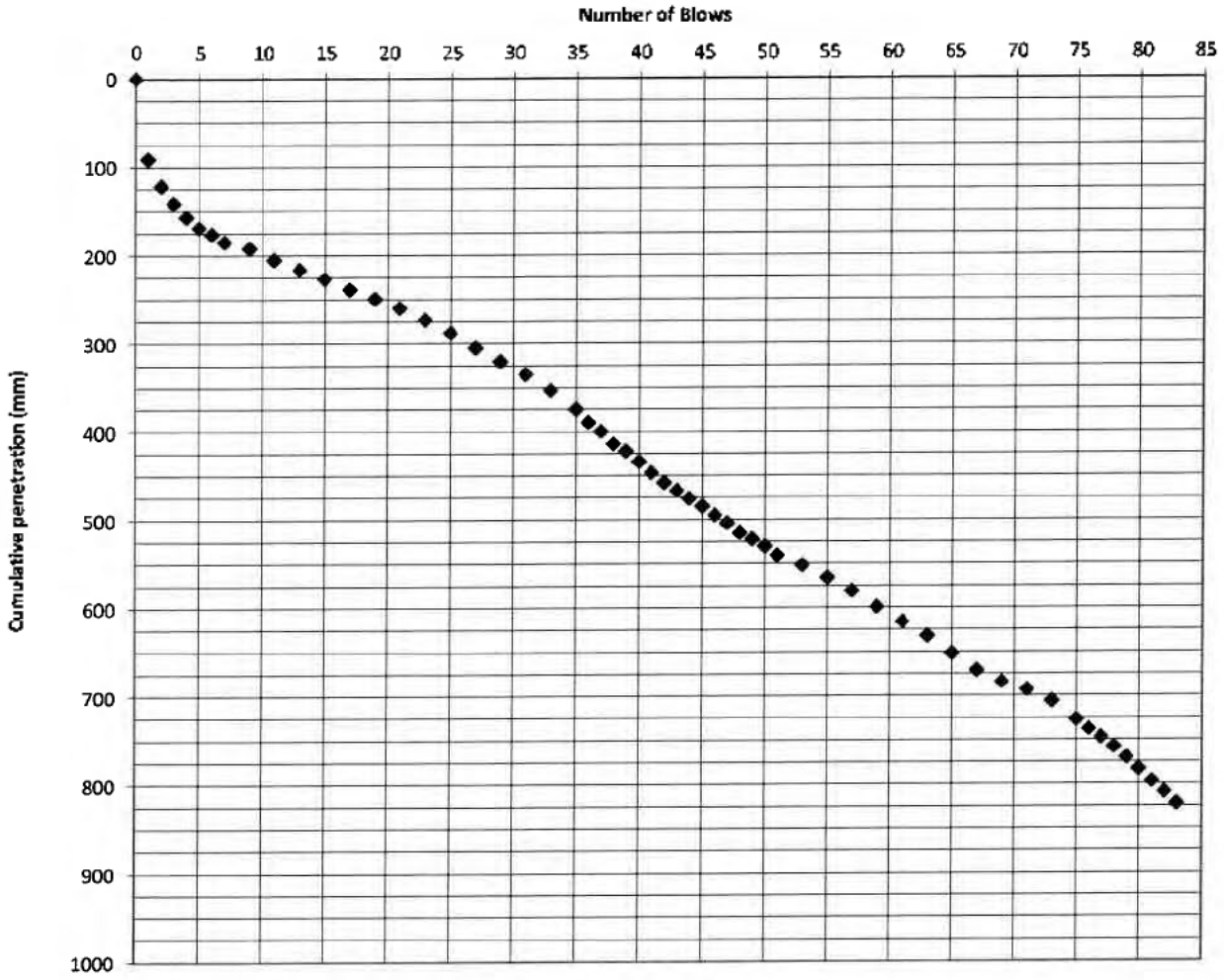

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.09	2.6
0.09	0.17	13
0.17	0.23	96
0.23	0.55	23
0.55	0.71	35
0.71	0.82	23

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP14**
Start Depth: **0.00 m**
Date of Test: **25/08/2022**
Job No. **16118SI**

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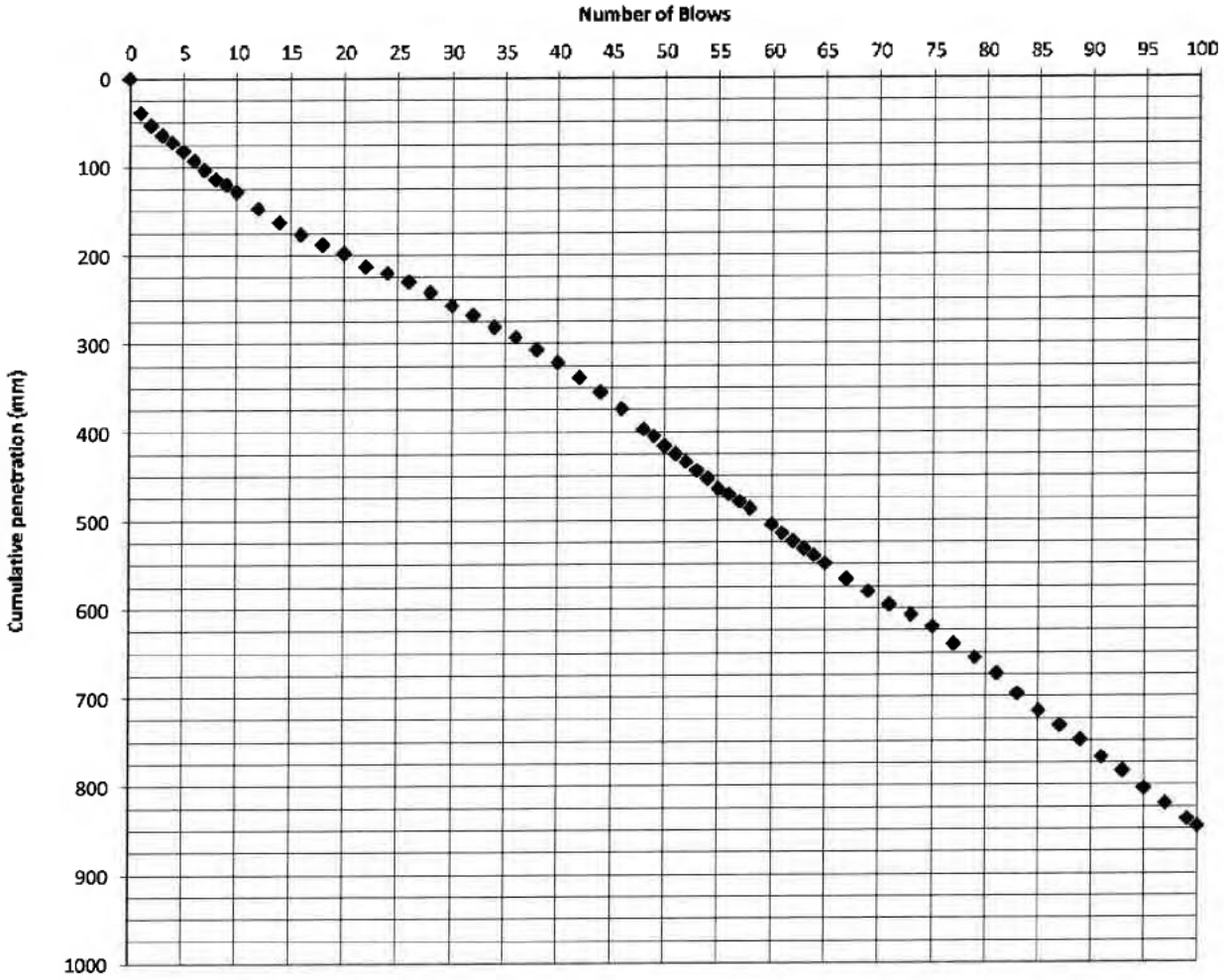

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.04	6.6
0.04	0.18	29
0.18	0.34	44
0.34	0.85	30

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP15**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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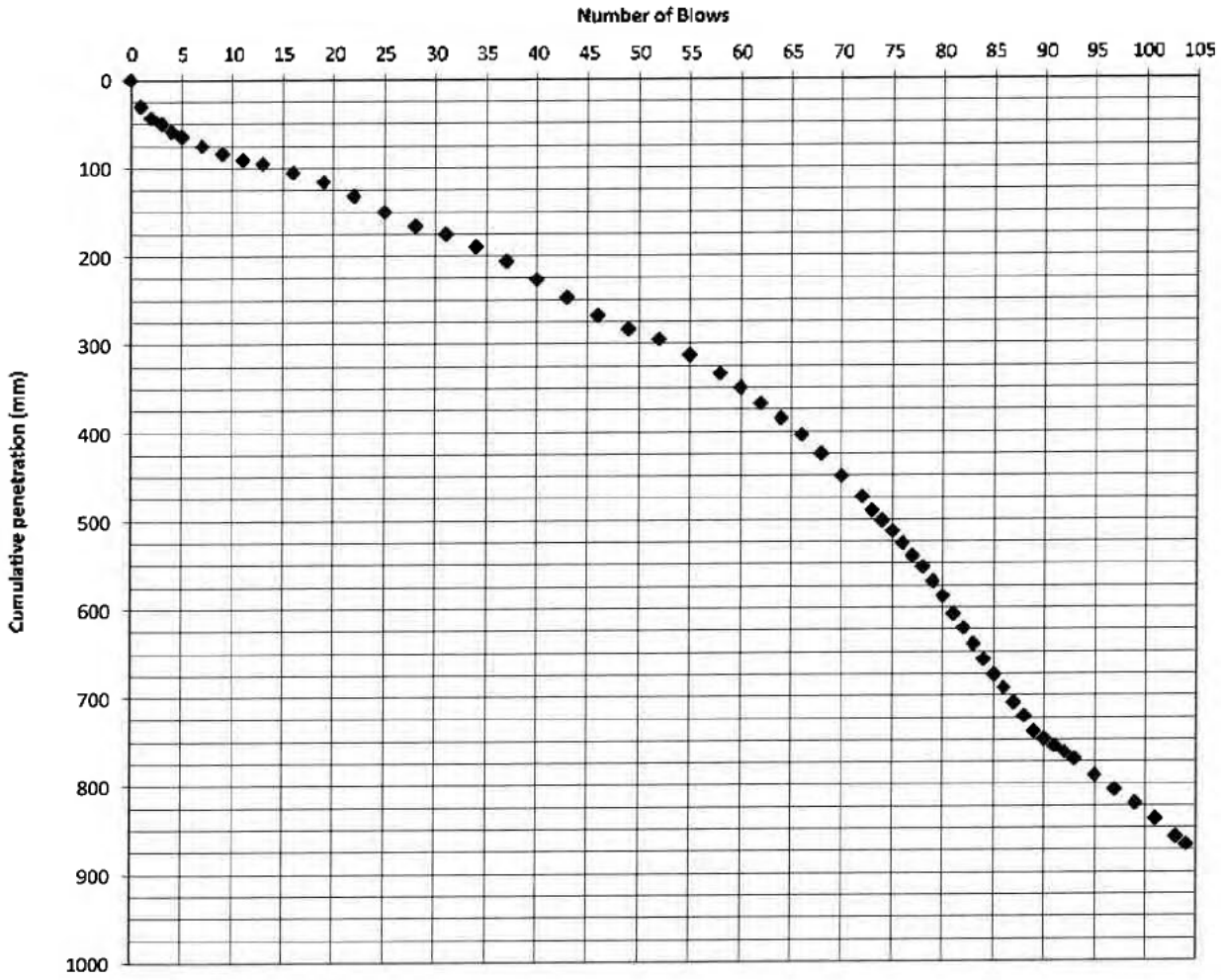

Method of Test: In-house method based on manufacturers operating Instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.03	8.3
0.03	0.08	36
0.08	0.12	82
0.12	0.40	44
0.40	0.74	18
0.74	0.87	31

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP16**
Start Depth: **0.00** m
Date of Test: **25/08/2022**
Job No. **16118SI**

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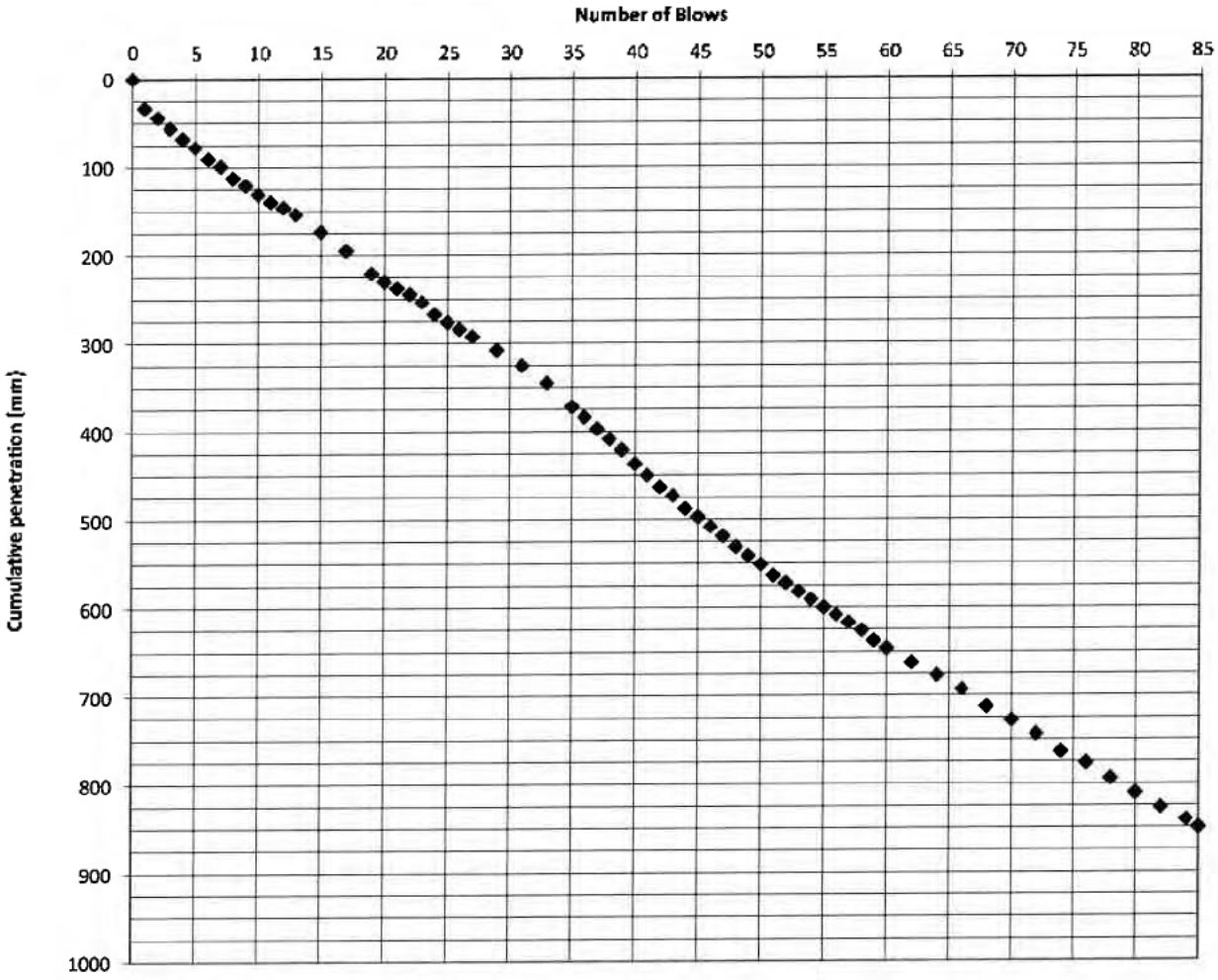
DYNAMIC CONE PENETROMETER



Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	**0.03**	**7.5**
0.03	**0.35**	**27**
0.35	**0.59**	**22**
0.59	**0.85**	**32**

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP17**
Start Depth: **0.00** **m**
Date of Test: **24/08/2022**
Job No. **16118SI**

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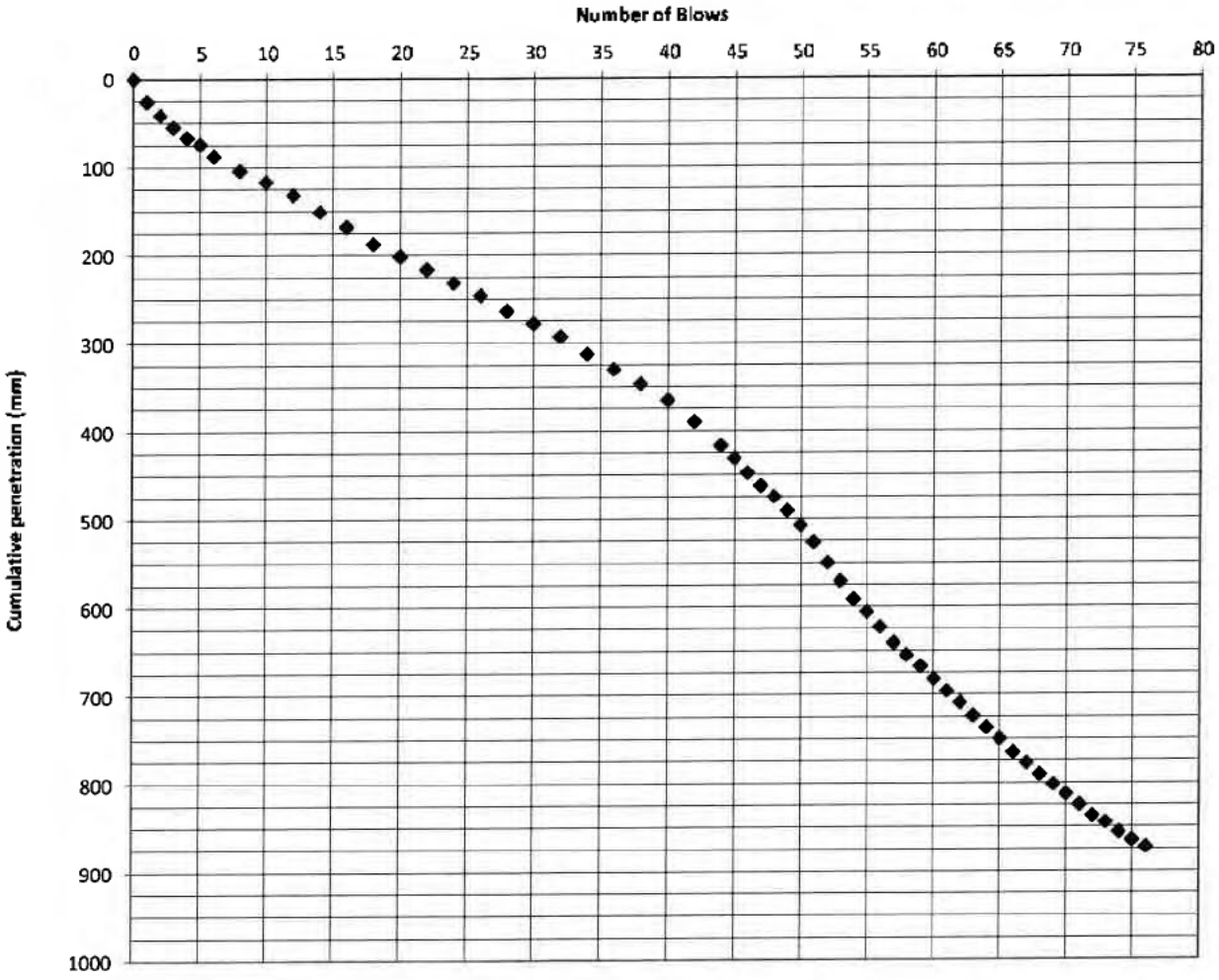

Method of Test: In-house method based on manufacturers operating instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.10	20
0.10	0.39	32
0.39	0.49	18
0.49	0.64	13
0.64	0.87	21

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP18**
Start Depth: **0.00** m
Date of Test: **24/08/2022**
Job No. **16118SI**

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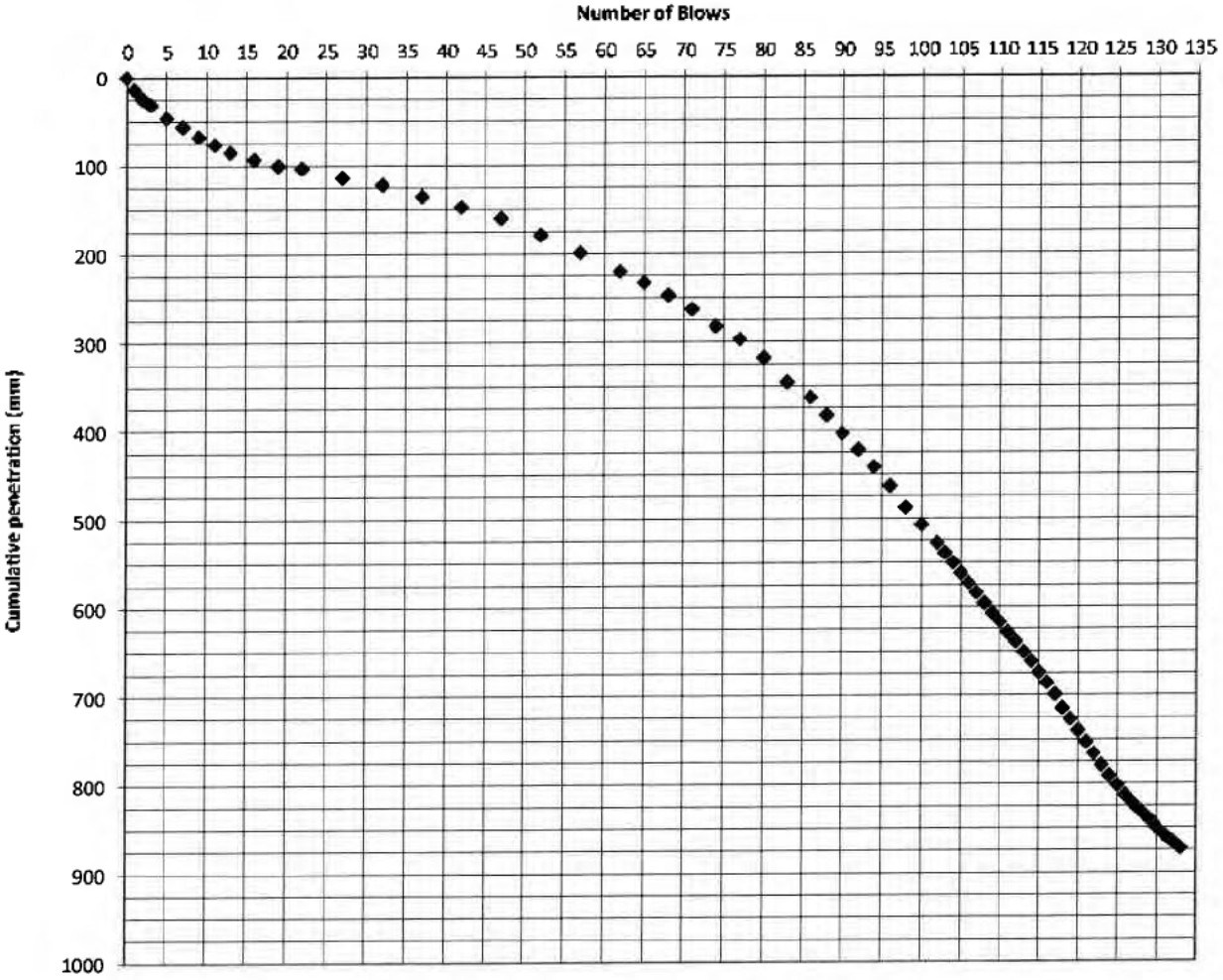

Method of Test: In-house method based on manufacturers operating Instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.09	41
0.09	0.18	119
0.18	0.32	56
0.32	0.81	25
0.81	0.87	31

Operative: MR/JF
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP19**
Start Depth: **0.00 m**
Date of Test: **25/08/2022**
Job No. **16118SI**

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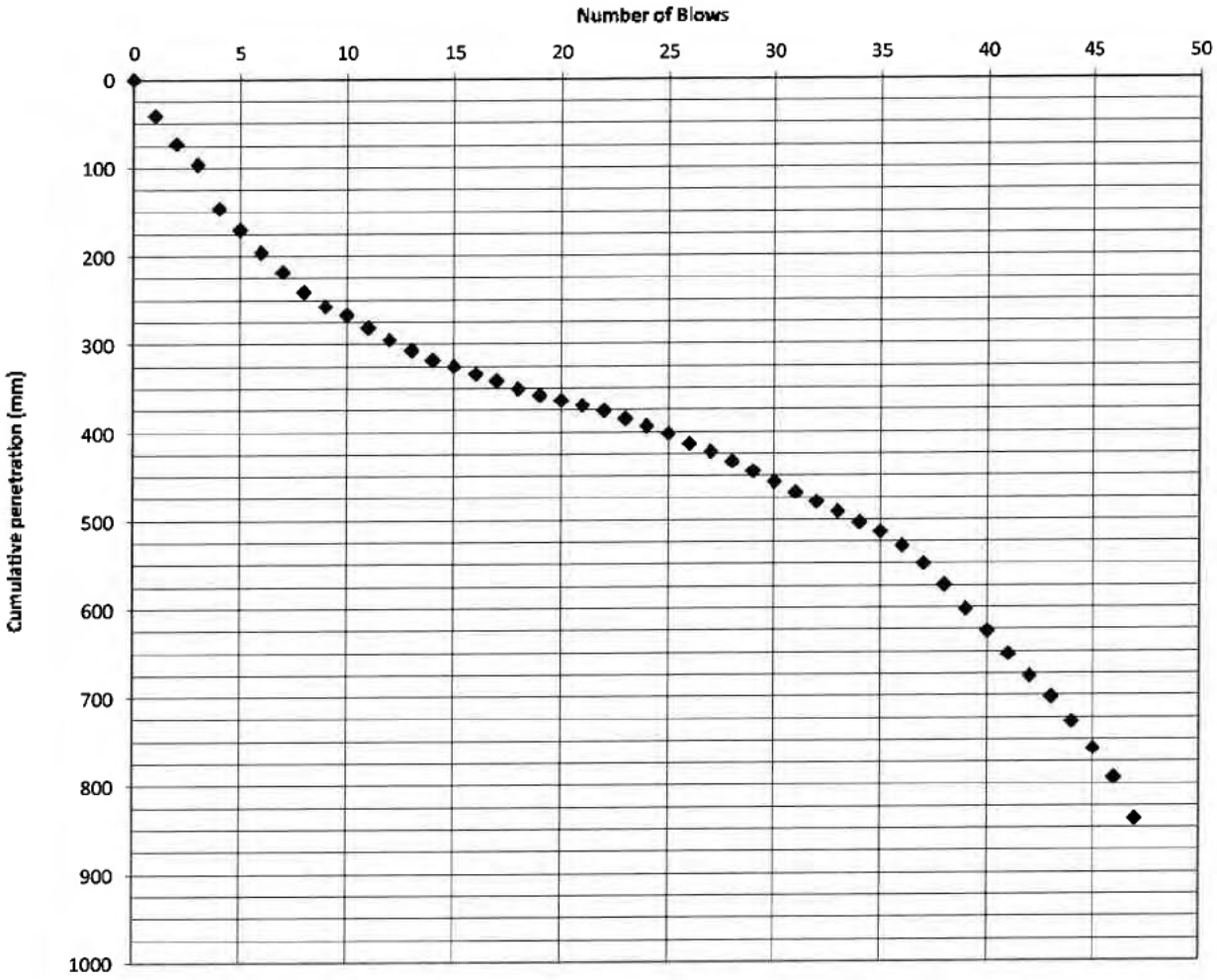

Method of Test: In-house method based on manufacturers operating Instructions and IAN 73/06 Revision 1 (2009)

Method of Calculations: Refer IAN 73/06 Section 4, Annex A

Depth (mbgl) from	Depth (mbgl) to	Inferred CBR (%)
0.00	0.27	9.4
0.27	0.34	25
0.34	0.53	27
0.53	0.84	8.9

Operative: MR/LG
Calculated: JMK
Checked: PAG

Project

Land North of Humber Doucy Lane, Ipswich, Suffolk

Location: **DCP20**
Start Depth: **0.00** m
Date of Test: **11/08/2022**
Job No. **16118SI**

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Borehole Number BH1, Test 1, 4.50m

Borehole Diameter	$B := 150mm$	
Borehole Depth	$D := 4.50m$	
Depth from ground level to base of casing	$D_c := 4.00m$	
Depth from ground level to top of test interval	$D_w := 0.00m$	
Porosity	$n := 100\%$	no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.25
1	0.51
1.5	0.68
2	0.97
3	1.21
4	1.48
5	1.8
7	2.18
9	2.49
12	2.78
15	3.15
20	3.43
25	3.6
30	3.74
40	3.98
50	4.1
60	4.48

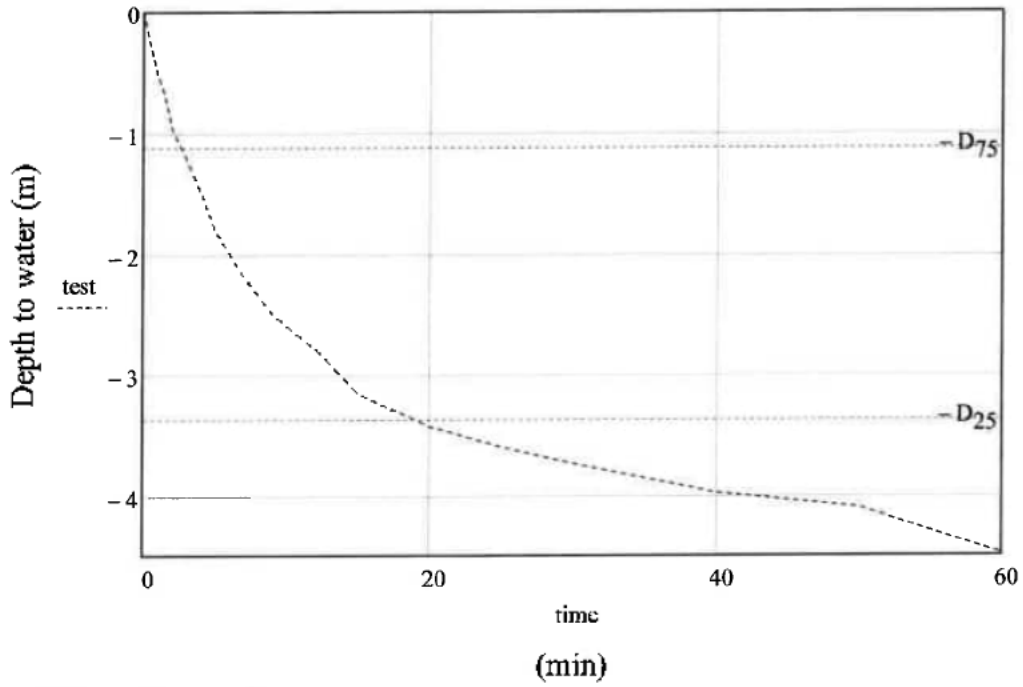
Depths when borehole is 75% and 25% full

$D_{75} = 1.125\,m$ $D_{25} = 3.375\,m$

Surface Area for Outflow

Volume from 75% to 25% full

$a_{p50} = 0.253\,m^2$ $V_{75\_25} = 39.761\,L$



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Time when borehole is 75% full

$t_{75} := 2.6min$

Time when borehole is 25% full

$t_{25} := 19min$

Soil Infiltration Rate

$f = 1.6 \times 10^{-4} \cdot m \cdot s^{-1}$

Test carried out by NI
Date of test 01/09/22
R:\16118SI Land north of Humber Doucy Lane, Ipswich Suffolk, GJB \Calculations and File Notes\

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Borehole Number BH1, Test 2, 4.50m

Borehole Diameter	$B := 150mm$	
Borehole Depth	$D := 4.50m$	
Depth from ground level to base of casing	$D_c := 4.00m$	
Depth from ground level to top of test interval	$D_w := 0.00m$	
Porosity	$n := 100\%$	no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.19
1	0.28
1.5	0.39
2	0.47
3	0.65
4	0.78
5	0.9
7	1.16
9	1.36
12	1.59
15	1.85
20	2.21
25	2.5
30	2.77
40	3.15
50	3.45
60	3.69

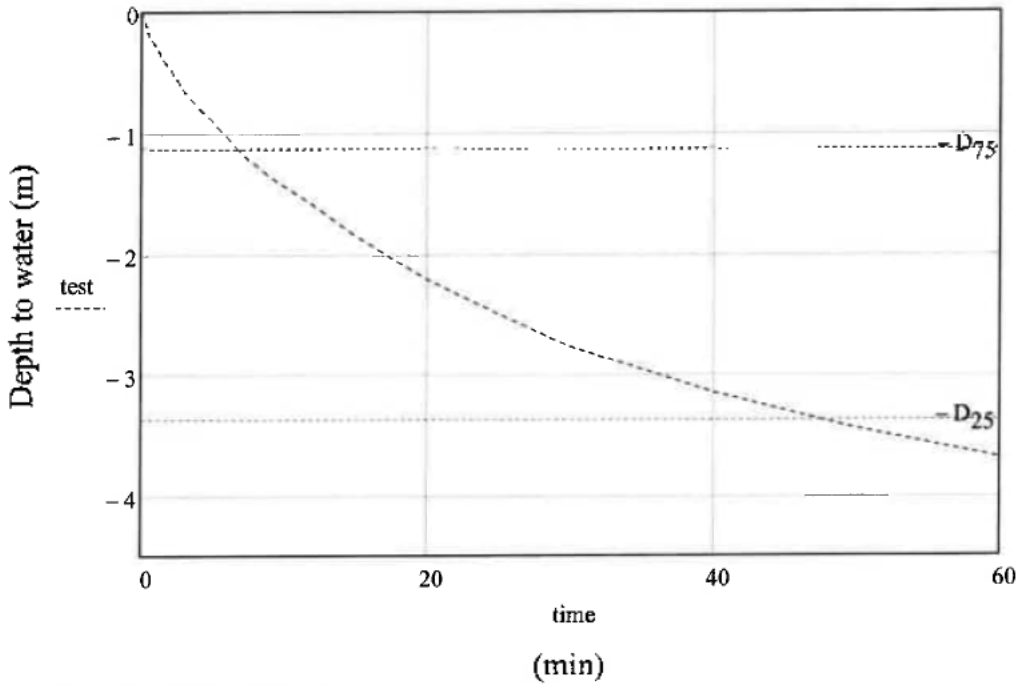
Depths when borehole is 75% and 25% full

$D_{75} = 1.125\,m$ $D_{25} = 3.375\,m$

Surface Area for Outflow

Volume from 75% to 25% full

$a_{p50} = 0.253\,m^2$ $V_{75\_25} = 39.761\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 6.9min$

Time when borehole is 25% full

$t_{25} := 46.9min$

Soil Infiltration Rate

$f = 6.5 \times 10^{-5} \cdot m \cdot s^{-1}$

RSA GEOTECHNICS LTD

Borehole Number BH1, Test 3, 4.50m

Borehole Diameter $B := 150mm$

Borehole Depth $D := 4.50m$

Depth from ground level to base of casing $D_c := 4.00m$

Depth from ground level to top of test interval $D_w := 0.00m$

Porosity $n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.15
1	0.24
1.5	0.32
2	0.46
3	0.57
4	0.7
5	0.81
7	1.03
9	1.2
12	1.44
15	1.71
20	1.98
25	2.33
30	2.71
40	2.95
50	3.24
60	3.51

Job Number:16118SI **Land North of Humber Doucy Lane, Ipswich, Suffolk**
Calculation Sheets For Borehole Soakaway Test,
Based on BRE Digest DG365 (2016)

Date: 23/09/2022
Calcs:JMK.
Checked:GJB.

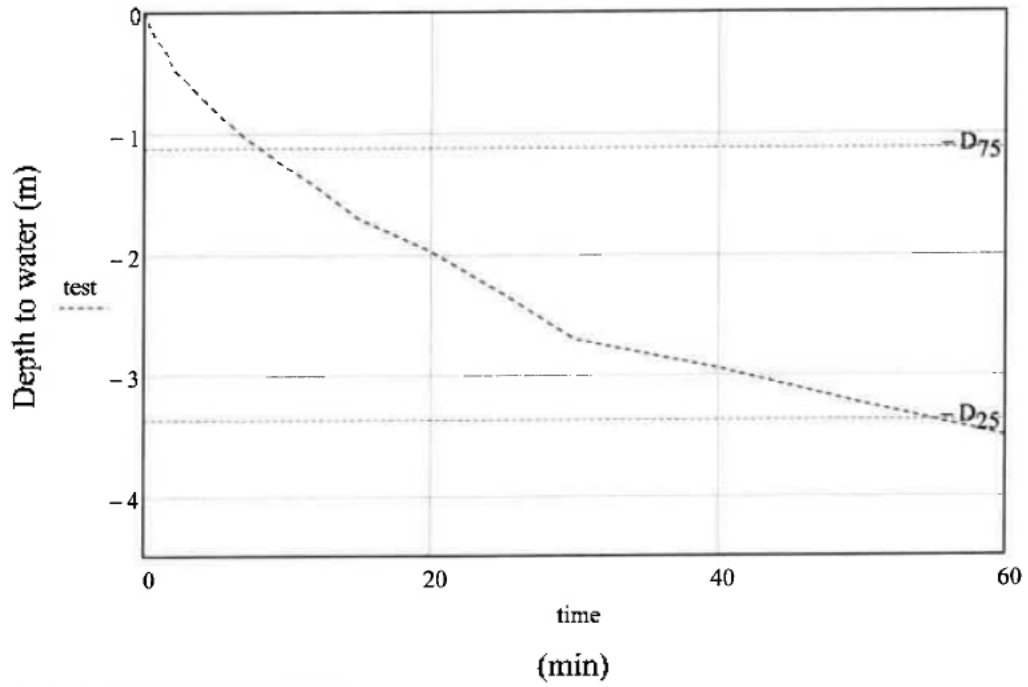
Depths when borehole is 75% and 25% full

$D_{75} = 1.125\,m$ $D_{25} = 3.375\,m$

Surface Area for Outflow

Volume from 75% to 25% full

$a_{p50} = 0.253\,m^2$ $V_{75\_25} = 39.761\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 8.2min$

Time when borehole is 25% full

$t_{25} := 55min$

Soil Infiltration Rate

$f = 5.6 \times 10^{-5} \cdot m \cdot s^{-1}$

Test carried out by NI
Date of test 01/09/22
R:\16118SI Land north of Humber Doucy Lane, Ipswich, Suffolk. GJB \Calculations and File Notes\

Borehole Number BH2, Test 1, 7.00m

RSA GEOTECHNICS LTD

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 7.00m$
Depth from ground level to base of casing	$D_c := 6.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 5.55m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.19
1	0.26
1.5	0.32
2	0.41
3	0.61
4	0.79
5	0.98
7	1.24
9	1.51
12	1.9
15	2.29
20	2.75
25	3.22
30	3.65
40	4.41
50	5.03
60	5.55

Job Number:16118SI **Land North of Humber Doucy Lane, Ipswich, Suffolk**
Calculation Sheets For Borehole Soakaway Test,
Based on BRE Digest DG365 (2016)

Date: 29/09/2022
Calcs:JMK.
Checked:GJB.

Depths when borehole is 75% and 25% full

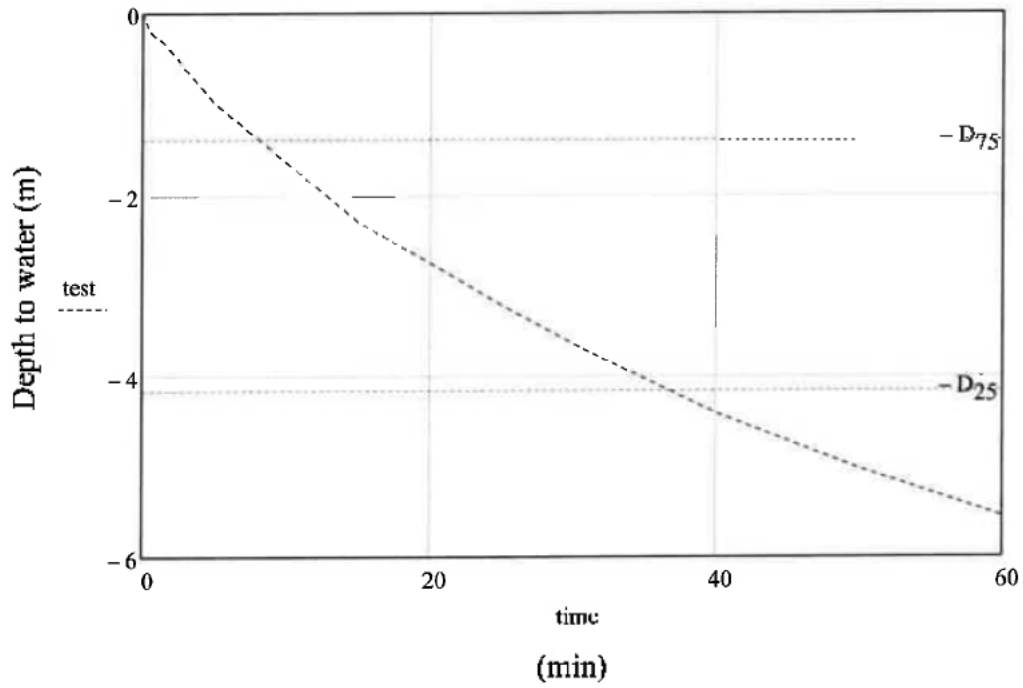
$D_{75} = 1.387\,m$ $D_{25} = 4.162\,m$

Mean Surface Area for Outflow

$a_{p50} = 0.253\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 49.038\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 8.3\,min$

Time when borehole is 25% full

$t_{25} := 36.8\,min$

Soil Infiltration Rate

$f = 1.1 \times 10^{-4} \cdot m \cdot s^{-1}$

Test carried out by NI
Date of test 21/09/22
R:\16118SI Land north of Humber Doucy Lane, Ipswich, Suffolk, GJB\Calculations and Field Notes\

Borehole Number BH2, Test 2, 7.00m

RSA GEOTECHNICS LTD

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 7.00m$
Depth from ground level to base of casing	$D_c := 6.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 5.85m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.21
1	0.28
1.5	0.34
2	0.41
3	0.58
4	0.81
5	0.99
7	1.28
9	1.57
12	2.01
15	2.38
20	2.81
25	3.3
30	3.77
40	4.52
50	5.17
60	5.85

Depths when borehole is 75% and 25% full

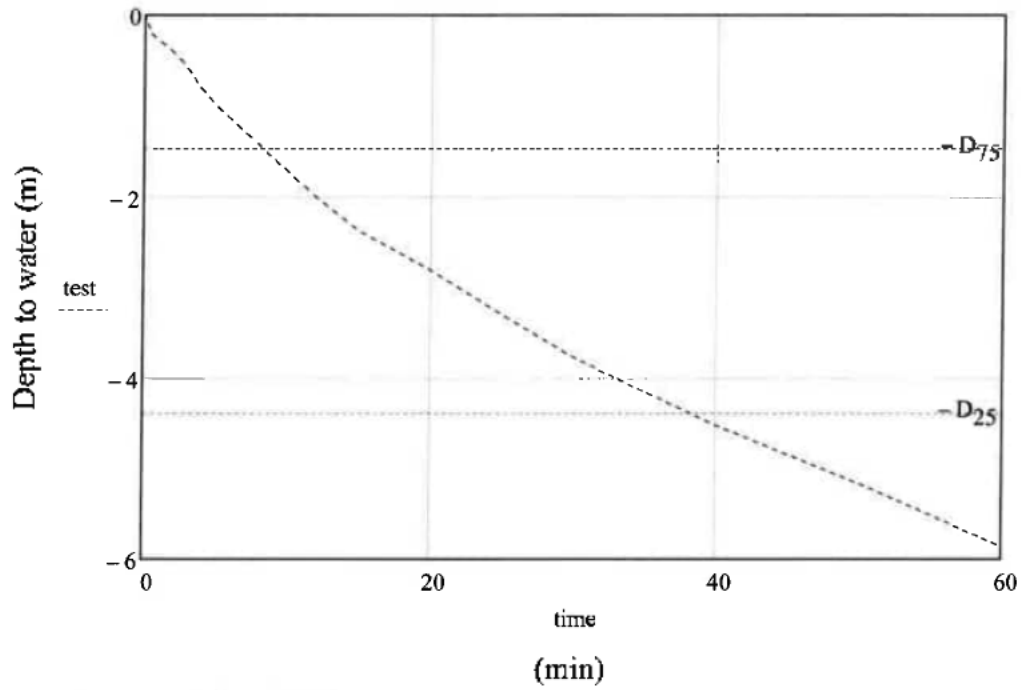
$D_{75} = 1.462\,m$ $D_{25} = 4.387\,m$

Mean Surface Area for Outflow

$a_{p50} = 0.253\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 51.689\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 8.6\,min$

Time when borehole is 25% full

$t_{25} := 38.1\,min$

Soil Infiltration Rate

$f = 1.2 \times 10^{-4}\,m \cdot s^{-1}$

Test carried out by NI
Date of test 21/09/22
R:\16118SI Land north of Humber Doucy Lane, Ipswich, Suffolk, GJB
\Calculations and File Notes\

Borehole Number BH2, Test 3, 7.00m

RSA GEOTECHNICS LTD

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 7.00m$
Depth from ground level to base of casing	$D_c := 6.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 5.51m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.22
1	0.28
1.5	0.35
2	0.4
3	0.54
4	0.69
5	0.91
7	1.17
9	1.43
12	1.84
15	2.09
20	2.59
25	3.1
30	3.56
40	4.32
50	5.01
60	5.51

Depths when borehole is 75% and 25% full

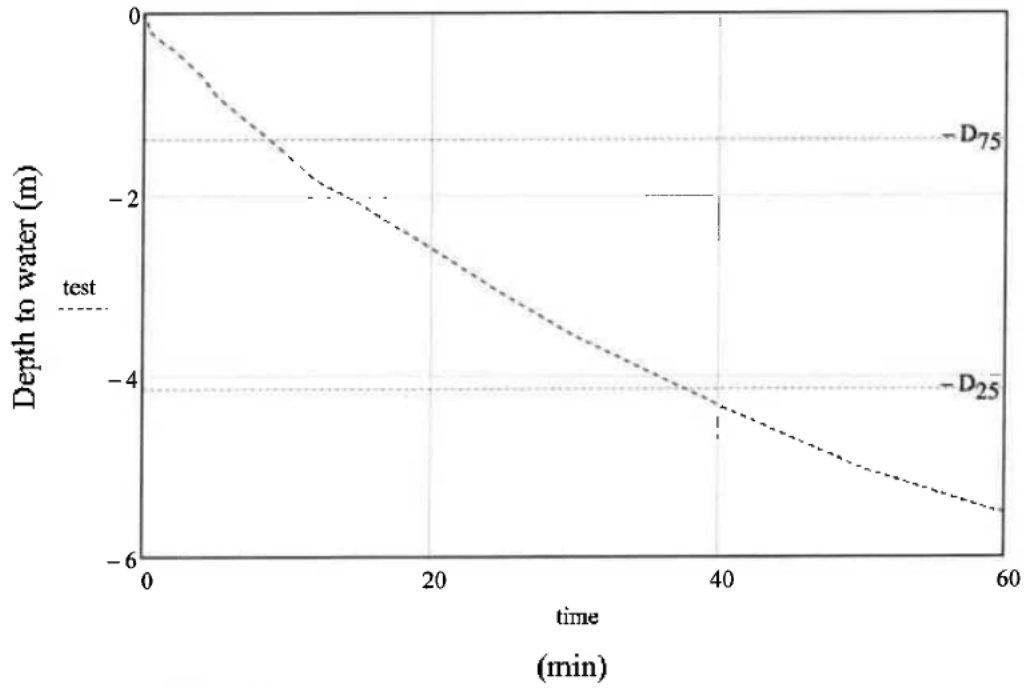
$D_{75} = 1.377\,m$ $D_{25} = 4.133\,m$

Mean Surface Area for Outflow

$a_{p50} = 0.253\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 48.685\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 8.7min$

Time when borehole is 25% full

$t_{25} := 37.7min$

Soil Infiltration Rate

$f = 1.1 \times 10^{-4} \cdot m \cdot s^{-1}$

Borehole Number BH3, Test 1, 6.00m

RSA GEOTECHNICS LTD

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 6.00m$
Depth from ground level to base of casing	$D_c := 5.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 3.37m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.25
1	0.31
1.5	0.4
2	0.49
3	0.58
4	0.69
5	0.79
7	0.91
9	1.1
12	1.29
15	1.49
20	1.78
25	2.11
30	2.29
40	2.71
50	3.09
60	3.37

Job Number:16118SI **Land North of Humber Doucy Lane, Ipswich, Suffolk**
Calculation Sheets For Borehole Soakaway Test,
Based on BRE Digest DG365 (2016)

Date: 29/09/2022
Calcs:JMK.
Checked:GJB.

Depths when borehole is 75% and 25% full

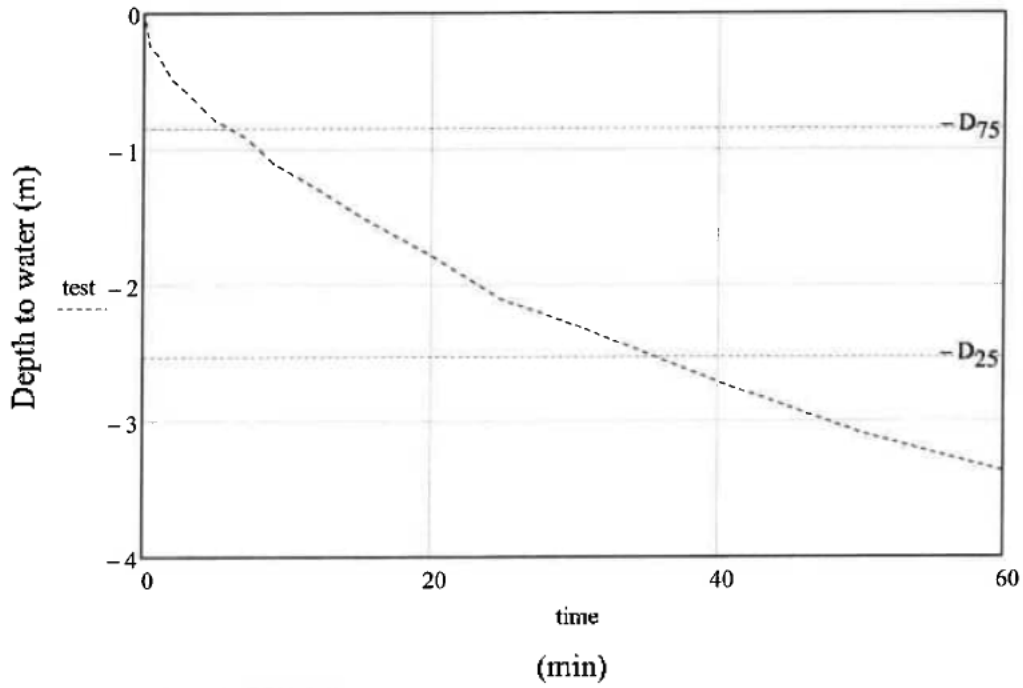
$D_{75} = 0.843\,m$ $D_{25} = 2.527\,m$

Mean Surface Area for Outflow

$a_{p50} = 0.253\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 29.776\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 6.5min$

Time when borehole is 25% full

$t_{25} := 35.6min$

Soil Infiltration Rate

$f = 6.7 \times 10^{-5} \cdot m \cdot s^{-1}$

Test carried out by NI
Date of test 26/09/22
R:\16116SI Land north of Humber Doucy Lane, Ipswich, Suffolk, GJB \Calculations and File Notes\

RSA GEOTECHNICS LTD

Borehole Number BH3, Test 2, 6.00m

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 6.00m$
Depth from ground level to base of casing	$D_c := 5.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 3.11m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

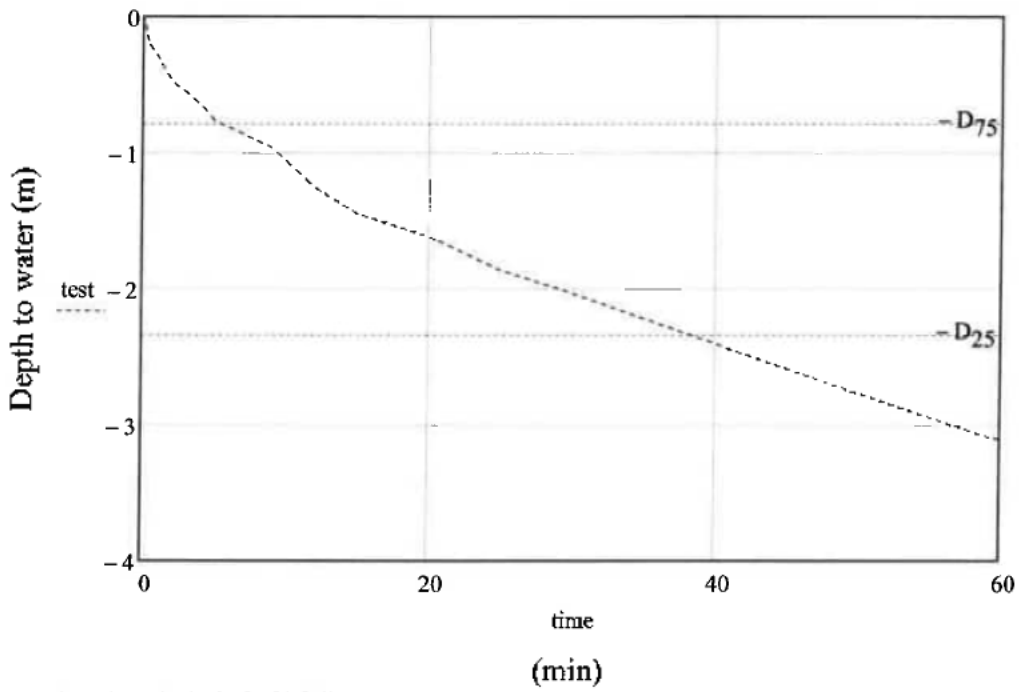
Time (mins)	Water Levels (mbGL)
0	0
0.5	0.21
1	0.28
1.5	0.38
2	0.47
3	0.55
4	0.64
5	0.77
7	0.86
9	0.96
12	1.25
15	1.44
20	1.61
25	1.86
30	2.03
40	2.4
50	2.76
60	3.11

Depths when borehole is 75% and 25% full

$D_{75} = 0.777\,m$ $D_{25} = 2.333\,m$

Mean Surface Area for Outflow Volume from 75% to 25% full

$a_{p50} = 0.253\,m^2$ $V_{75\_25} = 27.479\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 5.7min$

Time when borehole is 25% full

$t_{25} := 37.5min$

Soil Infiltration Rate

$f = 5.7 \times 10^{-5} \cdot m \cdot s^{-1}$

Borehole Number BH3, Test 3, 6.00m

RSA GEOTECHNICS LTD

Borehole Diameter	$B := 150mm$
Borehole Depth	$D := 6.00m$
Depth from ground level to base of casing	$D_c := 5.50m$
Depth from ground level to top of test interval	$D_s := 0.00m$
Completion depth of test	$D_e := 3.29m$
Pipe diameter	$B_p := 150mm$
Porosity	$n := 100\%$ no gravel used

Time (mins)	Water Levels (mbGL)
0	0
0.5	0.18
1	0.29
1.5	0.38
2	0.46
3	0.51
4	0.59
5	0.7
7	0.82
9	0.94
12	1.2
15	1.42
20	1.65
25	1.95
30	2.17
40	2.55
50	2.93
60	3.29

Depths when borehole is 75% and 25% full

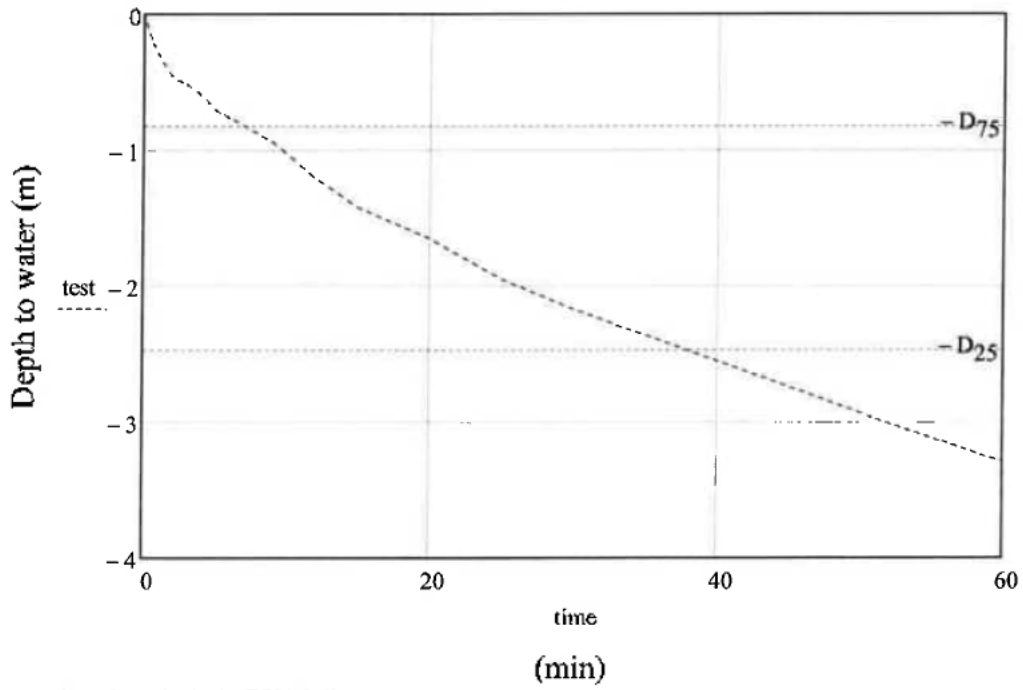
$D_{75} = 0.822\,m$ $D_{25} = 2.468\,m$

Mean Surface Area for Outflow

$a_{p50} = 0.253\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 29.07\,L$



RSA GEOTECHNICS LTD

Time when borehole is 75% full

$t_{75} := 7.0min$

Time when borehole is 25% full

$t_{25} := 38.4min$

Soil Infiltration Rate

$f = 6.1 \times 10^{-5} \cdot m \cdot s^{-1}$

Trial Pit Number TP195, Test 1, 3.00m

RSA GEOTECHNICS LTD

Trial Pit Length $L := 2.50m$

Trial Pit Width $W := 0.80m$

Trial Pit Depth $D := 3.00m$

Depth from ground level to water level at start of the test $D_s := 0.90m$

Depth to natural groundwater level Dry

Porosity of gravel backfill $n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	0.9
0.5	0.95
1	0.97
1.5	0.99
2	1
3	1.02
4	1.05
5	1.07
9	1.12
10	1.13
12	1.15
15	1.18
25	1.3
30	1.35
323	1.92
350	2.08
400	2.48

Depths when trial pit is 75% and 25% full

$D_{75} = 1.425m$ $D_{25} = 2.475m$

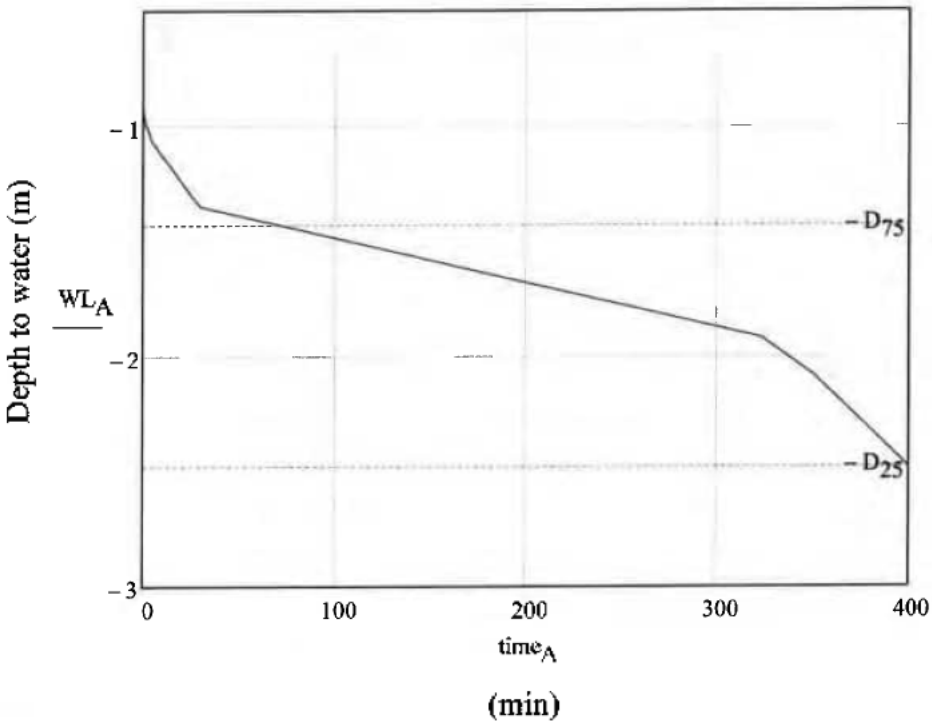
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 8.93\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 882\,L$



Time when trial pit is 75% full

$t_{75A} := 75min$

Time when trial pit is 25% full

$t_{25A} := 400min$

Soil Infiltration Rate

$f_A = 5.1 \times 10^{-6} \cdot m \cdot s^{-1}$

RSA GEOTECHNICS LTD

Trial Pit Number TP195, Test 2, 3.00m

Trial Pit Length	$L := 2.50m$
Trial Pit Width	$W := 0.80m$
Trial Pit Depth	$D := 3.00m$
Depth from ground level to water level at start of the test	$D_g := 0.95m$
Depth to natural groundwater level	Dry
Porosity of gravel backfill	$n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	0.95
0.5	0.95
1	0.97
1.5	0.98
2	1
5	1.04
10	1.11
15	1.17
20	1.22
40	1.4
60	1.59
90	1.8
120	2
150	2.2
180	2.36

Depths when trial pit is 75% and 25% full

$D_{75} = 1.462m$ $D_{25} = 2.487m$

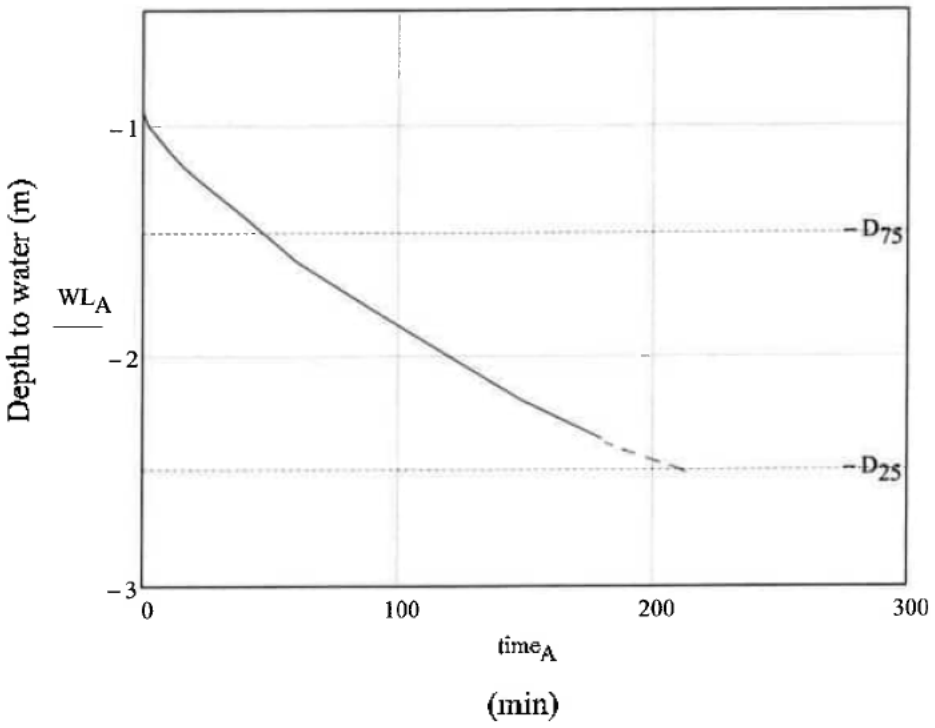
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 8.765\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 861\,L$



Time when trial pit is 75% full

$t_{75A} := 46min$

Time when trial pit is 25% full

$t_{25A} := 210min$ (extrapolated)

Soil Infiltration Rate

$f_A = 10 \times 10^{-6} \cdot m \cdot s^{-1}$

RSA GEOTECHNICS LTD

Trial Pit Number TP195, Test 3, 3.00m

Trial Pit Length	$L_w := 2.50m$
Trial Pit Width	$W_w := 0.80m$
Trial Pit Depth	$D := 3.00m$
Depth from ground level to water level at start of the test	$D_s := 0.93m$
Depth to natural groundwater level	Dry
Porosity of gravel backfill	n := 42% (assumed)

Time (minutes)	Water Levels (mbGL)
0	0.93
0.5	0.93
1	0.95
1.5	0.96
2	0.97
5	1.01
10	1.06
15	1.11
20	1.15
40	1.33
60	1.5
90	1.73
100	1.77

Depths when trial pit is 75% and 25% full

$D_{75} = 1.447m$ $D_{25} = 2.482m$

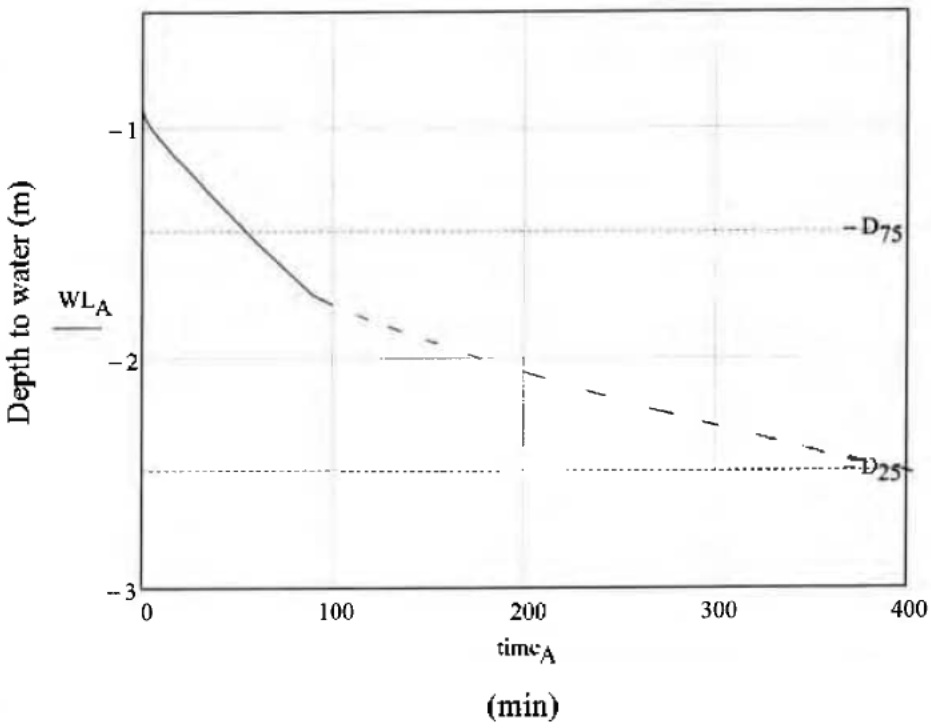
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 8.831\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 869.4\,L$



Time when trial pit is 75% full

$t_{75A} := 54min$

Time when trial pit is 25% full

$t_{25A} := 400min$ (extrapolated)

Soil Infiltration Rate

$f_A = 4.7 \times 10^{-6} \cdot m \cdot s^{-1}$

Trial Pit Number TP205, Test 1, 3.00m

RSA GEOTECHNICS LTD

Trial Pit Length $L_w := 2.70m$

Trial Pit Width $W_w := 0.80m$

Trial Pit Depth $D := 3.00m$

Depth from ground level to water level at start of the test $D_s := 1.40m$

Depth to natural groundwater level Dry

Porosity of gravel backfill $n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	1.4
0.5	1.46
1	1.49
1.5	1.53
2	1.56
5	1.75
8	1.92
10	2.04
12	2.12
15	2.25
18	2.37
19	2.4

Depths when trial pit is 75% and 25% full

$D_{75} = 1.8m$ $D_{25} = 2.6m$

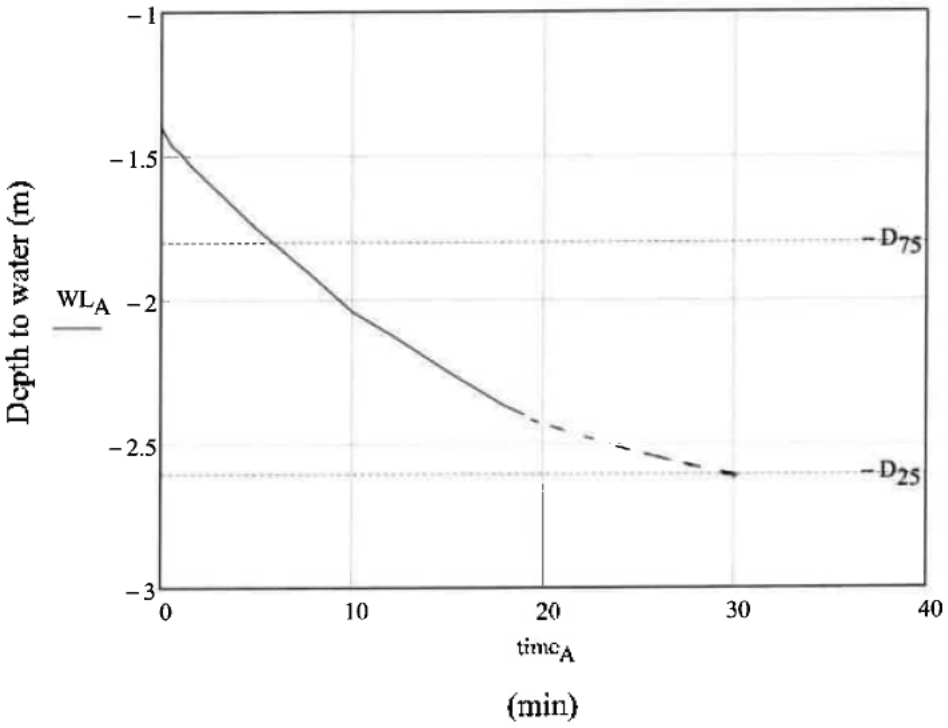
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 7.76\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 725.76\,L$



Time when trial pit is 75% full

$t_{75A} := 6min$

Time when trial pit is 25% full

$t_{25A} := 30min$ (extrapolated)

Soil Infiltration Rate

$f_A = 6.5 \times 10^{-5} \cdot m \cdot s^{-1}$

RSA GEOTECHNICS LTD

Trial Pit Number TP205, Test 2, 3.00m

Trial Pit Length	$L_m := 2.70m$
Trial Pit Width	$W_m := 0.80m$
Trial Pit Depth	$D := 3.00m$
Depth from ground level to water level at start of the test	$D_s := 1.20m$
Depth to natural groundwater level	Dry
Porosity of gravel backfill	$n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	1.2
0.25	1.3
0.5	1.33
1	1.39
1.5	1.42
2	1.45
2.5	1.49
3	1.52
4	1.58
5	1.63
7	1.74
9	1.85
11	1.95
13	2.03
15	2.11
17	2.19
20	2.29
22	2.35
25	2.44
28	2.53
29	2.55

Depths when trial pit is 75% and 25% full

$D_{75} = 1.65\,m$ $D_{25} = 2.55\,m$

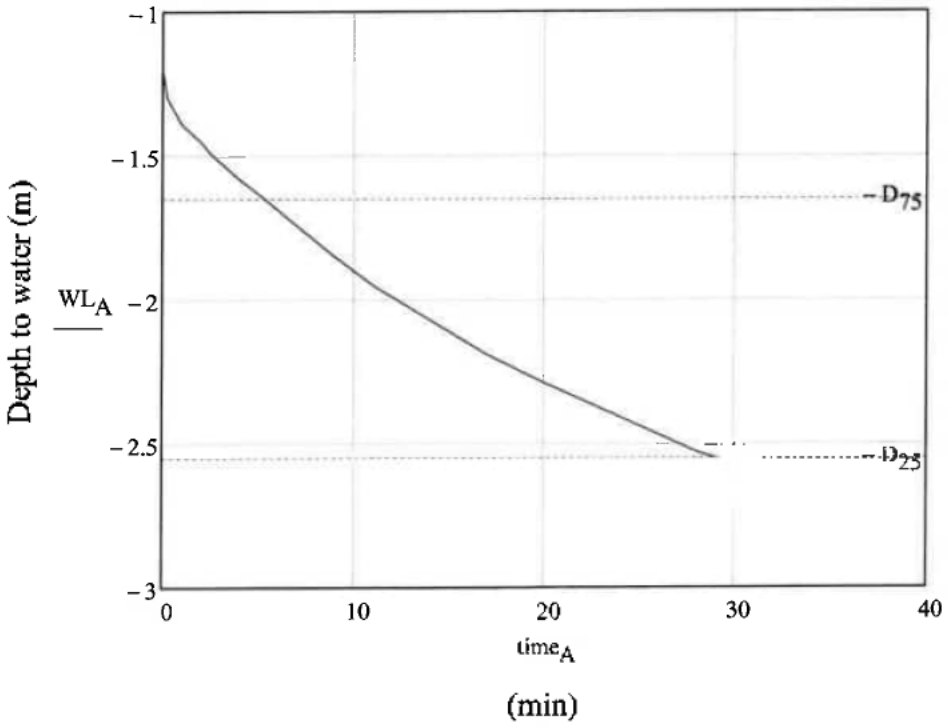
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 8.46\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 816.48\,L$



Time when trial pit is 75% full

$t_{75A} := 5min$

Time when trial pit is 25% full

$t_{25A} := 29min$

Soil Infiltration Rate

$f_A = 6.7 \times 10^{-5} \cdot m \cdot s^{-1}$

Trial Pit Number TP205, Test 3, 3.00m

RSA GEOTECHNICS LTD

Trial Pit Length $L := 2.70m$

Trial Pit Width $W := 0.80m$

Trial Pit Depth $D := 3.00m$

Depth from ground level to water level at start of the test $D_s := 1.20m$

Depth to natural groundwater level Dry

Porosity of gravel backfill $n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	1.2
0.25	1.29
0.5	1.33
1	1.37
1.5	1.41
2	1.44
2.5	1.46
3	1.49
4	1.54
5	1.58
7	1.67
10	1.83
13	1.95
15	2.03
17	2.09
20	2.2
23	2.31
26	2.39
29	2.47
32	2.56

Depths when trial pit is 75% and 25% full

$D_{75} = 1.65m$ $D_{25} = 2.55m$

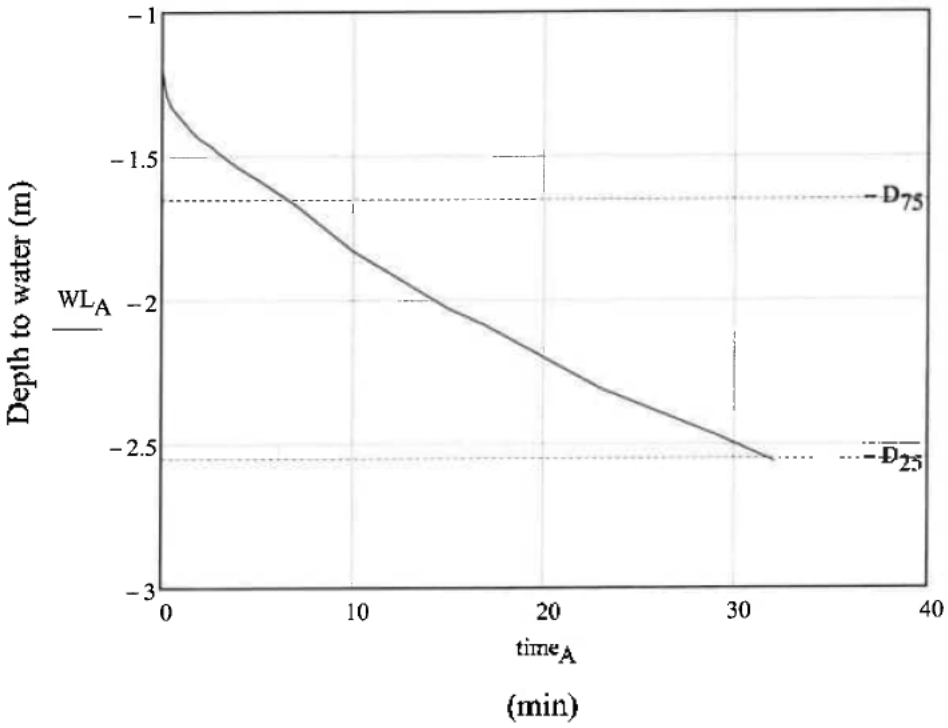
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 8.46\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 816.48\,L$



Time when trial pit is 75% full

$t_{75A} := 6.5min$

Time when trial pit is 25% full

$t_{25A} := 31.5min$

Soil Infiltration Rate

$f_A = 6.4 \times 10^{-5} \cdot m \cdot s^{-1}$

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Trial Pit Number TP215, Test 1, 3.00m

Trial Pit Length	$L_m := 2.80m$
Trial Pit Width	$W_m := 0.80m$
Trial Pit Depth	$D := 3.00m$
Depth from ground level to water level at start of the test	$D_s := 1.00m$
Depth to natural groundwater level	Dry
Porosity of gravel backfill	$n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	1
0.5	1.02
1	1.02
1.5	1.02
2	1.02
5	1.02
10	1.02
15	1.03
35	1.03
142	1.05
200	1.06
230	1.08
285	1.1
1330	1.3
1607	1.34
8481	1.85
9927	1.92
10290	1.93

Depths when trial pit is 75% and 25% full

$D_{75} = 1.5m$ $D_{25} = 2.5m$

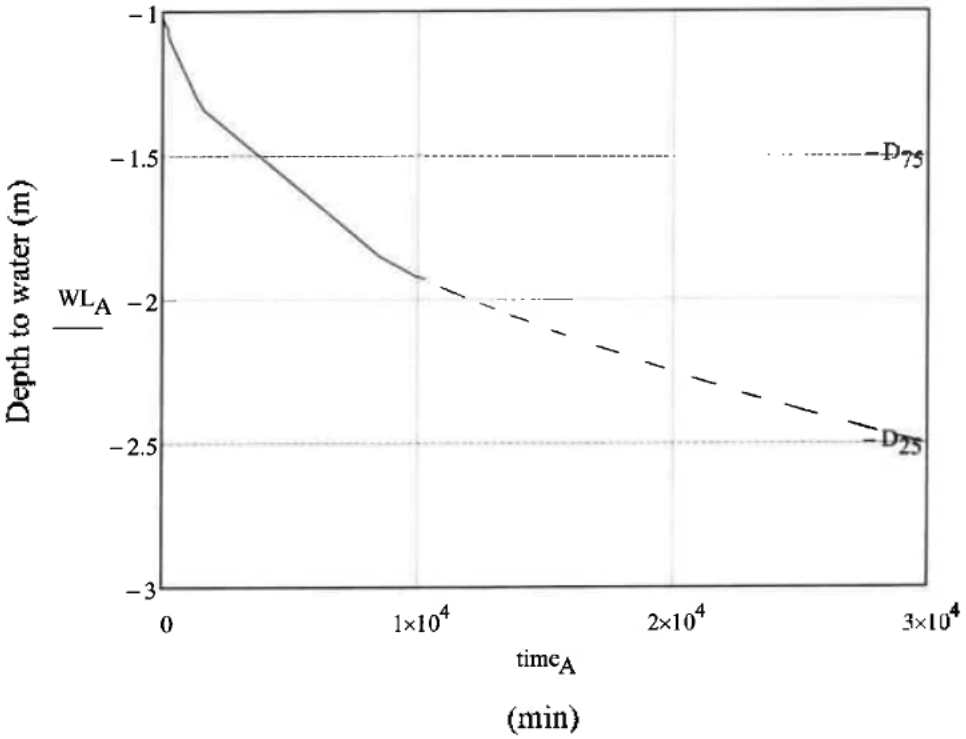
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 9.44\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 940.8\,L$



Time when trial pit is 75% full

$t_{75A} := 3836min$

Time when trial pit is 25% full

$t_{25A} := 30000min$ (extrapolated)

Soil Infiltration Rate

$f_A = 6.3 \times 10^{-8} \cdot m \cdot s^{-1}$

Trial Pit Number TP225, Test 1, 2.50m

RSA GEOTECHNICS LTD

Trial Pit Length $L := 2.60m$

Trial Pit Width $W := 0.80m$

Trial Pit Depth $D := 2.50m$

Depth from ground level to water level at start of the test $D_s := 0.83m$

Depth to natural groundwater level Dry

Porosity of gravel backfill $n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	0.83
0.5	0.83
1	0.83
1.5	0.83
2	0.84
5	0.84
10	0.84
15	0.85
35	0.86
56	0.86
85	0.87
120	0.91
1289	1.05
1573	1.06
8432	1.2
9868	1.25

Depths when trial pit is 75% and 25% full

$D_{75} = 1.248\,m$ $D_{25} = 2.083\,m$

Test carried out by:MR/LG/JF
Date of test: 18-25/08/22

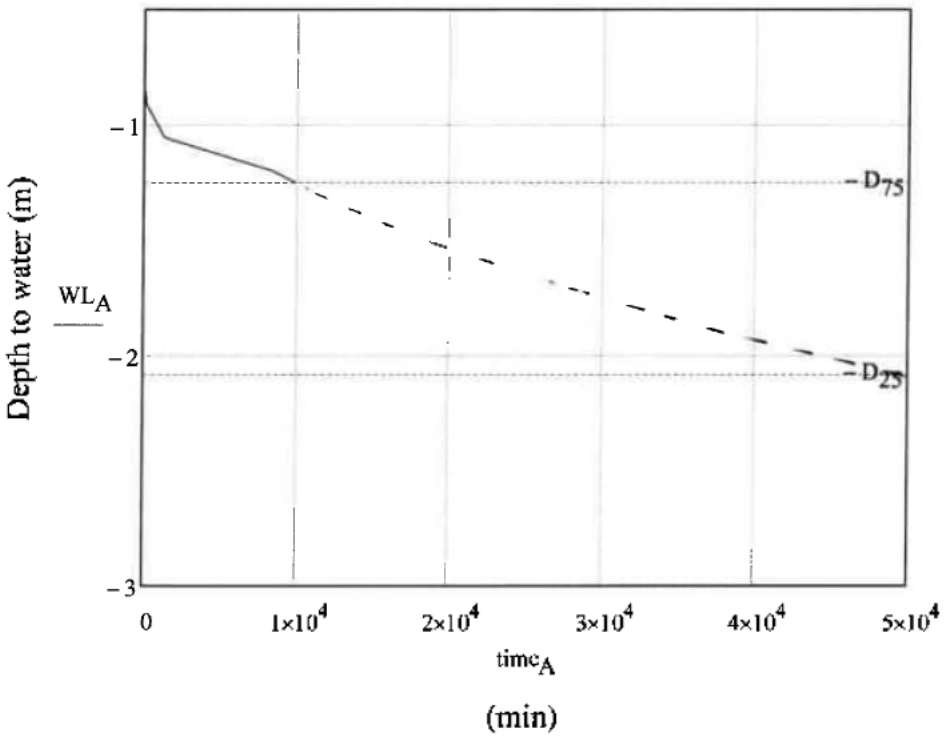
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 7.758\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 729.456\,l.$



Time when trial pit is 75% full

$t_{75A} := 10000min$

Time when trial pit is 25% full

$t_{25A} := 50000min$ (extrapolated)

Soil Infiltration Rate

$f_A = 3.9 \times 10^{-8} \cdot m \cdot s^{-1}$

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Trial Pit Number TP235, Test 1, 2.50m

Trial Pit Length	$L_m := 2.10m$
Trial Pit Width	$W_m := 0.80m$
Trial Pit Depth	$D := 2.50m$
Depth from ground level to water level at start of the test	$D_s := 0.85m$
Depth to natural groundwater level	Dry
Porosity of gravel backfill	n := 42% (assumed)

Time (minutes)	Water Levels (mbGL)
0	0.85
0.5	0.85
1	0.85
1.5	0.85
2	0.85
5	0.85
10	0.85
15	0.85
37	0.86
64	0.87
100	0.87
1236	0.95
1512	0.96
8640	1.35
10071	1.37

Depths when trial pit is 75% and 25% full

$D_{75} = 1.262m$ $D_{25} = 2.087m$

Test carried out by:MR/LG/JF
Date of test: 18-25/08/22

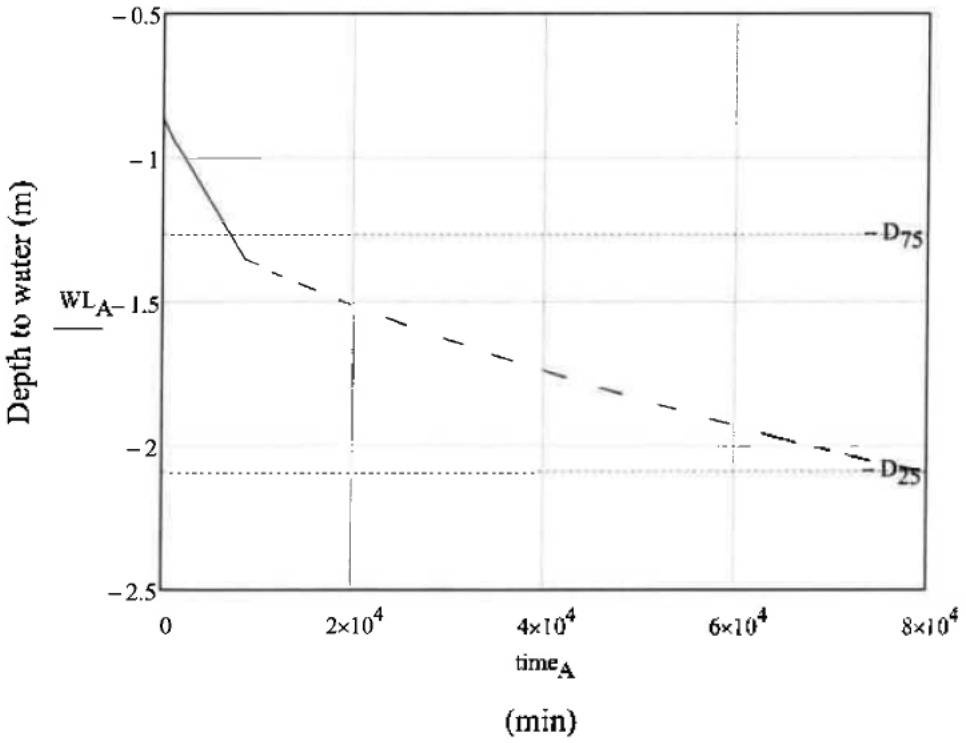
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 6.465\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 582.12\,l.$



Time when trial pit is 75% full

$t_{75A} := 7379min$

Time when trial pit is 25% full

$t_{25A} := 80000min$ (extrapolated)

Soil Infiltration Rate

$f_A = 2.1 \times 10^{-8} \cdot m \cdot s^{-1}$

Trial Pit Number TP245, Test 1, 2.50m

RSA GEOTECHNICS LTD

Trial Pit Length $L_m := 2.40m$

Trial Pit Width $W := 0.70m$

Trial Pit Depth $D := 2.50m$

Depth from ground level to water level at start of the test $D_s := 0.85m$

Depth to natural groundwater level Dry

Porosity of gravel backfill $n := 42\%$ (assumed)

Time (minutes)	Water Levels (mbGL)
0	1.21
0.5	1.21
1	1.21
2	1.21
5	1.21
10	1.21
15	1.21
48	1.22
65	1.22
1227	1.31
1552	1.32
8375	2.13
9807	2.18

Depths when trial pit is 75% and 25% full

$D_{75} = 1.262\,m$ $D_{25} = 2.087\,m$

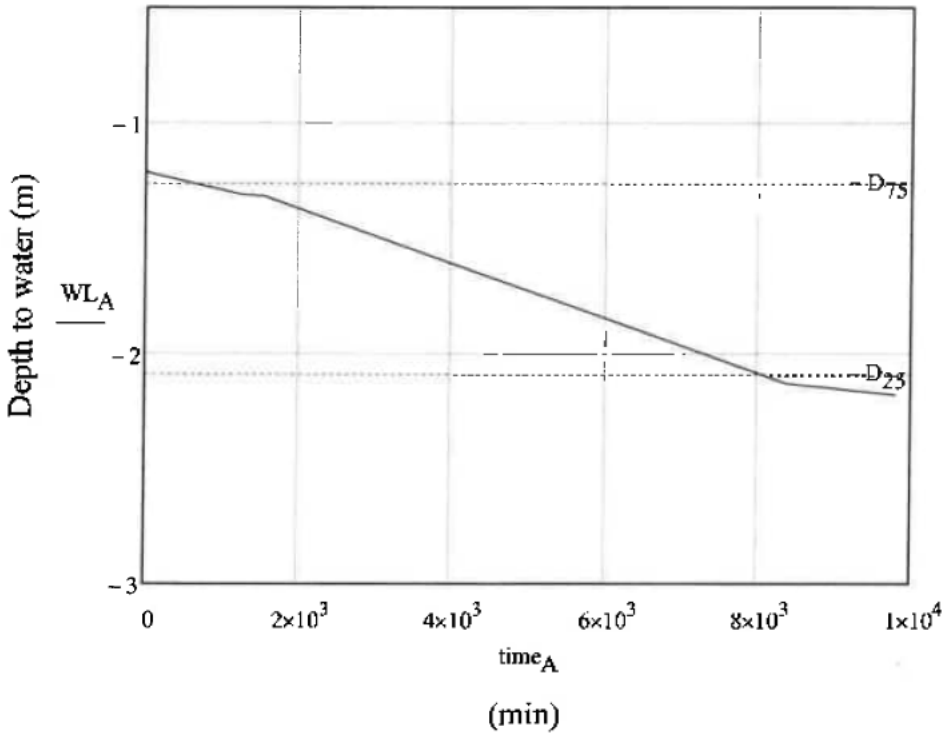
RSA GEOTECHNICS LTD

Mean Surface Area for Outflow

$a_{p50} = 6.795\,m^2$

Volume from 75% to 25% full

$V_{75\_25} = 582.12\,L$



Time when trial pit is 75% full

$t_{75A} := 670\,min$

Time when trial pit is 25% full

$t_{25A} := 8079\,min$

Soil Infiltration Rate

$f_A = 1.9 \times 10^{-7}\,m \cdot s^{-1}$

GAS AND GROUNDWATER MONITORING RECORD SHEETS

Type of Test: 1st Return Visit **Date of Test:** 30/09/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1155	<0.1	0.1	2	1.3	20.0	<1	<1	-	DRY	
BH2	22/09/2022	1130	0.1	0.2	4	0.5	20.0	<1	<1	-	DRY	
BH3	27/09/2022	1210	<0.1	0.1	2	0.2	20.7	<1	<1	-	DRY	
WS4	10/08/2022	1145	<0.1	0.1	2	0.4	20.7	<1	<1	-	DRY	
WS5	10/08/2022	1140	<0.1	0.2	4	0.6	20.5	<1	<1	-	2.70	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	0900	7	1008	Falling	Fog	Weather records are not site specific but have been approximately interpolated from local information
Cool, overcast, dry, calm	1300	14	1005	Falling	Mostly cloudy	
	1700	14	1002	Falling	Light rain	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
Date: OCTOBER 2022

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GAS AND GROUNDWATER MONITORING RECORD SHEETS

Type of Test: 2nd Return Visit **Date of Test:** 11/10/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1330	-0.2	0.1	2	0.6	20.1	<1	<1	-	DRY	
BH2	22/09/2022	1305	<0.1	0.2	4	0.3	20.6	<1	<1	-	DRY	
BH3	27/09/2022	1345	0.1	0.1	2	0.2	20.4	<1	<1	-	DRY	
WS4	10/08/2022	1325	-0.1	0.1	2	0.3	20.1	<1	<1	-	DRY	
WS5	10/08/2022	1315	-0.1	0.1	2	0.5	20.1	<1	<1	-	2.76	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	0900	7	1028	Steady	Sunny, light winds	Weather records are not site specific but have been approximately interpolated from local information
Cool, sunny, dry, calm	1300	14	1028	Falling	Sunny, light winds	
	1700	13	1026	Steady	Sunny intervals	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
Date: OCTOBER 2022

RSA GEOTECHNICS LTD

GAS AND GROUNDWATER MONITORING RECORD SHEETS

Type of Test: 3rd Return Visit **Date of Test:** 17/10/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1310	-0.1	0.1	2	0.1	20.5	1	<1	-	DRY	
BH2	22/09/2022	1225	-0.1	0.1	2	0.4	20.1	<1	<1	-	DRY	
BH3	27/09/2022	12.10	-0.3	0.2	4	0.2	20.5	<1	<1	-	DRY	
WS4	10/08/2022	1250	0.1	0.1	2	0.2	20.3	<1	<1	-	DRY	
WS5	10/08/2022	1235	-0.2	0.1	2	0.4	20.0	<1	<1	-	2.78	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	0900	15	1014	Rising	Light rain	Weather records are not site specific but have been approximately interpolated from local information
Cool, cloudy, damp, calm	1300	16	1017	Rising	Light rain	
	1700	17	1020	Rising	Sunny	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
Date: OCTOBER 2022

RSA GEOTECHNICS LTD

GAS AND GROUNDWATER MONITORING RECORD SHEETS

Type of Test: 4th Return Visit **Date of Test:** 20/10/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1225	<0.1	0.1	2	1.8	19.9	<1	2	-	DRY	
BH2	22/09/2022	1155	0.1	0.1	2	1.9	19.2	<1	1	-	DRY	
BH3	27/09/2022	1210	0.2	0.1	2	1.3	20.1	<1	1	-	DRY	
WS4	10/08/2022	1140	<0.1	0.1	2	0.3	20.6	<1	2	-	DRY	
WS5	10/08/2022	1125	<0.1	0.1	2	0.4	20.5	<1	2	-	2.43	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	0900	14	1008	Falling	Light rain showers	Weather records are not site specific but have been approximately interpolated from local information
Cool, overcast, wet, breezy	1300	15	1006	Falling	Light rain showers	
	1700	15	1005	Steady	Drizzle	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
Date: OCTOBER 2022

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GAS AND GROUNDWATER MONITORING RECORD SHEETS

RSA GEOTECHNICS LTD

Type of Test: 5th Return Visit **Date of Test:** 24/10/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1130	<0.1	0.2	4	0.3	20.5	<1	<1	-	DRY	
BH2	22/09/2022	1210	-0.1	0.1	2	0.3	20.2	<1	<1	-	DRY	
BH3	27/09/2022	1220	-0.2	0.1	2	0.2	20.4	<1	1	-	DRY	
WS4	10/08/2022	1155	-0.1	0.1	2	0.3	19.8	<1	<1	-	DRY	
WS5	10/08/2022	1146	<0.1	0.1	2	0.4	20.0	<1	<1	-	2.46	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	1200	15	1003	Steady	Sunny intervals	Weather records are not site specific but have been approximately interpolated from local information
Cool, cloudy, damp, breezy	1400	16	1003	Steady	Sunny intervals	
	1700	15	1004	Steady	Sunny intervals	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
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GAS AND GROUNDWATER MONITORING RECORD SHEETS

Type of Test: 6th Return Visit **Date of Test:** 28/10/2022

Location	Date of Installation	Time of Monitoring (hours)	Flow (litres/hr)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Other Gases (ppm) Hydrogen Sulphide	Other Gases (ppm) Carbon Monoxide	Other Gases (ppm) Photoionisation Detector	Groundwater Depth (mbgl)	Water Level (mAOD)
BH1	01/09/2022	1540	<0.1	0.1	2	0.5	20.1	<1	1	-	DRY	
BH2	22/09/2022	1445	-0.1	0.1	2	0.7	19.5	<1	<1	-	DRY	
BH3	27/09/2022	1435	-0.1	0.1	2	0.2	20.2	<1	<1	-	DRY	
WS4	10/08/2022	1520	<0.1	0.1	2	0.4	20.0	<1	<1	-	DRY	
WS5	10/08/2022	1455	0.1	0.1	2	0.5	19.6	<1	<1	-	2.86	

Notes:
1% by volume = 10000 ppm
1% LEL = 520 ppm
1 cm^3/min = 0.06 l/hr

Weather conditions as observed at time of monitoring:	Time (hours)	Air Temperature (^oC)	Barometric Pressure (mb)	Trend in Barometric Pressure	Weather	Remarks
	0900	16	1012	Rising	Light cloud	Weather records are not site specific but have been approximately interpolated from local information
Cool, sunny/cloudy, dry, breezy	1300	17	1015	Rising	Sunny intervals	
	1700	16	1017	Rising	Sunny intervals	

Project
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Project No: 16118SI
Date: OCTOBER 2022

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TEST REPORT

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DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION

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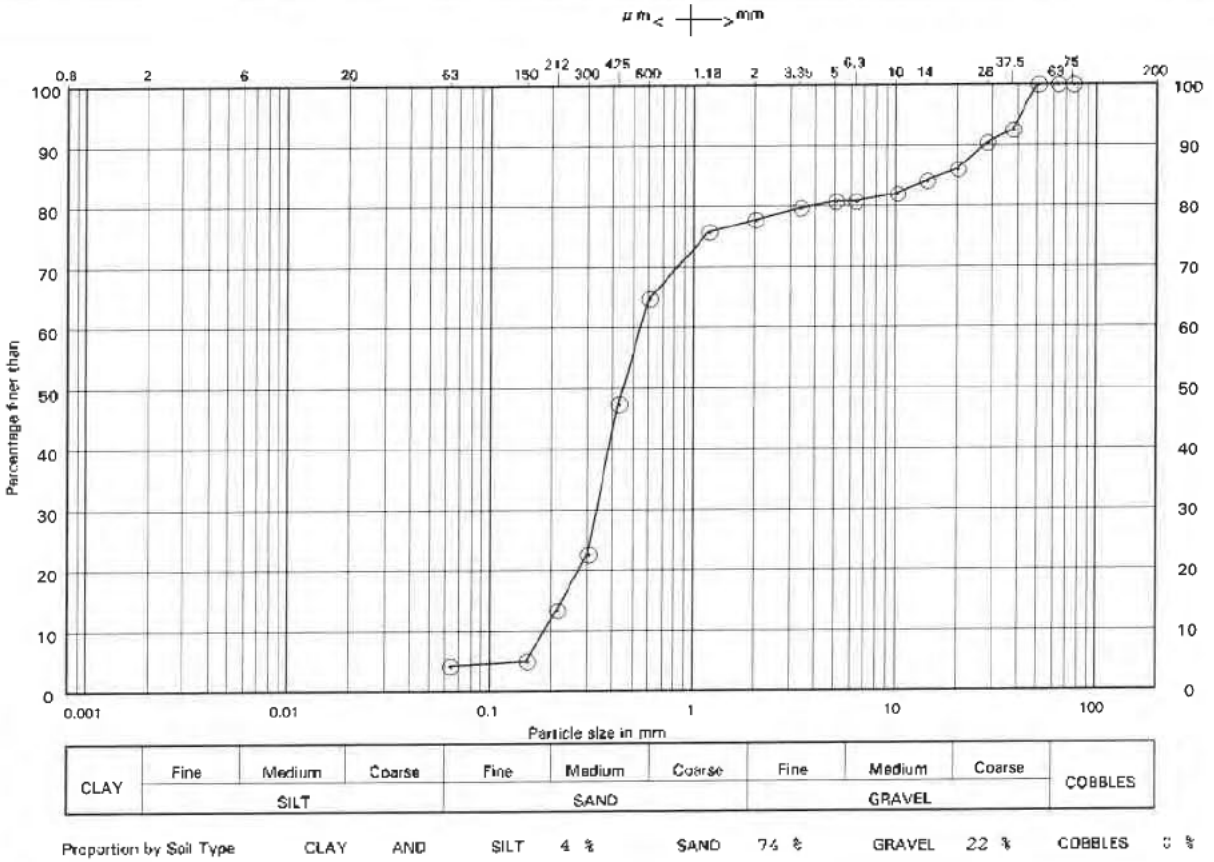
	Size (microns)						Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	3.35	5	6.3	10	14	20	28	37.5	50	63	75
Percentage by Mass passing Sieve	4	5	13	23	47	65	76	78	80	81	81	82	84	86	90	92	100	100	100



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Proportion by Soil Type CLAY AND SILT 4 % SAND 74 % GRAVEL 22 % COBBLES 0 %

Sample Description

Soil Type

Very dense orange brown slightly silty medium-coarse SAND with occasional subrounded-subangular fine coarse flint gravel (Lowestoft Formation)

LP

Method of Test Wet Sieve

METHOD OF PREPARATION BS 1377-1: 2016: 8,9

METHOD OF TEST BS1377:Part 2:1990: 9.2

REMARKS Result not determined where entry is blank.

Project

LAND NORTH OF HUMBER DOUCY, IPSWICH

Hole No BH1 Sample Ref B2

Depth 11.50 - 11.95 m

Specimen Location 11.50 - 11.95 m

Level

Job No 16118SI

RSAR2M

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DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION

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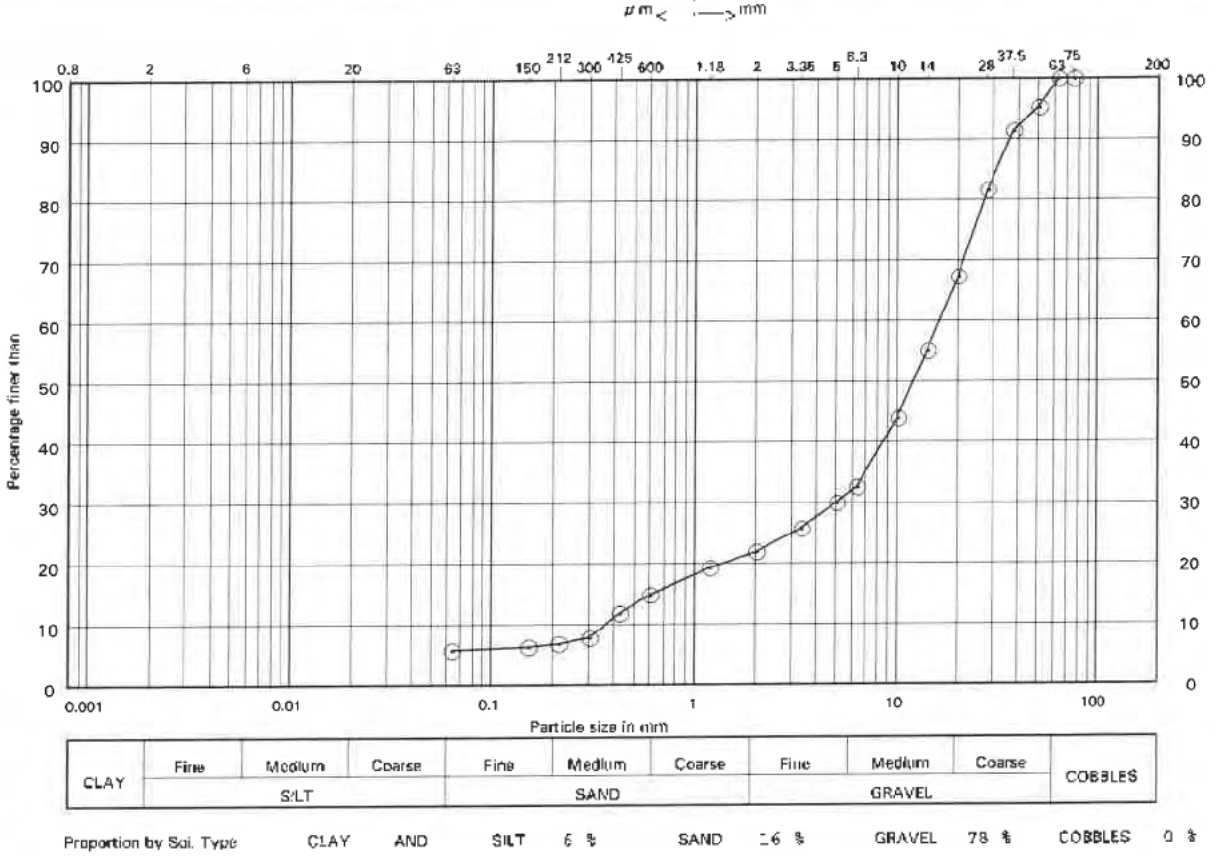
	Size (microns)						Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	3.35	5	6.3	10	14	20	28	37.5	50	63	75
Percentage by Mass passing Sieve	6	6	7	8	12	15	19	22	26	30	33	44	55	67	82	91	96	100	100



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	

Proportion by Soil Type CLAY AND SILT 6 % SAND 16 % GRAVEL 78 % COBBLES 0 %

Sample Description

Very dense orange brown silty sandy subrounded-subangular fine coarse flint GRAVEL (Lowestoft Formation)

Soil Type

LP

Method of Test Wet Sieve

METHOD OF PREPARATION BS 1377-1: 2016: 8,9

METHOD OF TEST BS1377:Part 2:1990: 9.2

REMARKS Result not determined where entry is blank.

Project

LAND NORTH OF HUMBER DOUCY, IPSWICH

Hole No BH1 Sample Ref D4

Depth 3.00 - 5.00 m

Specimen Location 3.00 - 5.00 m

Level

Job No 16118SI

RSAR2M

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DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION

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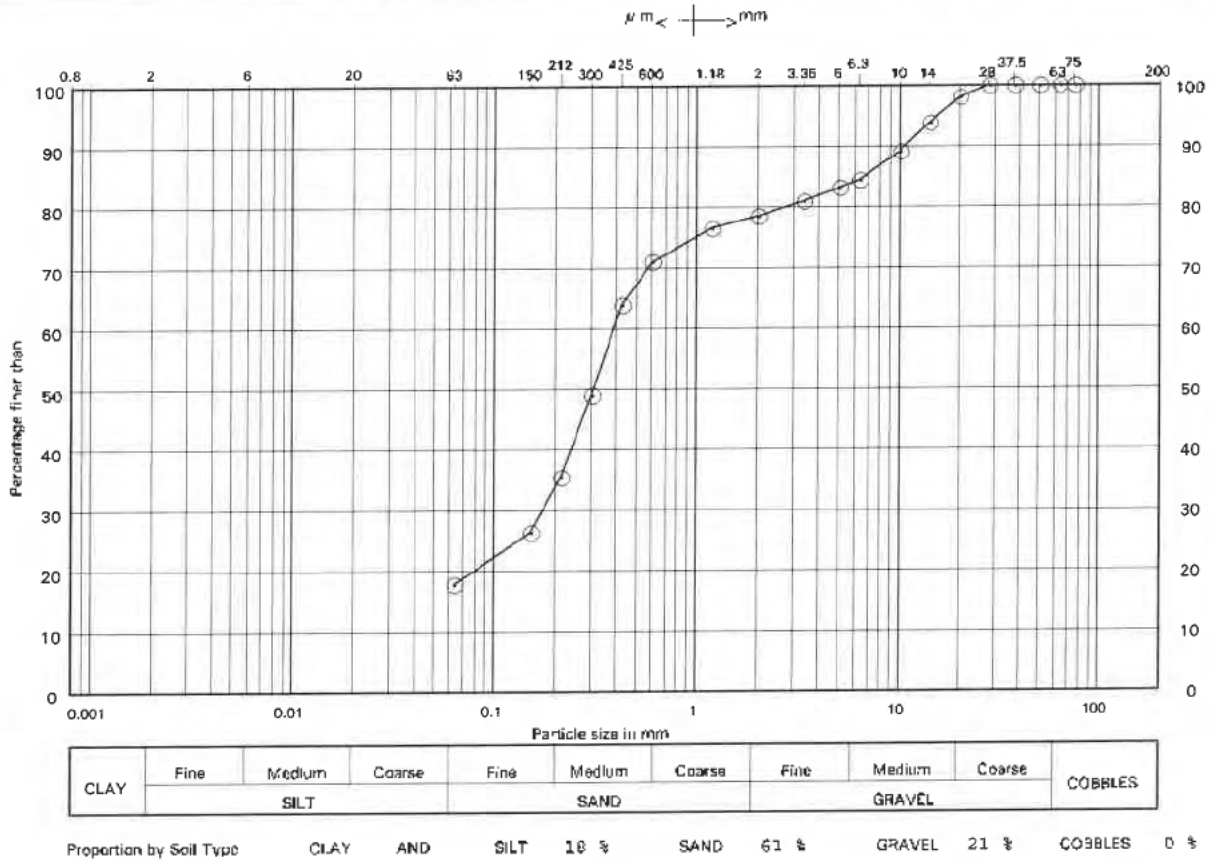
	Size (microns)						Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	3.35	5	6.3	10	14	20	28	37.5	50	63	75
Percentage by Mass passing Sieve	18	26	35	49	64	71	77	79	81	83	84	89	94	98	100	100	100	100	100



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Proportion by Soil Type CLAY AND SILT 18 % SAND 61 % GRAVEL 21 % COBBLES 0 %

Sample Description

Soil Type

LF

Medium dense orange brown silty fine-coarse SAND with occasional subrounded-subangular fine-coarse flint gravel, rare fine-medium gravel sized quartzite gravel and fine-medium gravel size pockets of soft brown silty sandy clay (Lowestoft Formation)

Method of Test Wet Sieve

METHOD OF PREPARATION BS 1377-1: 2016: 8,9

METHOD OF TEST BS1377:Part 2:1990: 9.2

REMARKS Result not determined where entry is blank.

Project

LAND NORTH OF HUMBER DOUCY, IPSWICH

Hole No BH2 Sample Ref U3

Depth 5.50 - 5.95 m

Specimen Location 5.50 - 5.95 m

Level

Job No 16118SI

RSAH2M

TEST REPORT

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DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION

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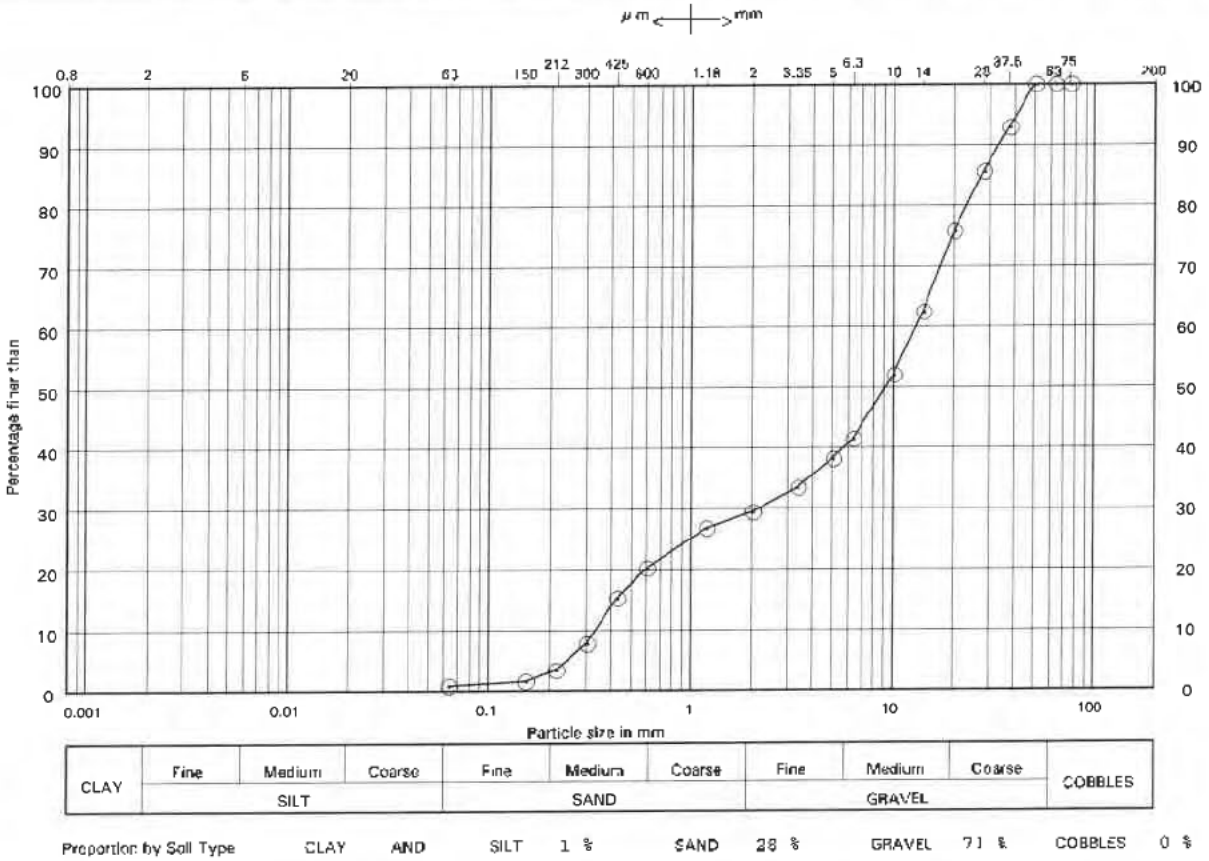
	Size (microns)						Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	3.35	5	6.3	10	14	20	28	37.5	50	63	75
Percentage by Mass passing Sieve	1	2	3	8	15	20	27	29	33	38	41	52	62	76	86	93	100	100	100



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Proportion by Soil Type CLAY AND SILT 1 % SAND 28 % GRAVEL 71 % COBBLES 0 %

Sample Description

Very dense orange brown slightly silty sandy subrounded-subangular fine-coarse flint GRAVEL with rare subrounded-rounded fine-medium quartzite gravel (Lowestoft Formation)

Soil Type

GF

Method of Test Wet Sieve

METHOD OF PREPARATION BS 1377-1: 2016: 8,9

METHOD OF TEST BS1377:Part 2:1990: 9.2

REMARKS Result not determined where entry is blank.

Project

LAND NORTH OF HUMBER DOUCY, IPSWICH

Hole No	BH3	Sample Ref	B1
Depth		7.00 - 7.45 m	
Specimen Location		7.00 - 7.45 m	
Level			
Job No		16118SI	

RSAR2M

SUMMARY OF CLASSIFICATION TESTING

BS1377: Part 1 1990: Clause 7.3 and 7.4 and Part 2 1990: Clause 3.2, 4.4, 5 and 6.5

Project	16118SI - Land North of Humber Doucy Lane, Ipswich	**Report number**	16118SI

Location	Sample type	Sample number	Depth - top (m)	Depth - base (m)	Material passing 425µm (%)	Moisture content (w %)	Plastic limit (wp %)	Liquid limit (wL %)	Plasticity index (IP %)	Linear shrinkage (LS %)	Particle density (Mg/m³)	Prep method	Drying temp (°C)	Description
BH1	D	2		1.00	79	14.0	13	25	12			Wet sieve	105	Firm orange brown silty sandy CLAY with a little subrounded-subangular fine-coarse flint gravel (Lowestoft Formation)

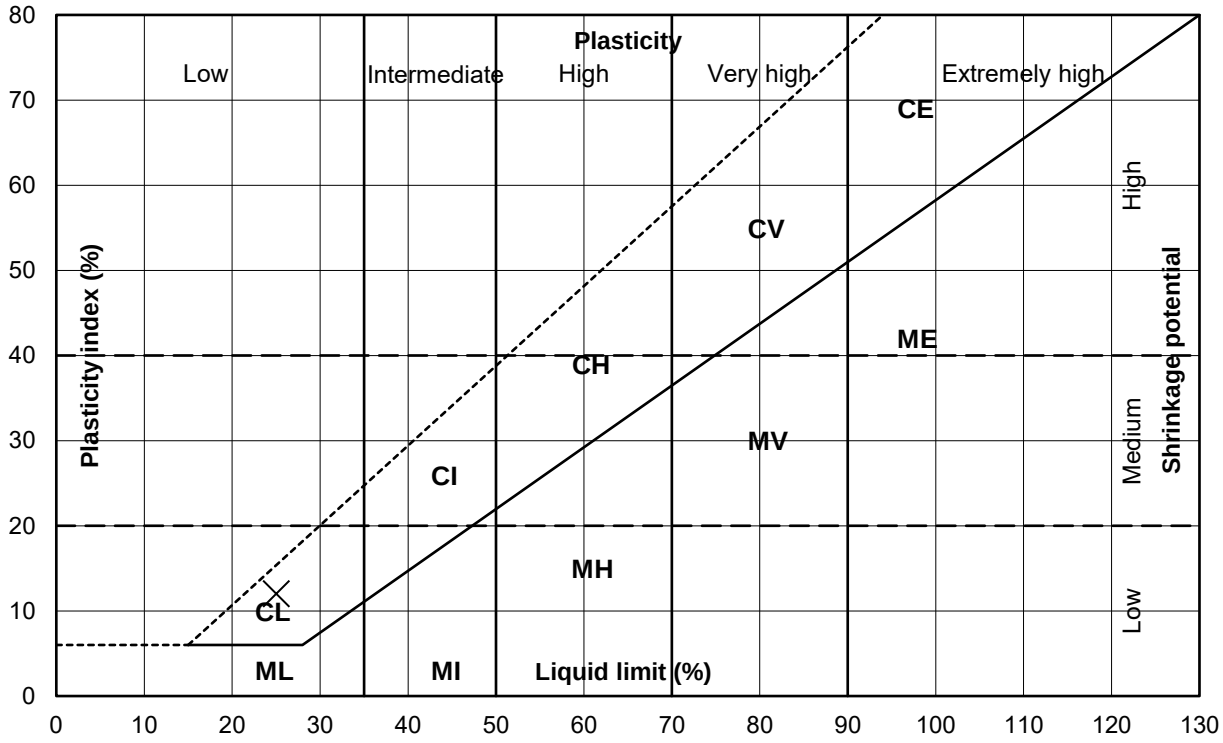
RSA GEOTECHNICS LTD ASHBURNHAM HOUSE 1 MAITLAND ROAD NEEDHAM MARKET IP6 8NZ
TELEPHONE (01449) 723 723 FAX (01449) 723 907

LABORATORY TEST RESULTS

PLASTICITY CHART

BS1377: Part 2: 1990: Clause 4.4 and 5

Project	16118SI - Land North of Humber Doucy Lane, Ipswich	**Report number**	16118SI



COMMENTS

Shrinkage potential taken from NHBC Standards - Chapter 4.2, Clause 4.2 - D5, Table 1.
Plasticity chart taken from BS5930: Clause 41, Figure 31.

SUMMARY OF STRENGTH TESTING

BS1377: Part 7: 1990: Clause 7*

Project	**Land North of Humber Doucy Lane, Ipswich**	**Report Number**	**16118SI**

Location	Sample Type	Sample Number	Depth - Top (m)	Depth - Base (m)	Test Method	Bulk Density (Mg/m^3)	Moisture Content - Top (w%)	Moisture Content - Bottom (w%)	Cell Pressure (kN/m^2)	Deviator Stress (kN/m^2)	Shear Strength (kN/m^2)	Vane Size (mm)	Shear Vane - Top (kN/m^2)	Shear Vane - Bottom (kN/m^2)	Description
BH2	UT	1	1.50	1.95	Ts	2.19		14.5	50	629	315				Very stiff very high strength light orange-brown and light grey slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel and rare rootlets (Lowestoft Formation)
BH2	UT	2	3.50	3.95	Ts	2.23		14.3	80	387	194				Very stiff very high strength light orange-brown and light grey slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel and rare rootlets (Lowestoft Formation)
BH3	UT	1	1.50	1.95	Ts	2.19		14.2	50	729	365				Very stiff very high strength orange-brown and brown slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel, rare pockets of black silt (Lowestoft Formation)
BH3	UT	2	3.50	3.95	Ts	2.19		15.5	80	353	177				Very stiff very high strength orange-brown and brown slightly sandy silty CLAY with occasional subrounded-subangular fine-coarse chalk and flint gravel, rare pockets of black silt (Lowestoft Formation)

Test methods marked * are 'Not UKAS Accredited'

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TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	**Land North of Humber Doucy Lane, Ipswich**
Serial No.	**41296_1**

Client:

RSA Geotechnics Ltd

Ashburnham House
1 Maitland Road
Needham Market
IP6 8NZ

Soil Property Testing Ltd

**15, 16, 18 Halcyon Court, St Margaret's Way,
Stukeley Meadows, Huntingdon,
Cambridgeshire, PE29 6DG**

[redacted]

Samples Submitted By:

RSA Geotechnics Ltd

Samples Labelled:

Land North of Humber Doucy Lane, Ipswich

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

[redacted]

Date Received: 19/08/2022

Samples Tested Between: 19/08/2022 **and** 02/09/2022

Remarks:

For the attention of Phil Gawne
Your Reference No: 16118SI
Your Order No: LAB/0237/JMK

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

UKAS TESTING 0998

Contract	Land North of Humber Doucy Lane, Ipswich		
Serial No.	41296_1	Target Date	02/09/2022
Scheduled By	RSA Geotechnics Ltd		

Schedule Remarks	

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BSEN)	Sulphate Content/pH Value	Liquid/Plastic Limits	Wet Sieve Preparation														Sample Remarks
TP1	D	2	0.70	1	1																
TP1	D	3	1.00	1		1	1														
TP1	D	4	1.50	1																	
TP1	D	5	2.00	1																	
TP1	D	6	2.60	1																	
TP1	D	7	3.00	1																	
TP10	D	1	0.60	1																	
TP10	D	2	1.10	1		1	1														
TP10	D	3	1.70	1		1	1														
TP10	D	4	2.20	1	1																
TP10	D	5	2.90	1																	
TP12	D	1	0.70	1																	
TP12	D	2	1.20	1	1																
TP12	D	3	1.50	1		1	1														
TP12	D	4	2.20	1																	
TP12	D	5	2.90	1																	
TP13	D	2	0.50	1																	
TP13	D	3	1.00	1																	
TP13	D	4	1.80	1		1	1														
TP13	D	5	2.40	1	1																
TP13	D	6	3.00	1																	
TP15	D	1	0.40	1																	
TP15	D	2	1.10	1		1	1														
TP15	D	3	1.60	1																	
TP15	D	4	2.20	1																	
TP15	D	5	2.80	1																	
TP17	D	2	0.40	1																	
TP17	D	3	0.80	1	1																
TP17	D	4	1.50	1		1	1														
TP17	D	5	2.00	1																	
TP17	D	6	2.50	1																	
TP18	D	2	0.60	1	1																
TP18	D	3	1.10	1		1	1														

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich		
Serial No.	41296_1	Target Date	02/09/2022
Scheduled By	RSA Geotechnics Ltd		

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BSEN)	Sulphate Content/pH Value	Liquid/Plastic Limits	Wet Sieve Preparation														Sample Remarks
TP18	D	4	1.80	1																	
TP18	D	5	2.50	1																	
TP18	D	6	2.90	1																	
TP5	D	1	0.65	1		1	1														
TP5	D	2	0.95	1																	
TP5	D	3	1.70	1	1																
TP5	D	4	2.30	1																	
TP5	D	5	2.90	1																	
WS2	D	2	0.50	1																	
WS2	D	3	0.90	1	1																
WS2	D	4	1.70	1		1	1														
WS2	D	5	2.50	1																	
WS2	D	6	2.90	1																	
WS8	D	2	0.50	1																	
WS8	D	3	0.90	1																	
WS8	D	4	1.40	1		1	1														
WS8	D	5	1.90	1	1																
WS8	D	6	2.40	1																	
WS8	D	7	2.90	1																	
Totals				52	9	11	11														End of Schedule

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
TP1	0.70	D	2	13.9	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP1	1.00	D	3	10.6	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chert and chalk	
TP1	1.50	D	4	12.3	Very stiff olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP1	2.00	D	5	14.8	Yellow SILT/CLAY with rare fine chalk gravel	
TP1	2.60	D	6	9.7	Brownish yellow slightly sandy gravelly silty CLAY. Gravel is fine to coarse angular to rounded chert, chalk and quartzite	1955.3g submitted - insufficient material to be representative for test.*
TP1	3.00	D	7	8.1	Brown, black and white fine to coarse angular to rounded slightly clayey silty sandy chert and chalk GRAVEL. Sand is brownish yellow	1802.8g submitted - insufficient material to be representative for test.*
TP10	0.60	D	1	13.2	Hard olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP10	1.10	D	2	14.2	Very stiff mottled light grey and light olive grey slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP10	1.70	D	3	15.7	Stiff mottled orange, light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP10	2.20	D	4	15.6	Very stiff mottled light grey, orange and light olive brown slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP10	2.90	D	5	17.2	Very stiff olive yellow slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to rounded chalk	
TP12	0.70	D	1	8.9	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP12	1.20	D	2	9.9	Firm yellowish brown sandy silty CLAY with rare fine chert gravel	
TP12	1.50	D	3	18.6	Stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine and medium angular to subrounded chalk and chert	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Mass required for max grain size of: 0.063mm = 30g, 2.0mm = 100g, 10.0mm = 500g, 31.5mm = 3000g, 63.0mm = 21000g

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
TP12	2.20	D	4	16.7	Very stiff mottled orange, light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP12	2.90	D	5	16.0	Very stiff light olive brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to subrounded chalk and chert	
TP13	0.50	D	2	7.7	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP13	1.00	D	3	11.2	Hard mottled yellowish brown, light grey and olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP13	1.80	D	4	15.2	Very stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP13	2.40	D	5	15.4	Very stiff mottled bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
TP13	3.00	D	6	20.2	Very stiff mottled bluish grey and olive slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to rounded chalk and chert	
TP15	0.40	D	1	12.2	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine to coarse angular and subangular chert	
TP15	1.10	D	2	12.4	Hard light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP15	1.60	D	3	15.7	Very stiff mottled light bluish grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP15	2.20	D	4	16.2	Very stiff mottled light bluish grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP15	2.80	D	5	15.8	Very stiff mottled light bluish grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP17	0.40	D	2	16.6	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP17	0.80	D	3	11.0	Hard mottled olive yellow and pale yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
TP17	1.50	D	4	14.4	Hard olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP17	2.00	D	5	16.7	Very stiff mottled light grey and brownish yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP17	2.50	D	6	15.0	Very stiff mottled bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
TP18	0.60	D	2	14.5	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP18	1.10	D	3	12.8	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP18	1.80	D	4	16.9	Very stiff mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to rounded chalk and chert	
TP18	2.50	D	5	16.8	Very stiff mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to rounded chalk and chert	
TP18	2.90	D	6	16.4	Very stiff mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to rounded chalk and chert	
TP5	0.65	D	1	10.0	Hard olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP5	0.95	D	2	14.0	Hard mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP5	1.70	D	3	15.9	Very stiff mottled light bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
TP5	2.30	D	4	15.8	Very stiff mottled light bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
TP5	2.90	D	5	16.0	Very stiff mottled light bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
WS2	0.50	D	2	14.8	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
WS2	0.90	D	3	11.9	Hard brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to rounded chalk and chert	
WS2	1.70	D	4	11.8	Hard mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
WS2	2.50	D	5	14.8	Very stiff mottled olive yellow and yellowish brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine and medium angular to subrounded chalk and chert	
WS2	2.90	D	6	13.1	Firm brownish yellow slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse angular to rounded chalk and chert	
WS8	0.50	D	2	8.3	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine to coarse angular and subangular chert	
WS8	0.90	D	3	15.8	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine to coarse angular and subangular chert	
WS8	1.40	D	4	14.0	Very stiff light olive brown slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
WS8	1.90	D	5	18.2	Stiff brownish yellow slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to subrounded chalk	
WS8	2.40	D	6	16.6	Firm yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to subrounded chalk and chert	
WS8	2.90	D	7	18.0	Stiff olive yellow slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium rounded to subangular chalk	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

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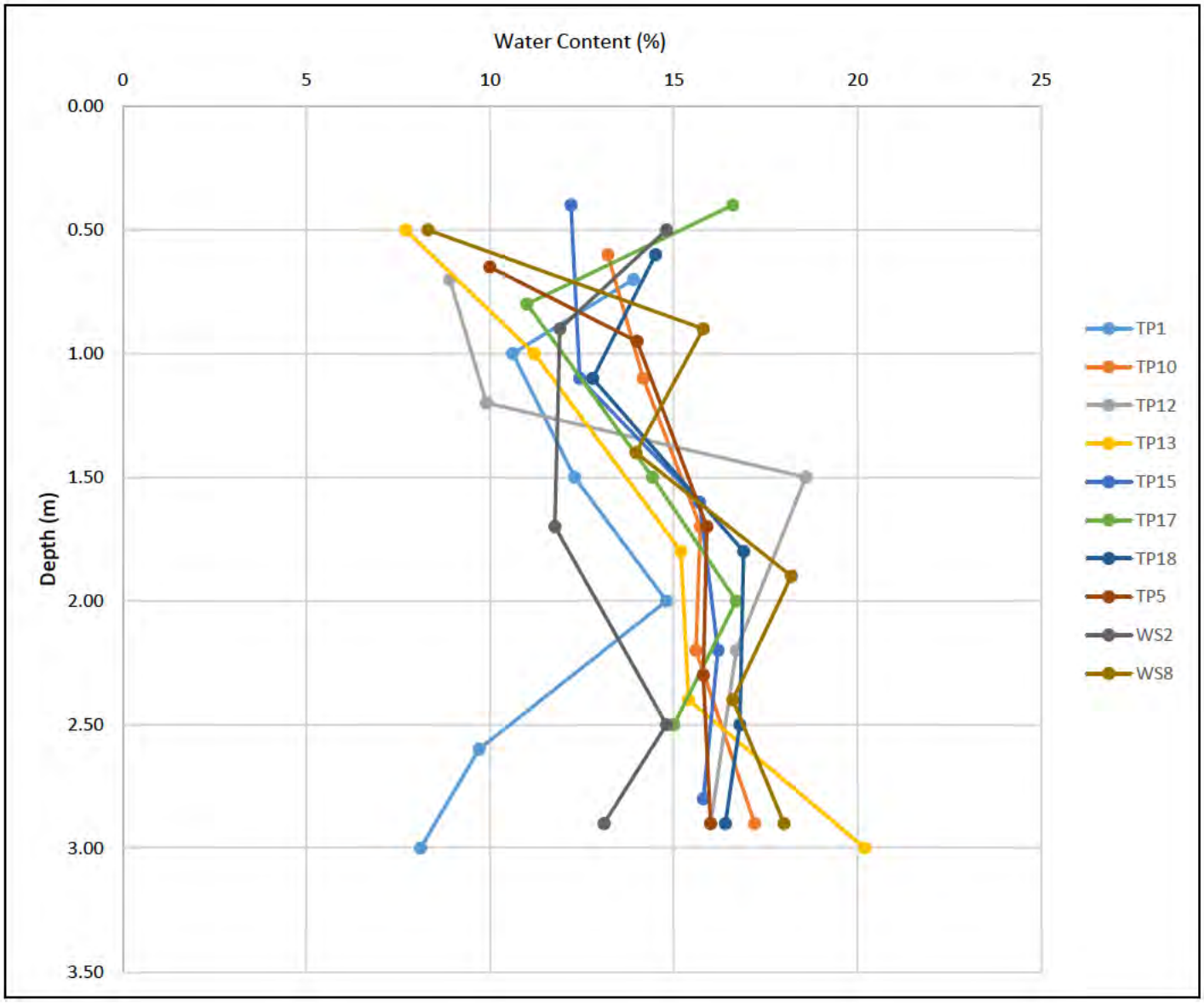
DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

WATER CONTENT VS DEPTH BELOW GROUND LEVEL



Method of Preparation:	BSEN ISO 17892-1: 2014
Method of Test:	BSEN ISO 17892-1: 2014
Type of Sample Key:	U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

0998

Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
TP1	1.00	D	3	10.6	40	15	25	-0.18	Wet Sieved	15 (M)	12.5*	28	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chert and chalk	CI
TP10	1.10	D	2	14.2	44	16	28	-0.07	Wet Sieved	11 (M)	15.9*	24	Very stiff mottled light grey and light olive grey slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP10	1.70	D	3	15.7	42	15	27	0.03	Wet Sieved	7 (M)	16.9*	24	Stiff mottled orange, light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP12	1.50	D	3	18.6	47	16	31	0.08	Wet Sieved	9 (M)	20.4*	27	Stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP13	1.80	D	4	15.2	38	15	23	0.01	Wet Sieved	11 (M)	17.1*	27	Very stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP15	1.10	D	2	12.4	43	15	28	-0.09	Wet Sieved	12 (M)	14.1*	25	Hard light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP17	1.50	D	4	14.4	39	16	23	-0.07	Wet Sieved	11 (M)	16.2*	93	Hard olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
TP18	1.10	D	3	12.8	43	16	27	-0.12	Wet Sieved	11 (M)	14.4*	96	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

TEST REPORT

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Contract	Land North of Humber Doucy Lane, Ipswich
Serial No.	41296_1

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
TP5	0.65	D	1	10.0	37	15	22	-0.23	Wet Sieved	8 (M)	10.9*	96	Hard olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
WS2	1.70	D	4	11.8	36	15	21	-0.15	Wet Sieved	16 (M)	14.0*	92	Hard mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI
WS8	1.40	D	4	14.0	45	16	29	-0.07	Wet Sieved	8 (M)	15.2*	93	Very stiff light olive brown slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	CI

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

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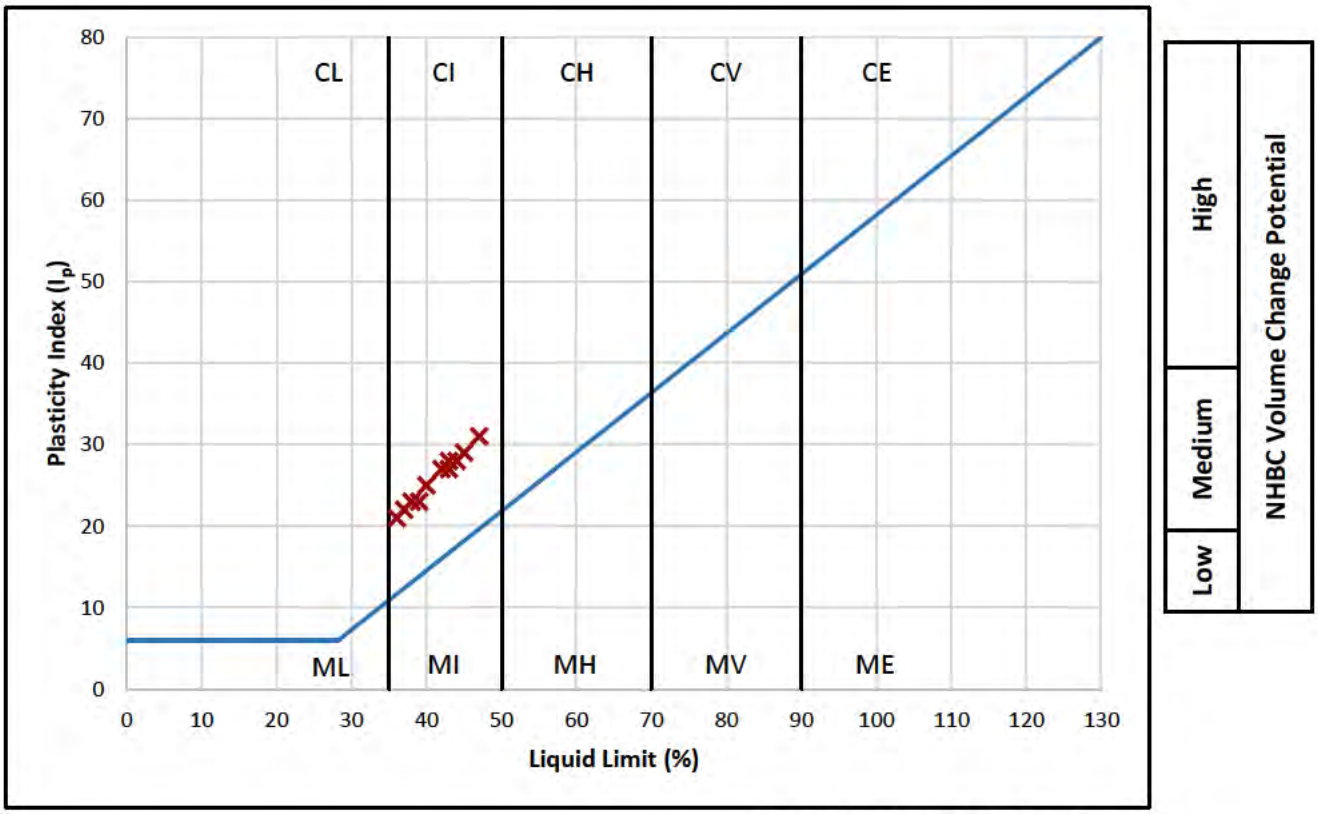
PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS 1377: Part 2: 1990: 4.2
Method of Test:	BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

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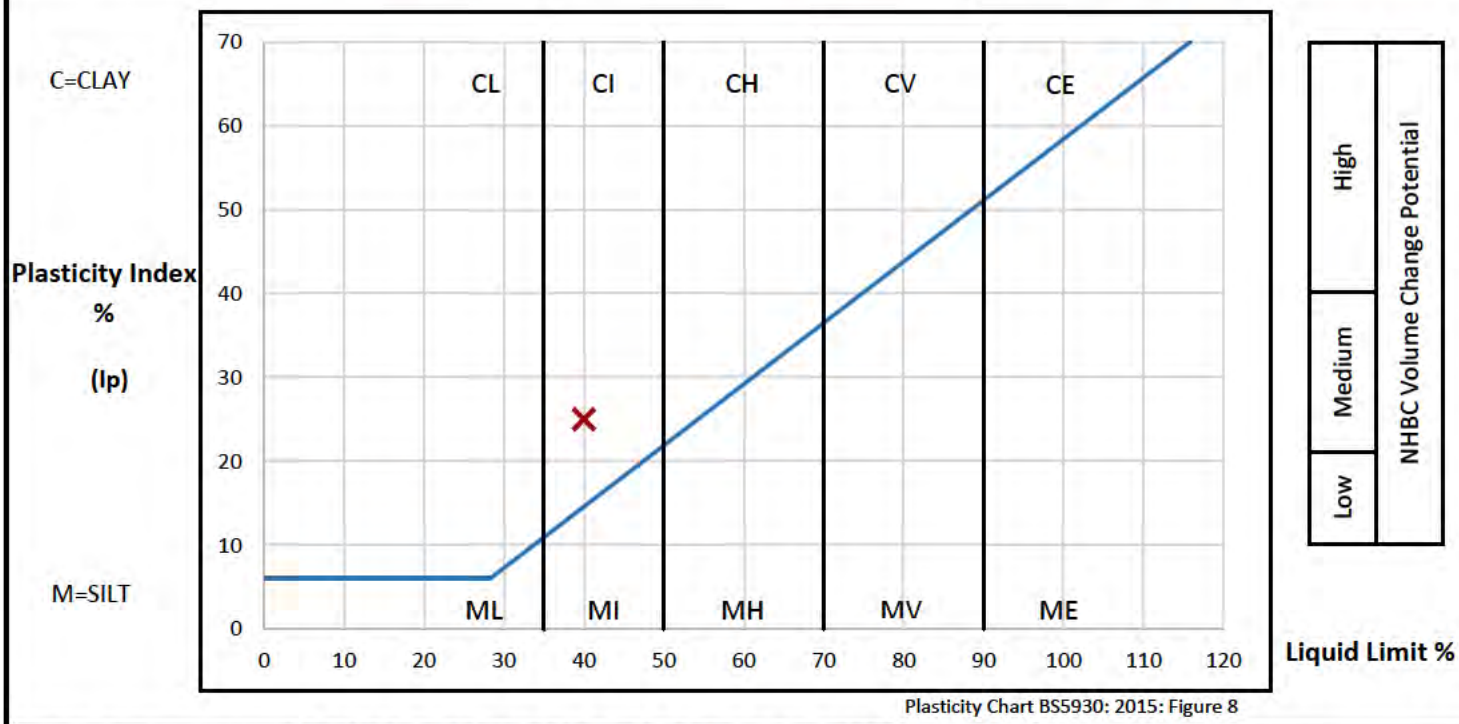
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP1	1.00	D	3	10.6	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chert and chalk	

PREPARATION				Liquid Limit	40 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plasticity Index	25 %
Corrected water content for material passing 0.425mm		12.5 %		Liquidity Index	-0.18
Sample retained 2mm sieve	(Measured)	10 %		NHBC Modified (I'p)	21 %
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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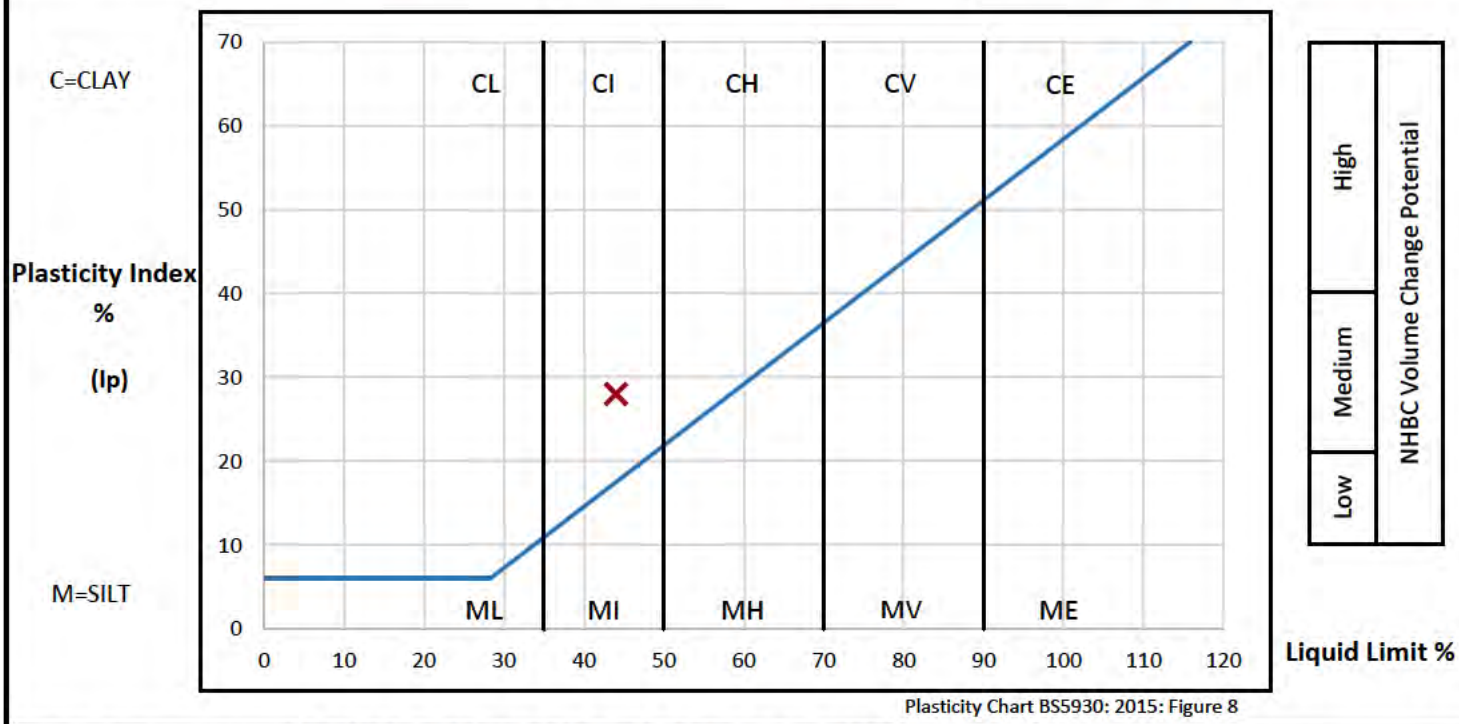
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP10	1.10	D	2	14.2	Very stiff mottled light grey and light olive grey slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION		Liquid Limit	44 %
Method of preparation	Wet sieved over 0.425mm sieve	Plastic Limit	16 %
Sample retained 0.425mm sieve (Measured)	11 %	Plasticity Index	28 %
Corrected water content for material passing 0.425mm	15.9 %	Liquidity Index	-0.07
Sample retained 2mm sieve (Measured)	9 %	NHBC Modified (I'p)	25 %
Curing time 24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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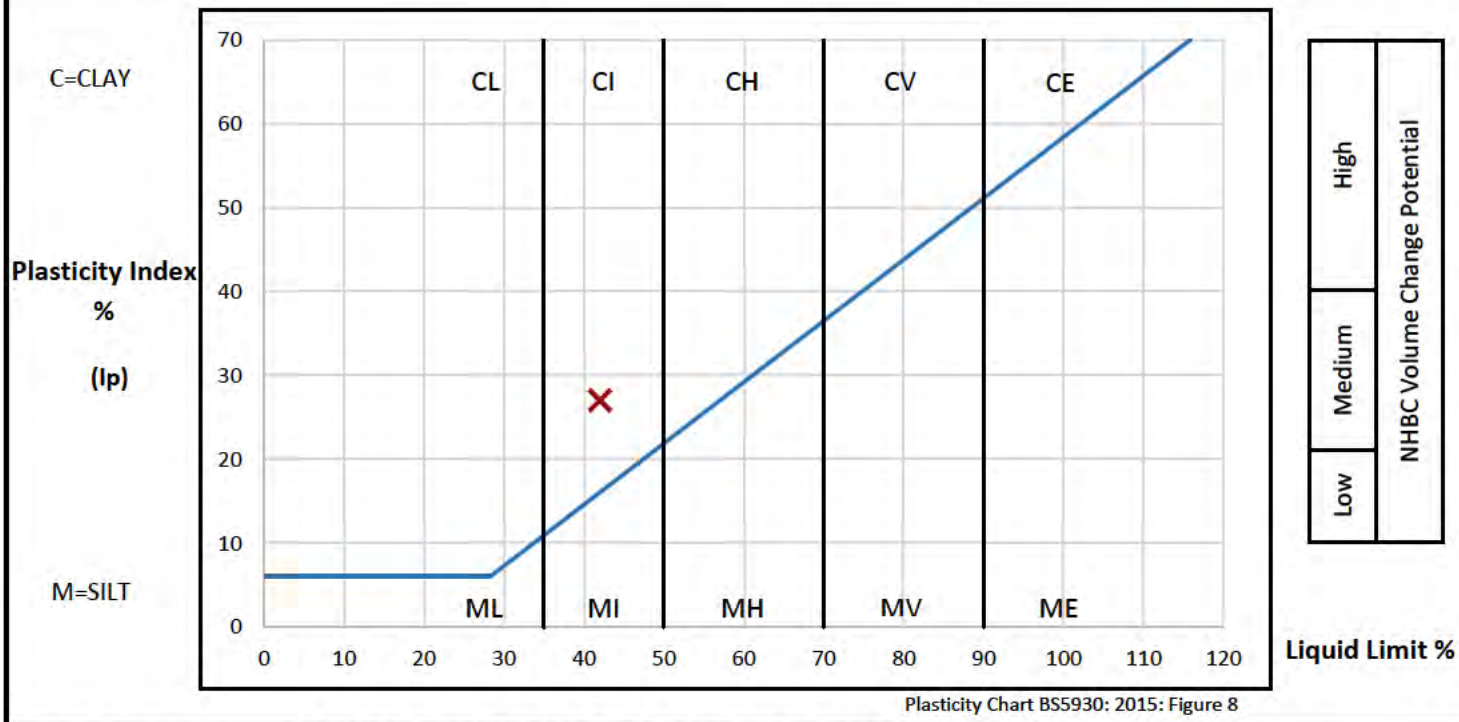
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP10	1.70	D	3	15.7	Stiff mottled orange, light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION			Liquid Limit	42 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	7 %	Plasticity Index	27 %
Corrected water content for material passing 0.425mm		16.9 %	Liquidity Index	0.03
Sample retained 2mm sieve	(Measured)	4 %	NHBC Modified (I'p)	25 %
Curing time	24 hrs	Clay Content: Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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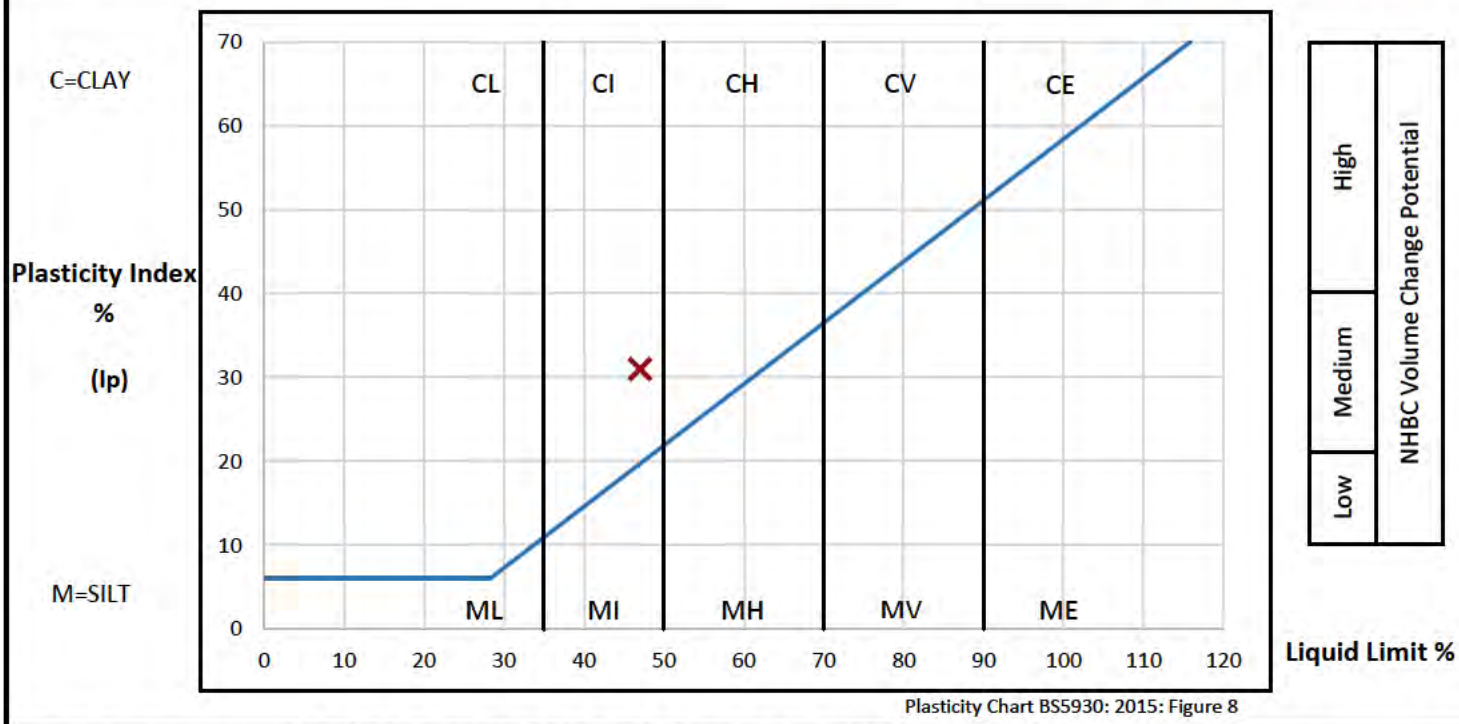
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP12	1.50	D	3	18.6	Stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION		Liquid Limit	47 %
Method of preparation	Wet sieved over 0.425mm sieve	Plastic Limit	16 %
Sample retained 0.425mm sieve (Measured)	9 %	Plasticity Index	31 %
Corrected water content for material passing 0.425mm	20.4 %	Liquidity Index	0.08
Sample retained 2mm sieve (Measured)	7 %	NHBC Modified (I'p)	28 %
Curing time	27 hrs	Clay Content: Not analysed	Derived Activity: Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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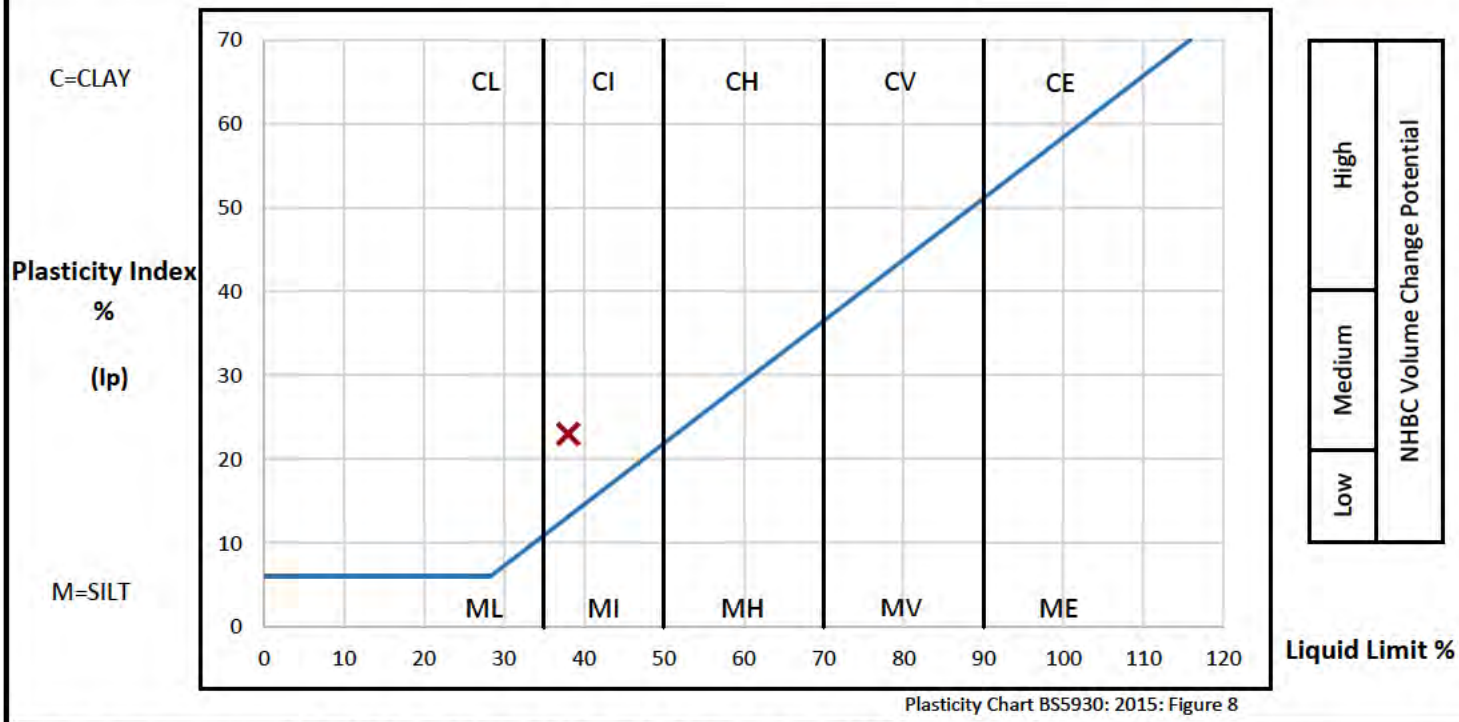
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP13	1.80	D	4	15.2	Very stiff mottled light grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION			Liquid Limit	38 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	11 %	Plasticity Index	23 %
Corrected water content for material passing 0.425mm		17.1 %	Liquidity Index	0.01
Sample retained 2mm sieve	(Measured)	8 %	NHBC Modified (I'p)	20 %
Curing time	27 hrs	Clay Content: Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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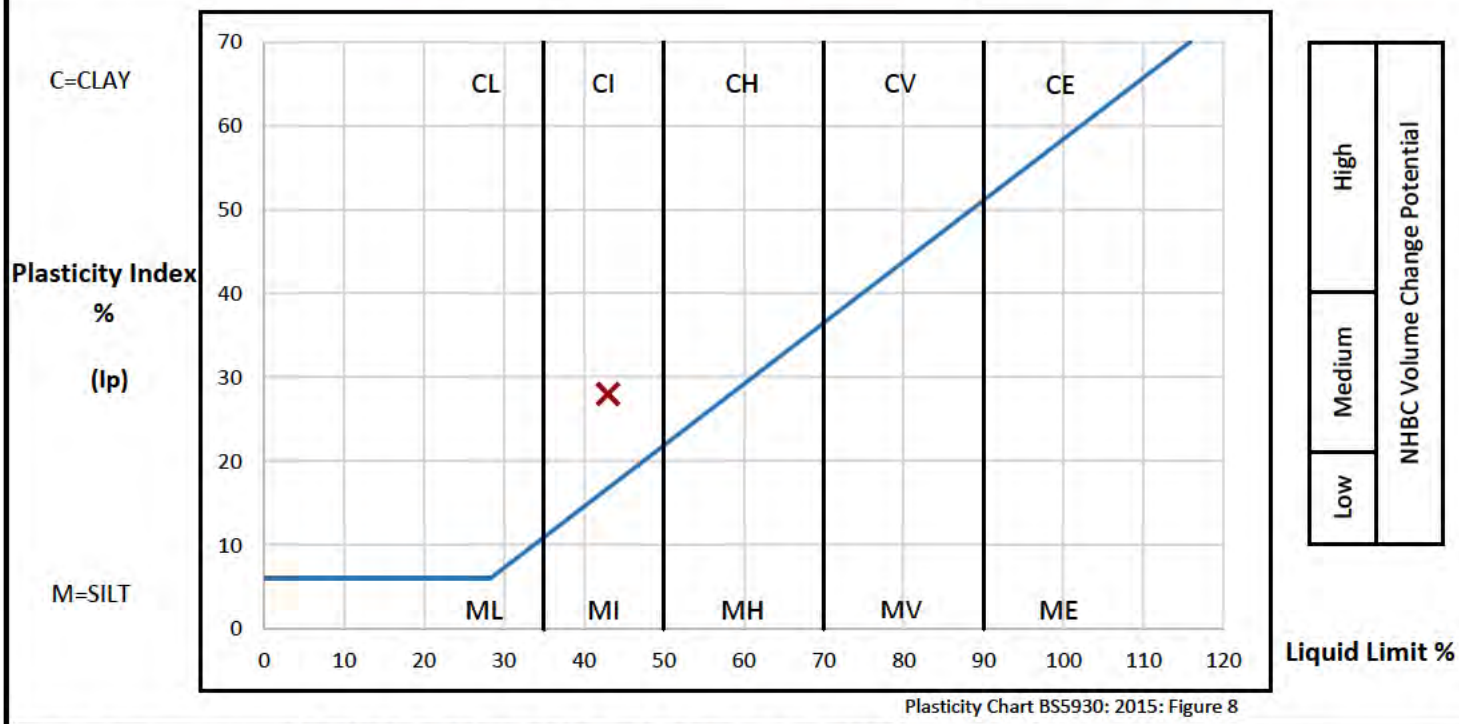
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP15	1.10	D	2	12.4	Hard light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION				Liquid Limit	43 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	12 %		Plasticity Index	28 %
Corrected water content for material passing 0.425mm		14.1 %		Liquidity Index	-0.09
Sample retained 2mm sieve	(Measured)	9 %		NHBC Modified (I'p)	25 %
Curing time	25 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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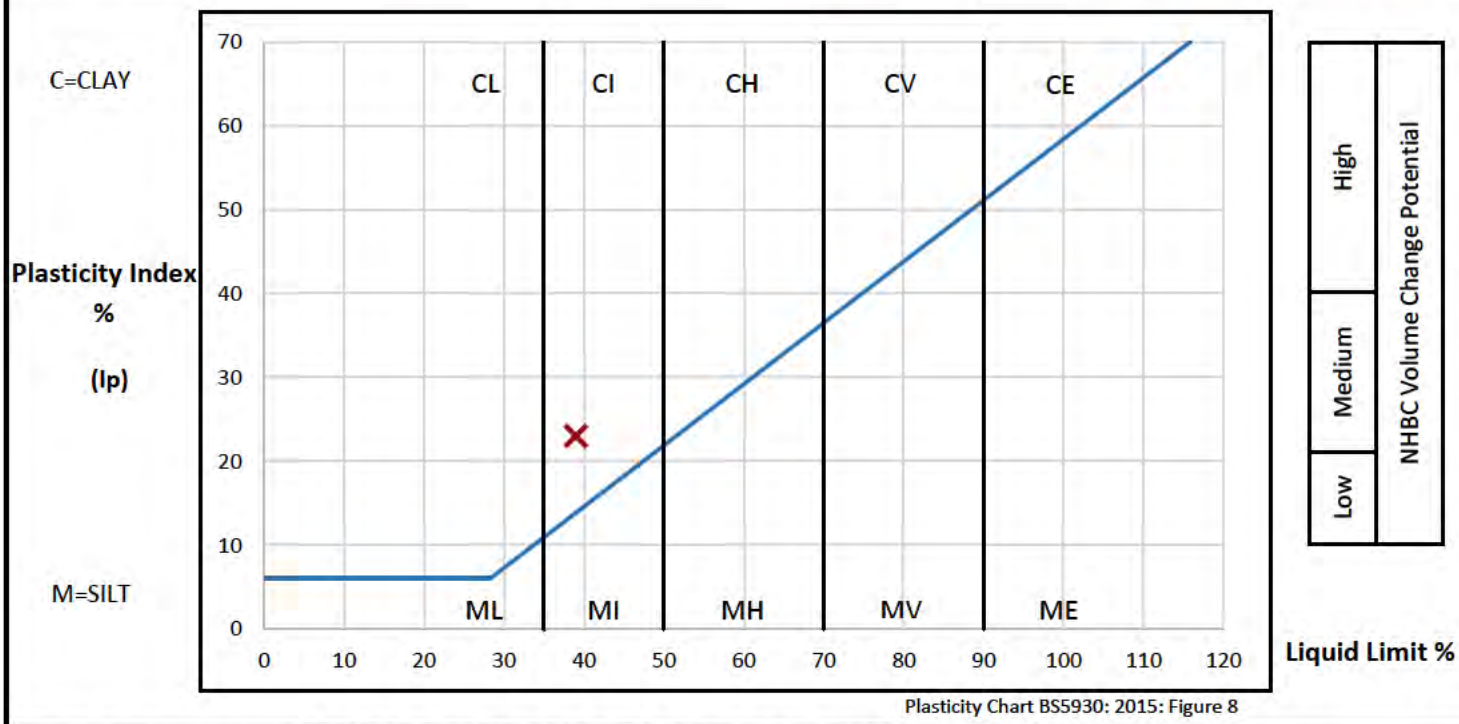
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP17	1.50	D	4	14.4	Hard olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION				Liquid Limit	39 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	23 %
Corrected water content for material passing 0.425mm		16.2 %		Liquidity Index	-0.07
Sample retained 2mm sieve	(Measured)	8 %		NHBC Modified (I'p)	20 %
Curing time	93 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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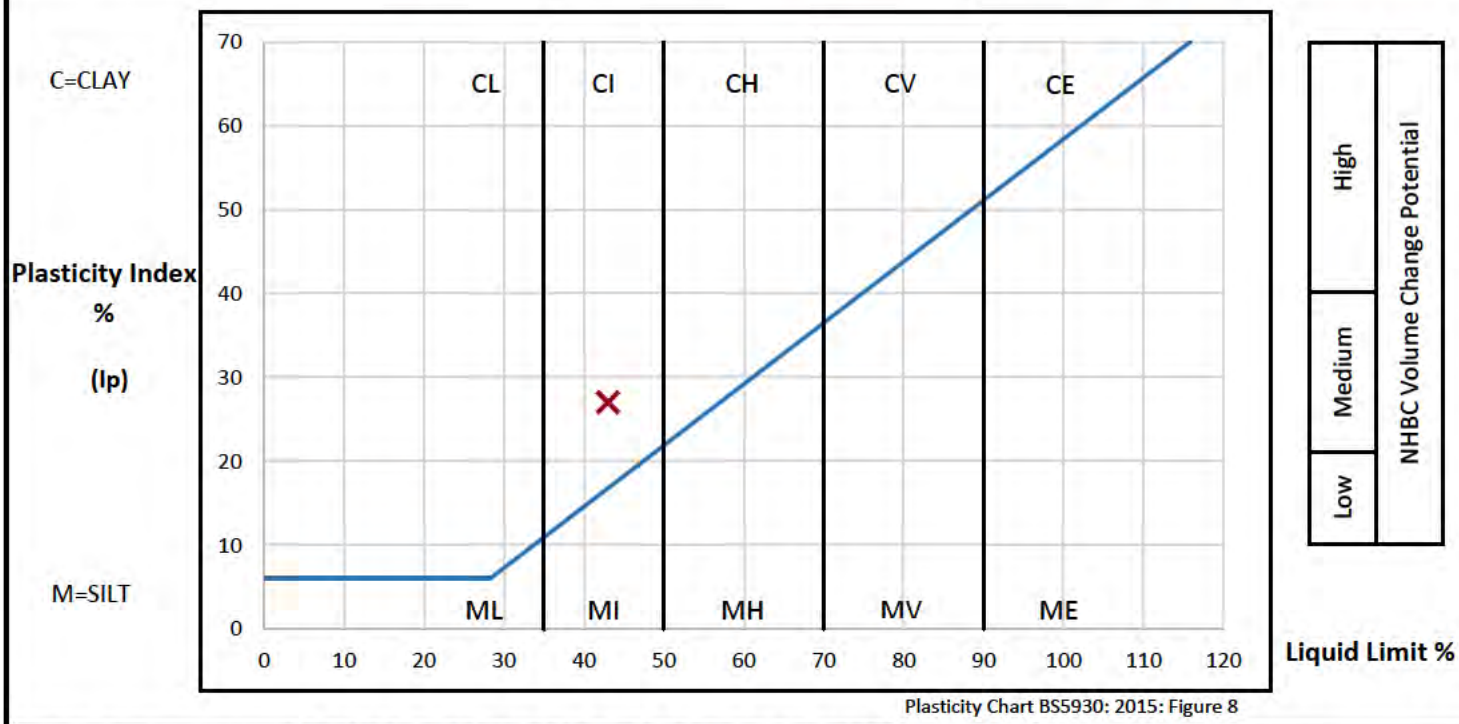
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP18	1.10	D	3	12.8	Hard light olive brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION				Liquid Limit	43 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	27 %
Corrected water content for material passing 0.425mm		14.4 %		Liquidity Index	-0.12
Sample retained 2mm sieve	(Measured)	9 %		NHBC Modified (I'p)	24 %
Curing time	96 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

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Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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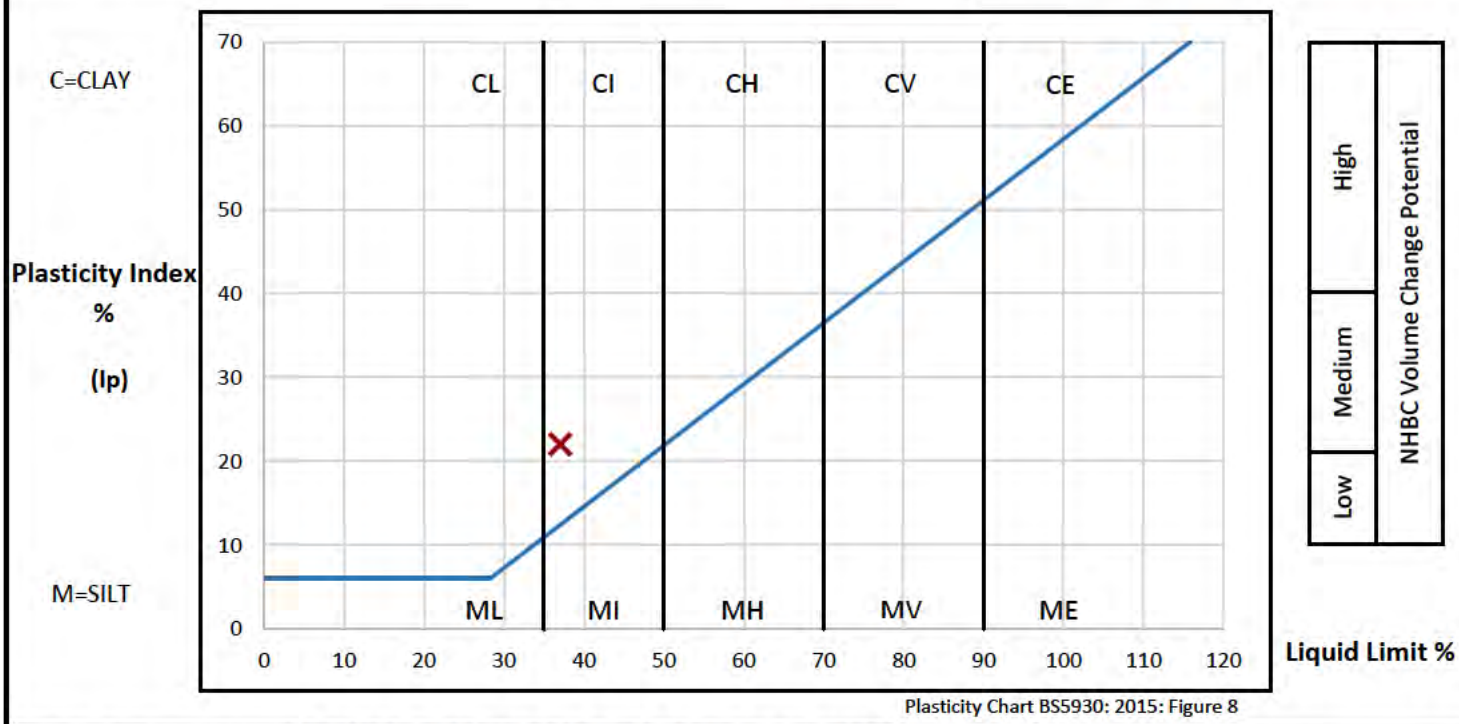
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP5	0.65	D	1	10.0	Hard olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION				Liquid Limit	37 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	22 %
Corrected water content for material passing 0.425mm		10.9 %		Liquidity Index	-0.23
Sample retained 2mm sieve	(Measured)	3 %		NHBC Modified (I'p)	20 %
Curing time	96 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

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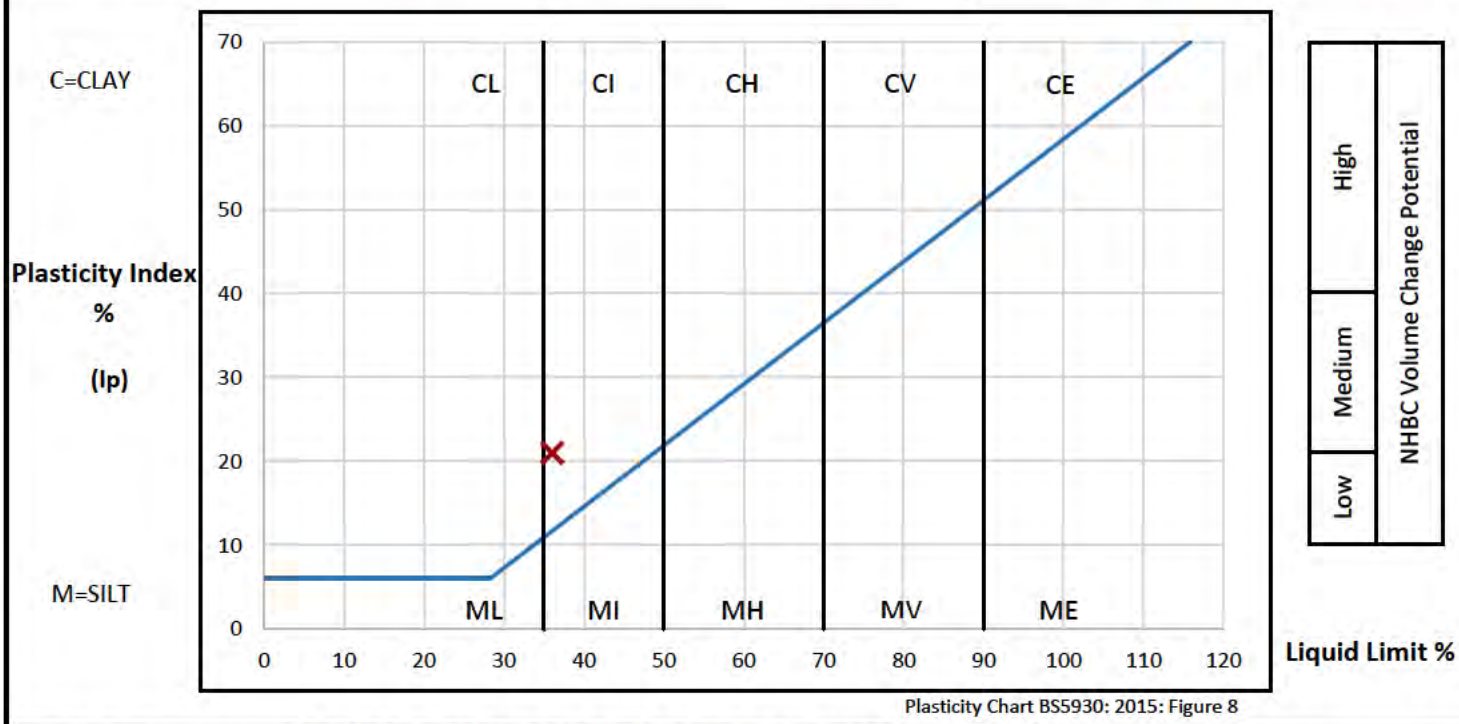
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS2	1.70	D	4	11.8	Hard mottled light grey and olive yellow slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION			Liquid Limit	36 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	16 %	Plasticity Index	21 %
Corrected water content for material passing 0.425mm		14.0 %	Liquidity Index	-0.15
Sample retained 2mm sieve	(Measured)	10 %	NHBC Modified (I'p)	18 %
Curing time	92 hrs	Clay Content: Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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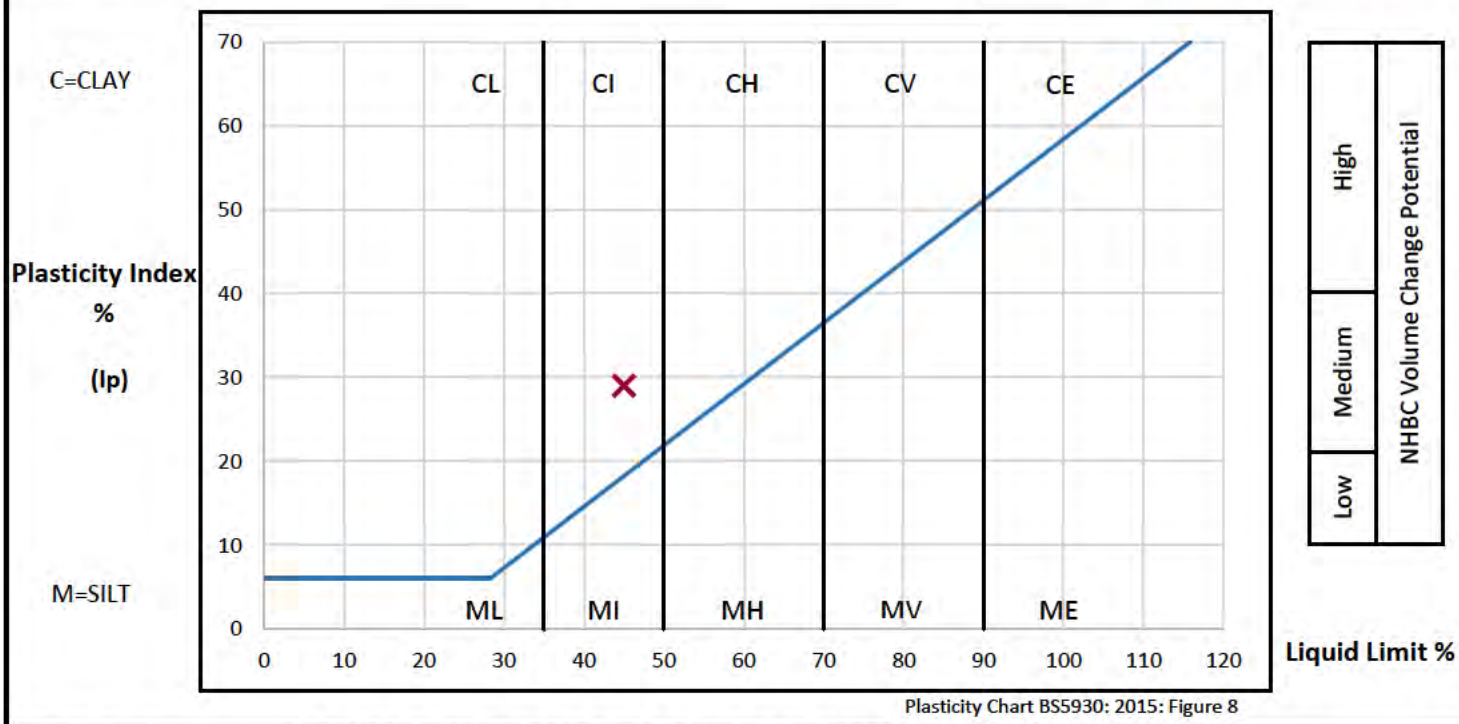
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS8	1.40	D	4	14.0	Very stiff light olive brown slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	

PREPARATION				Liquid Limit	45 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	29 %
Corrected water content for material passing 0.425mm		15.2 %		Liquidity Index	-0.07
Sample retained 2mm sieve	(Measured)	5 %		NHBC Modified (I'p)	27 %
Curing time	93 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

Contract:	Land North of Humber Doucy Lane, Ipswich
Serial No:	41296_1

DETERMINATION OF THE SULPHATE CONTENT AND pH OF SOIL AND GROUNDWATER

Borehole / Pit No.	Depth (m)	Sample		Conc. of Soluble SO3		Calc'd Conc. Of SO4 (g/L)	pH Value	% Sample Passing 2mm Sieve	Description	Remarks
		Type	Ref.	Water Soluble 2:1 (g/L)	Ground Water (g/L)					
TP1	0.70	D	2	0.05		0.06	6.9	98	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP10	2.20	D	4	0.04		0.05	7.4	100	Very stiff mottled light grey, orange and light olive brown slightly gravelly slightly sandy silty CLAY with rare decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP12	1.20	D	2	0.03		0.03	7.0	98	Firm yellowish brown sandy silty CLAY with rare fine chert gravel	
TP13	2.40	D	5	0.05		0.05	7.3	98	Very stiff mottled bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
TP17	0.80	D	3	<0.01		<0.01	7.4	97	Hard mottled olive yellow and pale yellow slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to subrounded chalk and chert	
TP18	0.60	D	2	0.05		0.06	7.3	98	Hard yellowish brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular and subangular chert	
TP5	1.70	D	3	0.01		0.02	7.3	98	Very stiff mottled light bluish grey and light olive brown slightly gravelly slightly sandy silty CLAY with rare recently active and decayed roots. Gravel is fine to coarse angular to subrounded chalk and chert	
WS2	0.90	D	3	0.08		0.10	6.8	96	Hard brown slightly gravelly slightly sandy silty CLAY with occasional recently active and decayed roots. Gravel is fine and medium angular to rounded chalk and chert	

Method of Preparation:	BS1377: Part 1: 2016: 8.5, BS1377: Part 3: 1990: 5.3 Soil/Water Extract, 5.4 Groundwater
Method of Test:	BS1377: Part 3: 1990: 5.5
Type of Sample Key:	U= Undisturbed, B= Bulk, D= Disturbed, J= Jar, W= Water, SPT= Split Spoon Sample, C= Core Cutter
Comments:	**Test not UKAS accredited**
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location, and origin of test specimen within original sample. Oven drying temperature if not 105-110C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/09/2022

Contract:	Land North of Humber Doucy Lane, Ipswich
Serial No:	41296_1

DETERMINATION OF THE SULPHATE CONTENT AND pH OF SOIL AND GROUNDWATER

Borehole / Pit No.	Depth (m)	Sample		Conc. of Soluble SO3		Calc'd Conc. Of SO4 (g/L)	pH Value	% Sample Passing 2mm Sieve	Description	Remarks
		Type	Ref.	Water Soluble 2:1 (g/L)	Ground Water (g/L)					
WS8	1.90	D	5	<0.01		<0.01	7.2	98	Stiff brownish yellow slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular to subrounded chalk	

Method of Preparation:	BS1377: Part 1: 2016: 8.5, BS1377: Part 3: 1990: 5.3 Soil/Water Extract, 5.4 Groundwater
Method of Test:	BS1377: Part 3: 1990: 5.5
Type of Sample Key:	U= Undisturbed, B= Bulk, D= Disturbed, J= Jar, W= Water, SPT= Split Spoon Sample, C= Core Cutter
Comments:	**Test not UKAS accredited**
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location, and origin of test specimen within original sample. Oven drying temperature if not 105-110C.

RSA GEOTECHNICS LTD

HEADSPACE MONITORING RECORD SHEET

Type of Test: Photoionisation Detector (PID)

Date	Location	Sample Ref	Depth (m)	Volatile (ppm)
12/08/2022	WS1	D1	0.20	0.5
		D2	0.50	0.9
		D3	0.90	1.2
		D4	1.40	2.3
		D5	1.90	1.4
		D6	2.40	0.8
		D7	2.75	2.2
	WS2	D1	0.20	<0.1
		D2	0.50	1.1
		D3	0.90	11.9
		D4	1.70	1.9
		D5	2.50	2.7
		D6	2.90	2.3
	WS3	D1	0.20	0.3
		D2	0.50	1.1
		D3	0.90	1.6
		D4	1.40	0.9
		D5	1.90	2.0
		D6	2.40	2.5
		D7	2.90	2.9
	WS4	D1	0.20	0.5
		D2	0.70	1.9
		D3	1.80	1.2
		D4	2.30	1.3
		D5	2.80	2.1
		D6	3.40	1.8
		D7	3.90	1.6
	WS5	D1	0.30	1.0
		D2	0.80	0.3
		D3	1.40	1.1
		D4	1.90	1.2
		D5	2.40	1.3
		D6	2.90	0.7
		D7	3.40	1.2
		D8	3.90	0.7

RSA GEOTECHNICS LTD

HEADSPACE MONITORING RECORD SHEET

Type of Test: Photoionisation Detector (PID)

Date	Location	Sample Ref	Depth (m)	Volatile (ppm)
12/08/2022	WS6	D1	0.20	0.6
		D2	0.50	1.8
		D3	0.90	3.1
		D4	1.70	2.0
		D5	2.30	2.0
		D6	2.80	1.8
	WS7	D1	0.20	0.7
		D2	0.50	1.0
		D3	0.90	0.7
		D4	1.40	0.8
		D5	1.90	1.1
		D6	2.40	1.8
		D7	2.95	2.2
		D8	3.30	2.1
		D9	3.80	1.3
	WS8	D1	0.20	0.8
		D2	0.50	1.9
		D3	0.90	2.8
		D4	1.40	2.9
		D5	1.90	2.5
		D6	2.40	2.2
		D7	2.90	0.2
		D8	3.40	1.7
		D9	3.90	1.0
	WS9	D1	0.20	0.1
		D2	0.50	2.3
		D3	0.90	1.2
		D4	1.30	1.2
		D5	1.80	1.6
		D6	2.30	1.2
		D7	2.80	1.6

Type of

RSA GEOTECHNICS LTD

HEADSPACE MONITORING RECORD SHEET

Test: Photoionisation Detector (PID)

Date	Location	Sample Ref	Depth (m)	Volatile (ppm)
12/08/2022	WS10	D1	0.20	1.1
		D2	0.50	1.3
		D3	0.90	1.6
		D4	1.40	2.0
		D5	1.90	2.9
		D6	2.40	2.8
		D7	2.90	1.9
		D8	3.40	2.6
		D9	3.90	2.6

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Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
[redacted]

DETS Report No: 22-06936

Site Reference:	Land North of Humber Doucy Lane, Ipswich
Project / Job Ref:	16118SI
Order No:	None Supplied
Sample Receipt Date:	16/08/2022
Sample Scheduled Date:	16/08/2022
Report Issue Number:	1
Reporting Date:	22/08/2022

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 22-06936	Date Sampled	10/08/22	10/08/22	10/08/22	10/08/22	10/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609167	609168	609169	609170	609171

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected		Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.0	7.2	6.9	7.6	7.6
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	16	10	< 10	15	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	0.01	< 0.01	0.02	< 0.01
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Organic Matter (SOM)	%	< 0.1	MCERTS	1.8	1.8	1.9	1.4	1.5
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	1	1.1	1.1	0.8	0.9
Arsenic (As)	mg/kg	< 2	MCERTS	10	11	12	9	10
Barium (Ba)	mg/kg	< 2.5	MCERTS	30	30	31	27	31
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.2	0.2	< 0.2	0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	13	14	15	13	12
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	18	15	18	12	14
Lead (Pb)	mg/kg	< 3	MCERTS	28	28	28	26	28
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	11	11	12	10	11
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 1	MCERTS	27	27	30	25	24
Zinc (Zn)	mg/kg	< 3	MCERTS	51	51	54	41	52
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-06936	Date Sampled	11/08/22	11/08/22	11/08/22	11/08/22	11/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS6	WS7	WS8	WS9	WS10
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609172	609173	609174	609175	609176

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected		Not Detected		Not Detected
pH	pH Units	N/a	MCERTS	6.5	6.3	6.4	7.0	6.4
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Organic Matter (SOM)	%	< 0.1	MCERTS	2.2	2.1	1.6	1.6	1.9
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	1.3	1.2	0.9	0.9	1.1
Arsenic (As)	mg/kg	< 2	MCERTS	11	11	9	10	9
Barium (Ba)	mg/kg	< 2.5	MCERTS	33	34	29	35	34
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	< 0.2	< 0.2	0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	14	15	13	13	11
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	14	13	15	15	11
Lead (Pb)	mg/kg	< 3	MCERTS	25	23	21	29	19
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	12	12	9	10	8
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 1	MCERTS	28	30	25	25	22
Zinc (Zn)	mg/kg	< 3	MCERTS	49	50	45	61	44
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-06936	Date Sampled	10/08/22	10/08/22	10/08/22	10/08/22	10/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609167	609168	609169	609170	609171

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.72	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.20	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.90	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.75	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.34	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.36	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.36	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.14	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.34	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.21	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.20	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	4.5	< 1.6

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-06936	Date Sampled	11/08/22	11/08/22	11/08/22	11/08/22	11/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS6	WS7	WS8	WS9	WS10
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609172	609173	609174	609175	609176

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.13	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.10	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Organochlorine Pesticides						
DETS Report No: 22-06936	Date Sampled	10/08/22	10/08/22	10/08/22	10/08/22	11/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS1	WS3	WS4	WS5	WS7
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609167	609169	609170	609171	609173

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
beta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
delta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dieldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Heptachlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Isodrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Trifluralin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

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Soil Analysis Certificate - Organochlorine Pesticides						
DETS Report No: 22-06936	Date Sampled	11/08/22				
RSA Geotechnics Ltd	Time Sampled	None Supplied				
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS9				
Project / Job Ref: 16118SI	Additional Refs	D1				
Order No: None Supplied	Depth (m)	0.20				
Reporting Date: 22/08/2022	DETS Sample No	609175				

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02				
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02				
beta-HCH	mg/kg	< 0.02	NONE	< 0.02				
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02				
delta-HCH	mg/kg	< 0.02	NONE	< 0.02				
Dieldrin	mg/kg	< 0.02	NONE	< 0.02				
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02				
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02				
Endrin	mg/kg	< 0.02	NONE	< 0.02				
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02				
Heptachlor	mg/kg	< 0.02	NONE	< 0.02				
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02				
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02				
Isodrin	mg/kg	< 0.02	NONE	< 0.02				
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02				
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02				
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02				
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02				
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02				
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02				
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02				
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02				
Trifluralin	mg/kg	< 0.02	NONE	< 0.02				

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Soil Analysis Certificate - Organophosphorus Pesticides						
DETS Report No: 22-06936	Date Sampled	10/08/22	10/08/22	10/08/22	10/08/22	11/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS1	WS3	WS4	WS5	WS7
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609167	609169	609170	609171	609173

Determinand	Unit	RL	Accreditation					
Azinphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chlorfenvinphos, alpha	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chlorfenvinphos, beta	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chlorpyriphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diazinon	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dichlorvos	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethoate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fenitrothion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fenthion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Malathion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mevinphos, €	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mevinphos, (Z)	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Parathion-ethyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Parathion-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phorate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

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Soil Analysis Certificate - Organophosphorus Pesticides						
DETS Report No: 22-06936	Date Sampled	11/08/22				
RSA Geotechnics Ltd	Time Sampled	None Supplied				
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS9				
Project / Job Ref: 16118SI	Additional Refs	D1				
Order No: None Supplied	Depth (m)	0.20				
Reporting Date: 22/08/2022	DETS Sample No	609175				

Determinand	Unit	RL	Accreditation					
Azinphos-methyl	mg/kg	< 0.1	NONE	< 0.1				
Chlorfenvinphos, alpha	mg/kg	< 0.1	NONE	< 0.1				
Chlorfenvinphos, beta	mg/kg	< 0.1	NONE	< 0.1				
Chlorpyriphos-methyl	mg/kg	< 0.1	NONE	< 0.1				
Diazinon	mg/kg	< 0.1	NONE	< 0.1				
Dichlorvos	mg/kg	< 0.1	NONE	< 0.1				
Dimethoate	mg/kg	< 0.1	NONE	< 0.1				
Fenitrothion	mg/kg	< 0.1	NONE	< 0.1				
Fenthion	mg/kg	< 0.1	NONE	< 0.1				
Malathion	mg/kg	< 0.1	NONE	< 0.1				
Mevinphos, €	mg/kg	< 0.1	NONE	< 0.1				
Mevinphos, (Z)	mg/kg	< 0.1	NONE	< 0.1				
Parathion-ethyl	mg/kg	< 0.1	NONE	< 0.1				
Parathion-methyl	mg/kg	< 0.1	NONE	< 0.1				
Phorate	mg/kg	< 0.1	NONE	< 0.1				

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Soil Analysis Certificate - Triazine Herbicides						
DETS Report No: 22-06936	Date Sampled	10/08/22	10/08/22	10/08/22	10/08/22	11/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS1	WS3	WS4	WS5	WS7
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 22/08/2022	DETS Sample No	609167	609169	609170	609171	609173

Determinand	Unit	RL	Accreditation					
Atrazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Prometryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Propazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Simazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Terbuthylazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Terbutryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ametryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

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Soil Analysis Certificate - Triazine Herbicides						
DETS Report No: 22-06936	Date Sampled	11/08/22				
RSA Geotechnics Ltd	Time Sampled	None Supplied				
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	WS9				
Project / Job Ref: 16118SI	Additional Refs	D1				
Order No: None Supplied	Depth (m)	0.20				
Reporting Date: 22/08/2022	DETS Sample No	609175				

Determinand	Unit	RL	Accreditation					
Atrazine	mg/kg	< 0.1	NONE	< 0.1				
Prometryn	mg/kg	< 0.1	NONE	< 0.1				
Propazine	mg/kg	< 0.1	NONE	< 0.1				
Simazine	mg/kg	< 0.1	NONE	< 0.1				
Terbuthylazine	mg/kg	< 0.1	NONE	< 0.1				
Terbutryn	mg/kg	< 0.1	NONE	< 0.1				
Ametryn	mg/kg	< 0.1	NONE	< 0.1				

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Soil Analysis Certificate - Sample Descriptions
DETS Report No: 22-06936
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 22/08/2022

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
609167	WS1	D1	0.20	< 0.1	Brown sandy clay with stones and vegetation
609168	WS2	D1	0.20	5.4	Brown sandy clay with vegetation
609169	WS3	D1	0.20	5.1	Brown sandy clay with stones and vegetation
609170	WS4	D1	0.20	5.2	Brown sandy clay with stones
609171	WS5	D1	0.20	4.3	Brown sandy clay with stones
609172	WS6	D1	0.20	4.4	Brown sandy clay with stones and vegetation
609173	WS7	D1	0.20	5	Brown sandy clay
609174	WS8	D1	0.20	4	Brown sandy clay with stones and vegetation
609175	WS9	D1	0.20	4.7	Brown sandy clay with stones and vegetation
609176	WS10	D1	0.20	3.5	Brown sandy clay with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample $^{I/S}$

Unsuitable Sample $^{U/S}$

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-06936
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 22/08/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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List of HWOL Acronyms and Operators
DETS Report No: 22-06936
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 22/08/2022

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym

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RSA Geotechnics Ltd
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1 Maitland Road
Lion Barn Estate
Needham Market
Suffolk
IP6 8NZ

Derwentside Environmental Testing Services Ltd
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Lenham Heath
Kent
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[redacted]

DETS Report No: 22-07097

Site Reference:	Land North of Humber Doucy Lane, Ipswich
Project / Job Ref:	16118SI
Order No:	None Supplied
Sample Receipt Date:	22/08/2022
Sample Scheduled Date:	22/08/2022
Report Issue Number:	1
Reporting Date:	26/08/2022

Authorised by:

Nick Watson
General Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 22-07097	Date Sampled	16/08/22	16/08/22	16/08/22	16/08/22	16/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP1	TP2	TP3	TP4	TP7
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.15	0.70	0.20	0.10	0.20
Reporting Date: 26/08/2022	DETS Sample No	609887	609888	609889	609890	609891

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				Not Detected
pH	pH Units	N/a	MCERTS	6.9	8.4	8.0	7.3	8.1
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	11	< 10	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Organic Matter (SOM)	%	< 0.1	MCERTS	2.4	0.5	1.9	1.8	1.7
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	1.4	0.3	1.1	1.1	1
Arsenic (As)	mg/kg	< 2	MCERTS	12	34	23	16	12
Barium (Ba)	mg/kg	< 2.5	MCERTS	34	30	134	40	40
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.6	0.9	0.8	0.9	0.8
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	1	1.2
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	14	24	22	21	19
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	14	12	17	15	16
Lead (Pb)	mg/kg	< 3	MCERTS	28	10	35	24	24
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	15	22	19	21	17
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 1	MCERTS	32	68	60	48	38
Zinc (Zn)	mg/kg	< 3	MCERTS	53	41	57	57	62
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-07097	Date Sampled	15/08/22	15/08/22	15/08/22	15/08/22	15/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP9	TP11	TP13	TP14	TP16
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.10	0.10	0.15	0.30	0.10
Reporting Date: 26/08/2022	DETS Sample No	609892	609893	609894	609895	609896

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025				Not Detected	
pH	pH Units	N/a	MCERTS	7.7	8.3	8.2	8.2	7.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Organic Matter (SOM)	%	< 0.1	MCERTS	1.7	2.2	3.6	1.9	2
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	1	1.3	2.1	1.1	1.2
Arsenic (As)	mg/kg	< 2	MCERTS	9	12	11	14	14
Barium (Ba)	mg/kg	< 2.5	MCERTS	32	40	38	44	48
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.5	0.7	0.6	0.8	0.9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	12	16	15	19	21
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	12	19	18	23	20
Lead (Pb)	mg/kg	< 3	MCERTS	31	39	33	33	28
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	12	16	13	18	23
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 1	MCERTS	24	35	30	38	41
Zinc (Zn)	mg/kg	< 3	MCERTS	46	56	53	68	60
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-07097	Date Sampled	15/08/22	15/08/22			
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP16	TP17			
Project / Job Ref: 16118SI	Additional Refs	D2	D1			
Order No: None Supplied	Depth (m)	0.60	0.10			
Reporting Date: 26/08/2022	DETS Sample No	609897	609898			

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025					
pH	pH Units	N/a	MCERTS	8.0	7.6			
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01			
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10			
Organic Matter (SOM)	%	< 0.1	MCERTS	0.6	1.8			
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	0.4	1			
Arsenic (As)	mg/kg	< 2	MCERTS	10	12			
Barium (Ba)	mg/kg	< 2.5	MCERTS	33	38			
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.7	0.6			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	15	16			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	12	17			
Lead (Pb)	mg/kg	< 3	MCERTS	10	136			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	17	15			
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3			
Vanadium (V)	mg/kg	< 1	MCERTS	29	32			
Zinc (Zn)	mg/kg	< 3	MCERTS	42	56			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-07097	Date Sampled	16/08/22	16/08/22	16/08/22	16/08/22	16/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP1	TP2	TP3	TP4	TP7
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.15	0.70	0.20	0.10	0.20
Reporting Date: 26/08/2022	DETS Sample No	609887	609888	609889	609890	609891

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.12	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-07097	Date Sampled	15/08/22	15/08/22	15/08/22	15/08/22	15/08/22
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP9	TP11	TP13	TP14	TP16
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	D1
Order No: None Supplied	Depth (m)	0.10	0.10	0.15	0.30	0.10
Reporting Date: 26/08/2022	DETS Sample No	609892	609893	609894	609895	609896

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 22-07097	Date Sampled	15/08/22	15/08/22			
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP16	TP17			
Project / Job Ref: 16118SI	Additional Refs	D2	D1			
Order No: None Supplied	Depth (m)	0.60	0.10			
Reporting Date: 26/08/2022	DETS Sample No	609897	609898			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.17			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.15			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.11			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6			

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Soil Analysis Certificate - Organochlorine Pesticides							
DETS Report No: 22-07097	Date Sampled	16/08/22	16/08/22	15/08/22	15/08/22		
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP2	TP7	TP13	TP16		
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1		
Order No: None Supplied	Depth (m)	0.70	0.20	0.15	0.10		
Reporting Date: 26/08/2022	DETS Sample No	609888	609891	609894	609896		

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
beta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
delta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Dieldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Endrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Heptachlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Isodrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Trifluralin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	

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Soil Analysis Certificate - Organophosphorus Pesticides							
DETS Report No: 22-07097	Date Sampled	16/08/22	16/08/22	15/08/22	15/08/22		
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP2	TP7	TP13	TP16		
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1		
Order No: None Supplied	Depth (m)	0.70	0.20	0.15	0.10		
Reporting Date: 26/08/2022	DETS Sample No	609888	609891	609894	609896		

Determinand	Unit	RL	Accreditation					
Azinphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Chlorfenvinphos, alpha	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Chlorfenvinphos, beta	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Chlorpyriphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Diazinon	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Dichlorvos	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethoate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Fenitrothion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Fenthion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Malathion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Mevinphos, €	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Mevinphos, (Z)	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Parathion-ethyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Parathion-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Phorate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	

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Soil Analysis Certificate - Triazine Herbicides						
DETS Report No: 22-07097	Date Sampled	16/08/22	16/08/22	15/08/22	15/08/22	
RSA Geotechnics Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Land North of Humber Doucy Lane, Ipswich	TP / BH No	TP2	TP7	TP13	TP16	
Project / Job Ref: 16118SI	Additional Refs	D1	D1	D1	D1	
Order No: None Supplied	Depth (m)	0.70	0.20	0.15	0.10	
Reporting Date: 26/08/2022	DETS Sample No	609888	609891	609894	609896	

Determinand	Unit	RL	Accreditation					
Atrazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Prometryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Propazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Simazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Terbuthylazine	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Terbutryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Ametryn	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	

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Soil Analysis Certificate - Sample Descriptions
DETS Report No: 22-07097
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 26/08/2022

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
609887	TP1	D1	0.15	5	Brown sandy clay with stones and vegetation
609888	TP2	D1	0.70	7.9	Light brown sandy clay
609889	TP3	D1	0.20	4.6	Light brown sandy clay with vegetation
609890	TP4	D1	0.10	8.1	Light brown sandy clay with stones and vegetation
609891	TP7	D1	0.20	8.5	Light brown sandy clay with stones and vegetation
609892	TP9	D1	0.10	4.5	Light brown sandy clay with stones and vegetation
609893	TP11	D1	0.10	5.5	Light brown sandy clay
609894	TP13	D1	0.15	6	Light brown sandy clay
609895	TP14	D1	0.30	7.9	Light brown sandy clay
609896	TP16	D1	0.10	8.3	Light brown sandy clay
609897	TP16	D2	0.60	7.4	Light brown sandy clay
609898	TP17	D1	0.10	5.5	Light brown sandy clay with vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-07097
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 26/08/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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List of HWOL Acronyms and Operators
DETS Report No: 22-07097
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI
Order No: None Supplied
Reporting Date: 26/08/2022

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym

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DETS Report No: 22-07792

Site Reference:	Land North of Humber Doucy Lane, Ipswich
Project / Job Ref:	16118SI Schedule 3
Order No:	None Supplied
Sample Receipt Date:	15/09/2022
Sample Scheduled Date:	15/09/2022
Report Issue Number:	1
Reporting Date:	22/09/2022

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 22-07792		**Date Sampled**	16/08/22				**Landfill Waste Acceptance Criteria Limits**	
RSA Geotechnics Ltd		**Time Sampled**	None Supplied				**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: Land North of Humber Doucy Lane, Ipswich		**TP / BH No**	WAC 1 Composite						
Project / Job Ref: 16118SI Schedule 3		**Additional Refs**	None Supplied						
Order No: None Supplied		**Depth (m)**	None Supplied						
Reporting Date: 22/09/2022		**DETS Sample No**	613064						
Determinand	**Unit**	**MDL**							
TOC[MU]	%	< 0.1	1				3%	5%	6%
Loss on Ignition	%	< 0.01	3.86				--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05				6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1				1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10				500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7				100	--	--
pH[MU]	pH Units	N/a	8.0				--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1				--	To be evaluated	To be evaluated
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]			< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]			< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]			< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]			< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]			< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]			< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]			0.005	0.003		< 0.1	0.5	10	30
Nickel[U]			< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]			< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]			< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]			< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]			0.008	0.006		< 0.2	4	50	200
Chloride[U]			4	3		33	800	15000	25000
Fluoride[U]			1	< 0.5		1.1	10	150	500
Sulphate[U]			7	3		30	1000	20000	50000
TDS			108	72		761	4000	60000	100000
Phenol Index			< 0.01	< 0.01		< 0.5	1	-	-
DOC			15.2	23.7		227	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.18						
Dry Matter (%)			95.1						
Moisture (%)			5.2						
Stage 1									
Volume Eluate L2 (litres)			0.34						
Filtered Eluate VE1 (litres)			0.20						

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
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M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 22-07792		**Date Sampled**	11/08/22				**Landfill Waste Acceptance Criteria Limits**	
RSA Geotechnics Ltd		**Time Sampled**	None Supplied				**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: Land North of Humber Doucy Lane, Ipswich		**TP / BH No**	WAC 2 Composite						
Project / Job Ref: 16118SI Schedule 3		**Additional Refs**	None Supplied						
Order No: None Supplied		**Depth (m)**	None Supplied						
Reporting Date: 22/09/2022		**DETS Sample No**	613065						
Determinand	**Unit**	**MDL**							
TOC[MU]	%	< 0.1	1				3%	5%	6%
Loss on Ignition	%	< 0.01	5				--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05				6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1				1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10				500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7				100	--	--
pH[MU]	pH Units	N/a	6.7				--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1				--	To be evaluated	To be evaluated
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]			< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]			< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]			< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]			< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]			< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]			< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]			0.002	< 0.001		< 0.1	0.5	10	30
Nickel[U]			< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]			< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]			< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]			< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]			0.009	< 0.005		< 0.2	4	50	200
Chloride[U]			5	3		32	800	15000	25000
Fluoride[U]			0.6	< 0.5		< 1	10	150	500
Sulphate[U]			6	2		26	1000	20000	50000
TDS			84	44		479	4000	60000	100000
Phenol Index			< 0.01	< 0.01		< 0.5	1	-	-
DOC			21.8	20		202	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.18						
Dry Matter (%)			95.7						
Moisture (%)			4.6						
Stage 1									
Volume Eluate L2 (litres)			0.34						
Filtered Eluate VE1 (litres)			0.17						

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 22-07792		**Date Sampled**	16/08/22				**Landfill Waste Acceptance Criteria Limits**	
RSA Geotechnics Ltd		**Time Sampled**	None Supplied				**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: Land North of Humber Doucy Lane, Ipswich		**TP / BH No**	WAC 3 Composite						
Project / Job Ref: 16118SI Schedule 3		**Additional Refs**	None Supplied						
Order No: None Supplied		**Depth (m)**	None Supplied						
Reporting Date: 22/09/2022		**DETS Sample No**	613066						
Determinand	**Unit**	**MDL**							
TOC[MU]	%	< 0.1	0.9				3%	5%	6%
Loss on Ignition	%	< 0.01	4.80				--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05				6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1				1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10				500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7				100	--	--
pH[MU]	pH Units	N/a	7.3				--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1				--	To be evaluated	To be evaluated
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]			< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]			< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]			< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]			< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]			< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]			< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]			0.004	0.002		< 0.1	0.5	10	30
Nickel[U]			< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]			< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]			< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]			< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]			0.010	< 0.005		< 0.2	4	50	200
Chloride[U]			5	3		30	800	15000	25000
Fluoride[U]			1.3	0.7		7.8	10	150	500
Sulphate[U]			6	2		24	1000	20000	50000
TDS			114	66		714	4000	60000	100000
Phenol Index			< 0.01	< 0.01		< 0.5	1	-	-
DOC			13.4	17.7		173	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.19						
Dry Matter (%)			93.5						
Moisture (%)			7						
Stage 1									
Volume Eluate L2 (litres)			0.34						
Filtered Eluate VE1 (litres)			0.20						

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
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Soil Analysis Certificate - Sample Descriptions
DETS Report No: 22-07792
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI Schedule 3
Order No: None Supplied
Reporting Date: 22/09/2022

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 613064	WAC 1 Composite	None Supplied	None Supplied	4.9	Brown sandy clay with stones and vegetation
$ 613065	WAC 2 Composite	None Supplied	None Supplied	4.3	Brown sandy clay with stones
$ 613066	WAC 3 Composite	None Supplied	None Supplied	6.5	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
& samples received in inappropriate containers for hydrocarbon analysis

$ samples exceeded recommended holding times

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-07792
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI Schedule 3
Order No: None Supplied
Reporting Date: 22/09/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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UKAS TESTING 4480

Water Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-07792
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI Schedule 3
Order No: None Supplied
Reporting Date: 22/09/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

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List of HWOL Acronyms and Operators
DETS Report No: 22-07792
RSA Geotechnics Ltd
Site Reference: Land North of Humber Doucy Lane, Ipswich
Project / Job Ref: 16118SI Schedule 3
Order No: None Supplied
Reporting Date: 22/09/2022

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Mineral Oil (C10 - C40) (BS EN 12457-3) - EH_CU_1D_AL
Total BTEX (BS EN 12457-3) - HS_1D_MS_Total

Parameter	Matrix Type	Suite Reference	Expanded Uncertainity Measurement	Unit
TOC	Soil	BS EN 12457	20.0	%
Loss on Ignition	Soil	BS EN 12457	35.0	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	23.0	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	11.6	%
pH	Soil	BS EN 12457	0.28	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	18.7	%
Barium	Leachate	BS EN 12457	11.6	%
Cadmium	Leachate	BS EN 12457	20.3	%
Chromium	Leachate	BS EN 12457	18.3	%
Copper	Leachate	BS EN 12457	24.3	%
Mercury	Leachate	BS EN 12457	23.7	%
Molybdenum	Leachate	BS EN 12457	14.7	%
Nickel	Leachate	BS EN 12457	16.1	%
Lead	Leachate	BS EN 12457	15.7	%
Antimony	Leachate	BS EN 12457	17.9	%
Selenium	Leachate	BS EN 12457	22.0	%
Zinc	Leachate	BS EN 12457	17.4	%
Chloride	Leachate	BS EN 12457	15.3	%
Fluoride	Leachate	BS EN 12457	16.4	%
Sulphate	Leachate	BS EN 12457	20.6	%
TDS	Leachate	BS EN 12457	12.0	%
Phenol Index	Leachate	BS EN 12457	14.0	%
DOC	Leachate	BS EN 12457	10.0	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	35.0	%
pH	Soil	BS 3882: 2015	0.14	Units
Carbonate	Soil	BS 3882: 2015	16.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16.0	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%

N

NOTE: All locations are approximate

DRAFT DEVELOPMENT MASTERPLAN (Based upon Phase 2 Planning and Development Ltd drawing) LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK	Date 22 SEPTEMBER 2022 Scale NOT TO SCALE
RSA GEOTECHNICS LIMITED	Drawing No 16118SI/1 Version A

N

WS1/DCP1
WS3/DCP2
BH1(G)
WS2
TP205
TP2/DCP3
TP3
TP195
TP1
TP5/DCP5
TP4/DCP4
TP215
TP7/DCP7
TP6/DCP6
TP8/DCP9
TP9/DCP10
WS4(G)/DCP8
TP13/DCP14
WS5(G)
TP10/DCP11
TP11/DCP13
TP225
TP12/DCP13
HUMBER DOUCY LANE
TP16/DCP16
TP15
TP14/DCP15
TP235
BH2(G)
TP17/DCP17
WS6/DCP18
WS8
TP245
BH3(G)
WS9/DCP20
WS7/DCP19
TP18
WS10

NOTE: All locations are approximate

EXPLORATORY HOLE LOCATION PLAN (Based upon drawing supplied by others) LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK	Date 30 SEPTEMBER 2022 Scale NOT TO SCALE
RSA GEOTECHNICS LIMITED	Drawing No 16118SI/2 Version A

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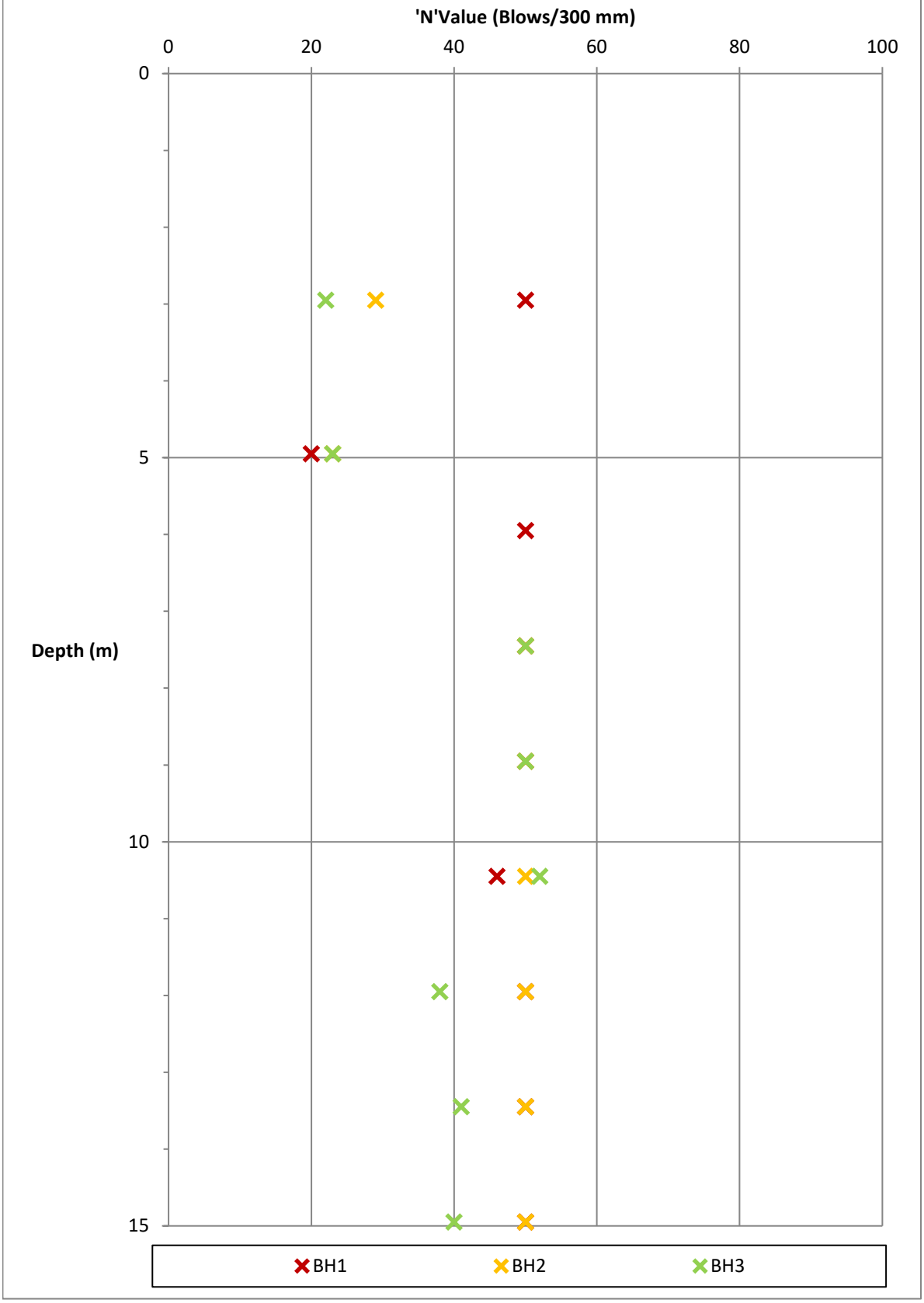
Uncorrected Penetration Resistance 'N' Value Against Depth



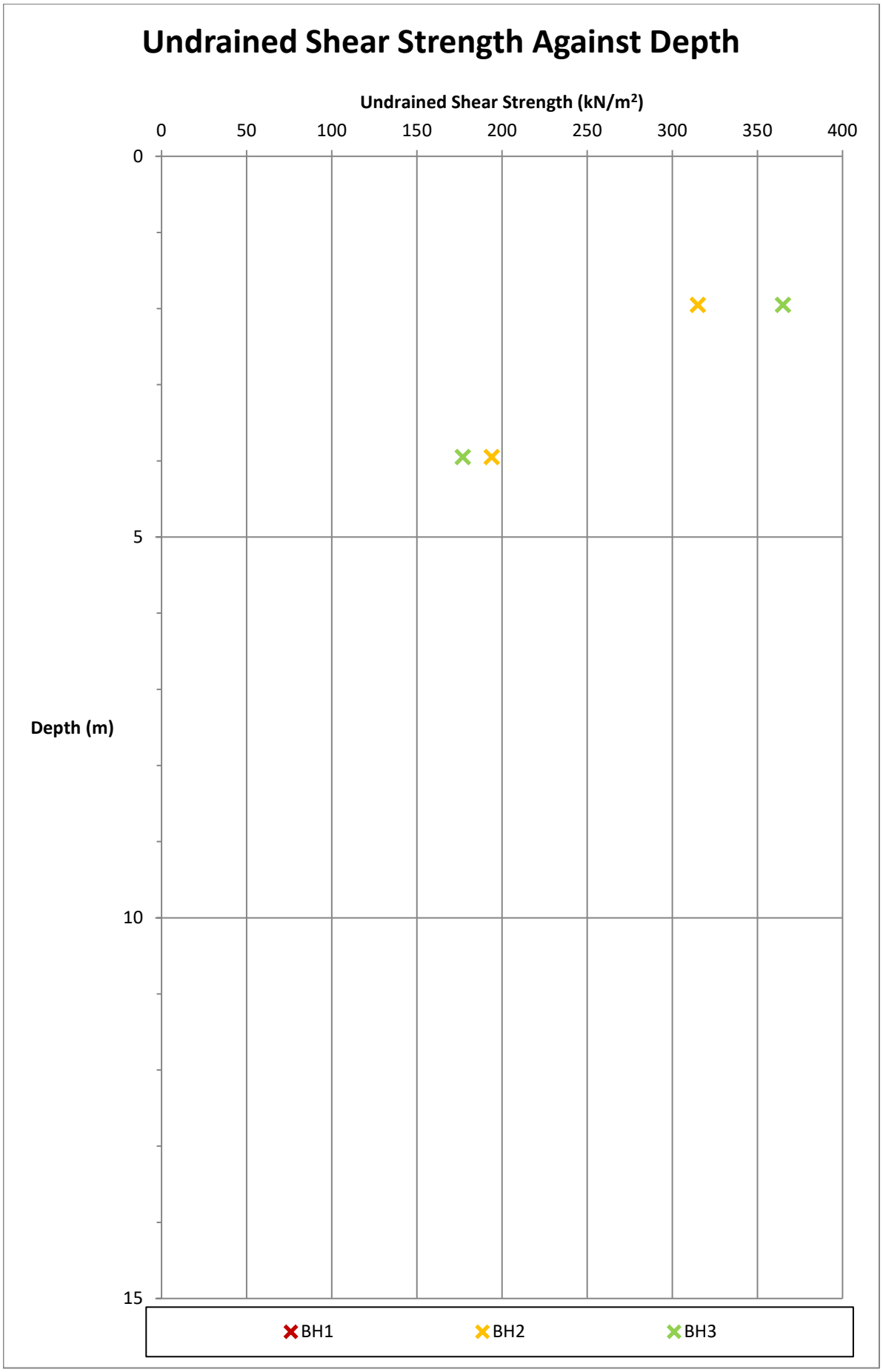
Job No 16118SI

Project:
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Drawing No 16118SI/3

Date NOVEMBER 2022

Undrained Shear Strength Against Depth



RSA GEOTECHNICS LTD

Job No 16118SI

Project:
LAND NORTH OF HUMBER DOUCY LANE, IPSWICH, SUFFOLK

Drawing No 16118SI/4

Date NOVEMBER 2022

APPENDIX 1

Fieldwork methodology

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FIELDWORK METHODOLOGY

The fieldwork for the investigation was carried out generally in accordance with BS 5930: 2015+A1:2020 'Code of Practice for Ground Investigations' and the contamination sampling was carried out generally in accordance with BS 10175: 2011+A2: 2017, 'Investigation of Potentially Contaminated Sites – Code of Practice'.

Cable Percussion Boreholes

The cable percussion boreholes were drilled using conventional light cable percussion techniques. Small 'disturbed' samples and larger 'bulk' samples were retrieved and sealed into suitable containers at regular intervals during drilling for the purposes of further examination and for laboratory analysis. Undisturbed U100 samples and Standard Penetration Tests (SPTs) were undertaken at intervals to assess the relative density (N value) and undrained shear strength of the soils encountered. The results of the penetration tests are recorded as 'N' values and are given on the borehole logs.

Window Sampling

The window sampling was carried out using a small, track mounted, soil sampling rig which utilised a sliding hammer to drive steel tubes into the ground and hydraulic rams to extract them. Each of the window sample tubes recovered a core of soil from the ground. Representative samples were taken from the core at approximately 0.5 m intervals, for material identification and testing purposes, and sealed into suitable containers to prevent deterioration or moisture content loss. The soils encountered were logged on site by an experienced geotechnician. Hand shear vane tests were undertaken in cohesive soils.

DCP

The Dynamic cone penetrometer (DCP) testing was undertaken an 8 kg free fall hammer fitted to a set of metal rods. The hammer is lifted and dropped through a height of 575mm. The distance of penetration of a 60° cone tip fitted to the base of the rods is then recorded and the cycle repeated. Continuous measurements can be made down to a depth of approximately 850mm or when extension shafts are fitted to a maximum recommended depth of 2 metres. Where sub-pavement layers have different strengths, the boundaries can be identified and the thickness determined. Correlations have been established between measurements with the DCP and conventional in-situ CBR so that results can be interpreted and compared with CBR specifications for pavement design.

Machine excavated trial pitting and BRE DG 365 soakage trial pits

The soakage trial pits were excavated using a wheeled mechanical excavator under the supervision of an experienced geotechnician who described the soils encountered in detail as they were revealed. Representative disturbed and bulk samples were taken from the trial pits. A record was made of the groundwater conditions, together with the orientation and stability of each trial pit. The trial pits were excavated to undertake soakage tests in accordance with BRE Digest DG 365.

The pit should have vertical sides trimmed square and, if necessary for stability, should be filled with granular material. A full-depth, perforated, vertical observation tube is positioned in the pit so that water levels can be monitored with a dip tape. The trial pit is filled, and allowed to drain three times to near empty, with readings taken at intervals. The infiltration rate is calculated from the time taken to drain from 75% full to 25% full.

Gas and Groundwater Monitoring

Gas and groundwater monitoring was undertaken in wells installed in the window sample and cable percussion boreholes. Each well comprised of a slotted geowrapped section with gravel surround, to allow the percolation of groundwater and the transmission of ground gases, and an upper plain section of pipe, nominally 0.50 m long, with a granular bentonite surround, hydrated to form a bentonite clay seal, preventing the infiltration of surface waters down the installation.

The concentrations of carbon dioxide (CO2), methane (CH4), carbon monoxide (CO), hydrogen sulphide (H2S) and the positive, equalised or negative flow rate were recorded using a GA5000 Gas Analyser.

After the gas monitoring the water level within each installation was recorded relative to ground level, using an electronic dip tape.

APPENDIX 2

Risk assessment methodology and legislative background;
Risk classification system; Published guidelines

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RISK ASSESSMENT METHODOLOGY AND LEGISLATIVE BACKGROUND

The legislative document regarding land contamination is the 1995 Environment Act. Forming Part 2A of the Environmental Protection Act of 1990, this act created the framework for the identification and remediation of contaminated land. It established the Environment Agency as the overall National Enforcement Agency, with regional control provided by the Local Authorities.

This Act defines "contaminated land" as any land which appears by the Local Authority to be "in such a condition, by reason of substances, in, on or under the land that:

- *significant harm is being caused or there is significant possibility of such harm being caused; or*
- *significant pollution of Controlled Waters is being caused, or there is significant possibility of such harm being caused."*

The Act is supported by other key guidance including BS10175, 2011+A2:2017 and the National Planning Policy Framework, 2019. In relation to regulatory intervention (Part 2A) and 'voluntary' investigation (including redevelopment of sites which may be affected by contamination), the Model Procedures (CLR-11, Environment Agency 2004) provided a generic framework indicating key technical activities applicable in each of those contexts; these have been replaced by the online guidance Land Contamination Risk Management (LCRM) from GOV.UK. The management of land contamination broadly comprises three components, which are identified as 'Risk Assessment', 'Options Appraisal' and 'Implementation'. These in turn determine if any unacceptable risks exist, ascertain the most appropriate remediation strategy for the site and demonstrate that the strategy will be effective.

In accordance with this and other current guidance, where a 'land quality' risk assessment is required each 'Relevant Pollutant Linkage' (formerly referred to as 'source-pathway-receptor' framework), is separately identified and a level of risk attached. The risk assessment takes account of the local environment, end user behaviour patterns and the nature of the development in relation to proven 'unacceptable' risk. This is the approach supported by current guidance and therefore has been adopted in the assessment of this site.

The guidance requires a Phase 1 investigation or desk study to be undertaken as the first stage of the risk assessment. This derives potential sources, pathways and receptors for the site taking into account the proposed end use. It results in the generation of potential pollutant linkages which are documented in the form of an 'Outline Conceptual Model'. This is then used to direct and target a Phase 2 or intrusive investigation, if deemed necessary.

In order to classify the anticipated risk associated with the proposed development the classification system defined in Table A has been adopted (from CIRIA C552). The level of risk was determined by the product of the potential consequence (minor, mild, medium, severe) of the contaminant hazard and probability of it occurring (unlikely, low likelihood, likely, high likelihood). A risk level has been assigned to each possible pollutant linkage in accordance with Table B.

Table A – Definitions of consequence, probability and risk ratings	
Potential consequence	
Term	*Description*
Severe	*Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short-term risk to an ecosystem or organism forming part of that ecosystem.*
Medium	*Chronic damage to human health, or pollution of sensitive water resources, significant changes in an ecosystem or organism forming part of that ecosystem.*
Mild	*Pollution of non-sensitive water resources. Significant damage to crops, building structures and services. Damage to sensitive buildings, structures, or the environment.*
Minor	*Harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.*
Probability	
Highly likely	*The event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.*
Likely	*It is probable that an event will occur, or circumstances are such that the event in not inevitable, but possible in the short term and likely over the long term.*
Low likelihood	*Circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term.*
Unlikely	*Circumstances are such that it is improbable the event would occur even in the long term.*
Risk rating	
Term	*Description*
Very high risk	*There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remedial action.*
High risk	*Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action.*
Moderate risk	*It is possible that without appropriate remedial action harm could arise to a designated receptor but it is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.*
Low risk	*It is possible that harm could arise to a designated receptor from an identified hazard but is likely that at worst, this harm if realised would normally be mild.*
Very Low/ Negligible risk	*The presence of an identified hazard does not give rise to the potential to cause significant harm to a designated receptor.*

Table B – Risk Matrix	*Consequence*			
	Severe	*Medium*	*Mild*	*Minor*

Probability					
	Highly Likely	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Very Low/Negligible
	Unlikely	Moderate/Low	Low	Very Low/Negligible	Very Low/Negligible

The outcome of the intrusive investigation and subsequent 'land quality' risk assessment is the establishment of plausible relevant pollutant linkages shown in the form of a 'Refined Conceptual Model'. This is then used to determine the need for further investigation, or remediation to appropriately mitigate any determined unacceptable risks.

In accordance with the Model Procedures and Regulatory preference, detailed remedial measures should be provided in a separate report to the investigation and risk assessment generally referred to as a Remediation Method Statement (RMS).

The National Planning Policy Framework (NPPF) places responsibility with the Applicant and Developer to ensure that the land and development is suitable for the proposed purpose, and that unacceptable risks have been suitably mitigated.

Human Health Generic Risk Assessment

Generic risk assessment includes the comparison of concentrations of determinands measured in site soils with 'Tier 1' screening values derived from reference to current guidance, principally comprising Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) 'Suitable for Use Levels (S4ULs) 2015, Defra Category 4 Screening Levels (C4SL) 2014 and CL:AIRE Generic Assessment Criteria (GAC) values 2010. Reference may be made to other sources where considered appropriate, including non-UK sources where no screening values are readily available, such as the USEPA Regional Screening Levels (RSLs).

Screening values must be appropriate to the site setting and/or proposals for development. 'Default' generic categories include 'Residential with home-grown produce'; 'Residential without home-grown produce'; 'Allotment'; 'Commercial'; 'Public Open Space$_{residential}$'; and 'Public Open Space$_{park}$'.

Generic screening values considered appropriate to the development proposals for the subject site have been tabulated and included within this section, together with their source.

For some projects it may be appropriate to derive site specific screening values using the Environment Agency Contaminated Land Exposure Assessment (CLEA) model or other tools, to more appropriately reflect site conditions, receptors and the context of exposure.

Screening values for organic determinands can be sensitive to the soil organic matter content and this is taken into account in their derivation.

The assessment of cumulative risk to human health from total petroleum hydrocarbons is undertaken through Hazard Index calculation based on the methodology of the EA 'UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils', Science Report P5-080/TR3. Hazard Indices greater than one typically require remedial action or further consideration.

Groundwater Risk Assessment

Generic assessment criteria for groundwater are principally derived from reference to Environmental Quality Standards or Drinking Water Standards, as appropriate for the site environs, or in the absence of such values from other sources as considered appropriate. Modelling of the fate and transport of contaminants in soil or groundwater and their potential effects on Controlled Waters may be appropriate depending on the sensitivity of the site setting.

Asbestos

There are currently no generic assessment criteria concentrations for asbestos in soils however industry guidance is contained within CIRIA C733 and CAR-SOIL 2012 (2016). It is recognised that the risk is proportional to the potential for fibre release, with a lower risk from asbestos in bonded form, in damp conditions and at low (trace) concentrations. The type of asbestos is also important, with blue asbestos (crocidolite) generally considered two orders of magnitude more hazardous than white asbestos (chrysotile), and brown asbestos (amosite) being in between. The current approach is to reduce exposure to asbestos as far as practically possible, both during siteworks and post-development. This is typically achieved through removal or the provision of a suitable break in pathway between source and receptor.

Ground Gas

Guidance with respect to risk assessment and protective measures for ground gases is contained within CIRIA C665, 2007 'Assessing risks posed by hazardous ground gases to buildings'; the Ground Gas Handbook, 2009; BS8485: 2015+A1:2019, 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' and CL:AIRE Research Bulletin 'A Pragmatic Approach to Ground Gas Risk Assessment' (RB 17, 2012). Gas Screening Values are calculated using the recorded concentrations of methane and carbon dioxide from borehole well monitoring together with the flow rate from the borehole installations, to categorise the site with respect to the typical ground gas precautions anticipated to mitigate unacceptable risks.

Buried Concrete

The potential risk to buried concrete is assessed with reference to the guidance of BRE Special Digest 1 (SD-1), 2005, 'Concrete in Aggressive Ground'. This publication attributes a Design Sulphate Class and an Aggressive Chemical Environment for Concrete (ACEC) Class for the site under consideration, based upon the nature of the site, sulphate concentrations, pH values and mobility of groundwater.

Potable Water Pipes

Guidance on the selection of potable water supply pipework is contained within the UK Water Industry Research (UKWIR) report reference 10/WM/0321, 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites', and this has been adopted by a number of water authorities. The report recommends specific investigation of the proposed pipeline route and level, with laboratory analysis and associated risk assessment to determine the specification for the pipework, once the proposed route and level is confirmed.

Vegetation

Nickel, copper and zinc are phytotoxic and could therefore inhibit plant growth or establishment. In order to assess the risk posed to vegetation on site from these potentially phytotoxic contaminants the concentrations of copper, zinc and nickel are compared against values given in the British Standard BS 3882: 2015, 'Specification for topsoil', taking into account the typical pH of the site soils.

PUBLISHED GUIDELINES

i) *Land Contamination Risk Management (LCRM), GOV.UK*

ii) *Contaminated Land Statutory Guidance, DEFRA, 2012*

iii) *CIRIA C552 – Contaminated Land Risk Assessment: A Guide to Good Practice, 2001*

iv) *BS10175:2011+A2:2017 Investigation of potentially contaminated sites, code of practice*

v) *LQM-CIEH Suitable for Use Levels (S4ULs) for Human Health Risk Assessment, 2015 (Publication Number S4UL3364)*

vi) *EIC/AGS/CL:AIRE - Soil Generic Assessment Criteria for Human Health Risk Assessment, 2010*

vii) *Category 4 Screening Levels (C4SL) – DEFRA 2014*

viii) *The Water Supply (Water Quality) Regulations 2018 – Drinking Water Standards*

ix) *The Water Environment (Water Framework Directove) (England and Wales) Regulations 2017*

x) *Environmental Quality Standards (EQS) for freshwaters; estuaries and coastal waters; specific pollutants; operational EQS; priority hazardous substances; priority substances and other pollutants*

xi) *CL:AIRE – 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', 2008*

xii) *Environment Agency Technical Advice to Third Parties on Pollution of Controlled Waters for Part 2A, Version 2, 2002*

xiii) *BRE Special Digest 1, 'Concrete in Aggressive Ground', 2005*

xiv) *UK Water Industry Research 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' Report Ref. No. 10/WM/03/21, 2011*

xv) *BS 3882: 2015, 'Specification for topsoil' & BS8601:2013, 'Specification for subsoil and requirements for use'*

xvi) *CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings', 2007*

xvii) *Environment Agency 'Guidance on the classification and assessment of waste' Technical Guidance WM3, 2015, (1st Edition V1.1), May 2018*

xviii) *Environment Agency 'Soil Guideline Values for dioxins furans and dioxin-like PCBs in soil' Science Report SC050021, 2009*

xix) *United States Environmental Protection Agency (USEPA) – Regional Screening Values, 2021*

xx) *Health Protection Agency 'Indicative Atlas of Radon', 2007*

xxi) *BRE 211 'Radon: Protective Measures for New Buildings', 2015*

xxii) *Water UK 'Contaminated Land Assessment Guidance' 2014*

xxiii) *BS 8485:2015+A1:2019, 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'*

xxiv) *CL:AIRE Research Bulletin 17 'A Pragmatic Approach to Ground Gas Risk Assessment', 2012*

xxv) *CIRIA C733: 'Asbestos in soil and made ground: a guide to understanding and managing risks', 2014*

xxvi) *CIRIA 765: 'Asbestos in soil and made ground: good practice site guide; 2017*

xxvii) *AGS 'Assessment and control of asbestos risk in soil', 2021.*

APPENDIX 3

Screening values for 'Residential with homegrown produce' and use

GENERIC SCREENING VALUES ADOPTED IN THE ASSESSMENT

HUMAN HEALTH SCREENING VALUES

Table 1 – Soil Screening Values, Residential with Homegrown Produce End Use

Determinand	Screening Value (mg/kg)			Source
	Soil Organic Matter Content			
	1%	*2.5%*	*6%*	
Arsenic	37	37	37	LQM/CIEH 2015
Barium	1300*	1300*	1300*	CL:AIRE GAC 2010
Beryllium	1.7	1.7	1.7	LQM/CIEH 2015
Boron	290	290	290	LQM/CIEH 2015
Cadmium	11	11	11	LQM/CIEH 2015
Chromium (III)	910	910	910	LQM/CIEH 2015
Chromium (VI)	6	6	6	LQM/CIEH 2015
Copper	2400	2400	2400	LQM/CIEH 2015
Lead	200	200	200	DEFRA 2014
Mercury	40	40	40	LQM/CIEH 2015
Nickel	130	130	130	LQM/CIEH 2015
Selenium	250	250	250	LQM/CIEH 2015
Vanadium	410	410	410	LQM/CIEH 2015
Zinc	3700	3700	3700	LQM/CIEH 2015
Cyanide	34	34	34	ATRISK SOIL
Phenol	120	200	380	LQM/CIEH 2015**
Benzene	0.087	0.17	0.37	LQM/CIEH 2015**
Toluene	130	290	660	LQM/CIEH 2015**
Ethylbenzene	47	110	260	LQM/CIEH 2015**
Xylenes	56	130	310	LQM/CIEH 2015**
MTBE	49	84	160	CL:AIRE GAC 2010
TPH CWG - Aliphatic >C5-C6	42	78	160	LQM/CIEH 2015**
TPH CWG - Aliphatic >C6-C8	100	230	530	LQM/CIEH 2015**
TPH CWG - Aliphatic >C8-C10	27	65	150	LQM/CIEH 2015**
TPH CWG - Aliphatic >C10-C12	130	330	760	LQM/CIEH 2015**
TPH CWG - Aliphatic >C12-C16	1100	2400	4300	LQM/CIEH 2015**
TPH CWG - Aliphatic >C16-C35	65000	92000	110000	LQM/CIEH 2015**
TPH CWG - Aliphatic >C35-C44	65000	92000	110000	LQM/CIEH 2015**
TPH CWG - Aromatic >C5-C7	70	140	300	LQM/CIEH 2015**
TPH CWG - Aromatic >C7-C8	130	290	660	LQM/CIEH 2015**
TPH CWG - Aromatic >C8-C10	34	83	190	LQM/CIEH 2015**
TPH CWG - Aromatic >C10-C12	74	180	380	LQM/CIEH 2015**
TPH CWG - Aromatic >C12-C16	140	330	660	LQM/CIEH 2015**
TPH CWG - Aromatic >C16-C21	260	540	930	LQM/CIEH 2015**
TPH CWG - Aromatic >C21-C35	1100	1500	1700	LQM/CIEH 2015**
TPH CWG - Aromatic >C35-C44	1100	1500	1700	LQM/CIEH 2015**

Table 1 – Soil Screening Values, Residential with Homegrown Produce End Use continued

Determinand	Screening Value (mg/kg)			Source
	Soil Organic Matter Content			
	1%	*2.5%*	*6%*	
Naphthalene	2.3	5.6	13	LQM/CIEH 2015**
Acenaphthylene	170	420	920	LQM/CIEH 2015**
Acenaphthene	210	510	1100	LQM/CIEH 2015**
Fluorene	170	400	860	LQM/CIEH 2015**
Phenanthrene	95	220	440	LQM/CIEH 2015**
Anthracene	2400	5400	11000	LQM/CIEH 2015**
Fluoranthene	280	560	890	LQM/CIEH 2015**
Pyrene	620	1200	2000	LQM/CIEH 2015**
Benzo(a)anthracene	7.2	11	13	LQM/CIEH 2015**
Chrysene	15	22	27	LQM/CIEH 2015**
Benzo(b)fluoranthene	2.6	3.3	3.7	LQM/CIEH 2015**
Benzo(k)fluoranthene	77	93	100	LQM/CIEH 2015**
Benzo(a)pyrene	2.2	2.7	3.0	LQM/CIEH 2015**
Indeno(1,2,3-cd)pyrene	27	36	41	LQM/CIEH 2015**
Di-benzo(a,h)anthracene	0.24	0.28	0.3	LQM/CIEH 2015**
Benzo(g,h,i)perylene	320	340	350	LQM/CIEH 2015**
Chloromethane	0.0083	0.0098	0.013	CL:AIRE GAC 2010
Chloroethane	8.3	11	18	CL:AIRE GAC 2010
Vinyl Chloride	0.00064	0.00087	0.0014	LQM/CIEH 2015**
1,1-dichloroethene	0.23	0.4	0.82	CL:AIRE GAC 2010
Cis-1,2-dichloroethene	0.11	0.19	0.37	CL:AIRE GAC 2010
1,1-dichloroethane	2.4	3.9	7.4	CL:AIRE GAC 2010
Trichloromethane	0.91	1.7	3.4	LQM/CIEH 2015**
1,1,1-Trichloroethane	8.8	18	39	LQM/CIEH 2015**
Trans-1,2-dichloroethene	0.19	0.34	0.7	CL:AIRE GAC 2010
Tetrachloromethane	0.026	0.056	0.13	LQM/CIEH 2015**
1,2-dichloropropane	0.024	0.042	0.084	CL:AIRE GAC 2010
Trichloroethene	0.016	0.034	0.075	LQM/CIEH 2015**
Bromodichloromethane	0.016	0.03	0.061	CL:AIRE GAC 2010
1,1,2-Trichloroethane	0.6	1.2	2.7	CL:AIRE GAC 2010
Tetrachloroethene	0.18	0.39	0.9	LQM/CIEH 2015**
Chlorobenzene	0.46	1	2.4	LQM/CIEH 2015**
1,1,1,2-Tetrachloroethane	1.2	2.8	6.4	LQM/CIEH 2015**
Styrene	8.1	19	43	CL:AIRE GAC 2010
1,1,2,2-Tetrachloroethane	1.6	3.4	7.5	LQM/CIEH 2015**
Isopropylbenzene	11	27	64	CL:AIRE GAC 2010
Bromobenzene	0.87	2	4.7	CL:AIRE GAC 2010
N-Propylbenzene	34	82	190	CL:AIRE GAC 2010
1,2,4-Trimethylbenzene	0.35	0.85	2	CL:AIRE GAC 2010
1,2,3-Trichlorobenzene	1.5	3.6	8.6	LQM/CIEH 2015**
1,3-Dichlorobenzene	0.4	1	2.3	LQM/CIEH 2015**
1,2-Dichlorobenzene	23	55	130	LQM/CIEH 2015**
1,4-Dichlorobenzene	61	150	350	LQM/CIEH 2015**
Hexachloroethane	0.2	0.48	1.1	CL:AIRE GAC 2010

Table 1 – Soil Screening Values, Residential with Homegrown Produce End Use continued

Determinand	Screening Value (mg/kg)			Source
	Soil Organic Matter Content			
	1%	*2.5%*	*6%*	
2,4-Dimethylphenol	19	43	97	CL:AIRE GAC 2010
1,2,4-Trichlorobenzene	2.6	6.4	15	LQM/CIEH 2015**
Hexachlorobutadiene	0.29	0.7	1.6	LQM/CIEH 2015**
2-Chloronaphthalene	3.7	9.2	22	CL:AIRE GAC 2010
2,6-Dinitrotoluene	0.78	1.7	3.9	CL:AIRE GAC 2010
2,4-Dinitrotoluene	1.5	3.2	7.2	CL:AIRE GAC 2010
Diethyl phthalate	120	260	570	CL:AIRE GAC 2010
Hexachlorobenzene	1.8	3.3	4.9	LQM/CIEH 2015**
Butyl benzyl phthalate	1400	3300	7200	CL:AIRE GAC 2010
Di-n-octylphthalate	2300	2800	3100	CL:AIRE GAC 2010
Bis(2-ethylhexyl)phthalate	280	610	1100	CL:AIRE GAC 2010
Pentachlorophenol	0.22	0.52	1.2	LQM/CIEH 2015**

* Based on residential without home grown produce

** Assumes no free product

APPENDIX 4

Landmark Envirocheck data search report

RSA GEOTECHNICS LTD

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
298514201_1_1

Customer Reference:
16118SI/RBIB

National Grid Reference:
618460, 246520

Slice:
A

Site Area (Ha):
31.74

Search Buffer (m):
1000

Site Details:

Land North of Humber Doucy Lane
IPSWICH
IP4 3PZ

Client Details:

Mr G Bell
RSA Geotechnics Ltd
Ashburnham House
1 Maitland Road
Lion Barn Estate
Needham Market
Suffolk
IP6 8NZ

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	9
Hazardous Substances	-
Geological	11
Industrial Land Use	17
Sensitive Land Use	20
Data Currency	21
Data Suppliers	28
Useful Contacts	29

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.

Report Version v53.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1	1	4	1	
Prosecutions Relating to Controlled Waters			n/a	n/a	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					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 3	Yes			
Pollution Incidents to Controlled Waters	pg 3				2
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 3	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 4	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 4	Yes	n/a	n/a	n/a
Source Protection Zones	pg 4	1	1	1	
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 5	2	8	7	13

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 9		1	1	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 9	3	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 9		1	1	1
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 10				1
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					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 11	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 11	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 12		1		3
BGS Urban Soil Chemistry	pg 13		Yes	Yes	Yes
BGS Urban Soil Chemistry Averages	pg 15	Yes			
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 15		Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 15	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 15	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 16	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 16	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 17		2	3	9
Fuel Station Entries					
Points of Interest - Commercial Services	pg 18		1	2	
Points of Interest - Education and Health	pg 18		2		
Points of Interest - Manufacturing and Production	pg 18	2			1
Points of Interest - Public Infrastructure	pg 18		1	6	2
Points of Interest - Recreational and Environmental	pg 19			1	2
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas	pg 20			1	
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 20	4			
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
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NE (W)	0	1	618459 246521
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NW (NE)	169	1	618850 247250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NW (NE)	181	1	618850 247300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NW (N)	194	1	618800 247400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NW (NE)	265	1	618850 247450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NW (NE)	341	1	618950 247450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(NE)	372	1	618950 247500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A16NW (NE)	383	1	619000 247450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(NE)	410	1	619000 247500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NE (NE)	447	1	619200 247200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	451	1	619050 247500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A16NE (NE)	471	1	619200 247250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(NE)	480	1	619050 247550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16NE (NE)	499	1	619200 247300
1	**Discharge Consents** Operator: The Kesgrave Trading Company Limited Property Type: OFFICES ADMIN + SUPPORT Location: Tuddenham Road Business Centre Tuddenham Road, Ipswich, Suffolk, Ip4 3qh Authority: Environment Agency, Anglian Region Catchment Area: River Gipping / River Jordan Reference: Npswqd010413 Permit Version: 1 Effective Date: 10th February 2010 Issued Date: 10th February 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of The River Fynn **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A15NW (N)	0	2	618322 247135

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Complete Timber Solutions Limited Property Type: Domestic Property (Multiple) Location: 1&2 Westerfield Farm Cottages, Humber Doucy Lane, Ipswich, Suffolk, Ip4 3qg Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Eprhp3525xt Permit Version: 1 Effective Date: 14th February 2011 Issued Date: 14th February 2011 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Fynn **Status:** **New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A15NW (N)	5	2	618300 247135
2	**Discharge Consents** Operator: Ian Lawrence & Nicola Catherine Tucker Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Westerfield House Cottage Humber Doucy Lane, Ipswich, Ip4 3qe, Ip4 3qe Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Prenf10890 Permit Version: 1 Effective Date: 14th March 1997 Issued Date: 14th March 1997 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary River Flynn **Status:** **Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A15SW (N)	3	2	618380 246810
3	**Discharge Consents** Operator: Mr Derke Noske Property Type: Domestic Property (Single) Location: Millbank House Tuddenham Lane, Rushmere St Andrew, Ipswich, Suffolk, Ip5 1du Authority: Environment Agency, Anglian Region Catchment Area: River Gipping / River Jordan Reference: Eprjp3022xr Permit Version: 1 Effective Date: 14th February 2013 Issued Date: 14th February 2013 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Fynn **Status:** **New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A16SW (NE)	25	2	618926 246787
4	**Discharge Consents** Operator: S E Kent & Son Property Type: Arable Farming Location: Church Lane, Westerfield, Suffolk, Ip6 9be Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Gwelf50669 Permit Version: 1 Effective Date: 31st March 1999 Issued Date: 26th January 2001 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Agricultural And Surface Discharge Environment: Onto Land Receiving Water: Groundwater **Status:** **Deemed Groundwater Regulations Authorisation** Positional Accuracy: Located by supplier to within 10m	A15NW (N)	64	2	618310 247320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Mrs Ann Mccusker Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: 3 Villa Farm Cottages Lamberts Lane, Rushmere St Andrew, Ipswich, Suffolk, Ip5 1dt Authority: Environment Agency, Anglian Region Catchment Area: River Fynn / River Lark (Burgh) Reference: Prenf20452 Permit Version: 1 Effective Date: 2nd February 2007 Issued Date: 2nd February 2007 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Fynn **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12NE (E)	266	2	619310 246680
	Nearest Surface Water Feature	A12NW (E)	0	-	618772 246551
6	**Pollution Incidents to Controlled Waters** Property Type: Road Location: IPSWICH Authority: Environment Agency, Anglian Region Pollutant: Chemicals - Other Organic Note: Not Supplied Incident Date: 27th January 1997 Incident Reference: 2808 Catchment Area: Not Given Receiving Water: Potential River Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8SW (S)	686	2	618800 245700
6	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Ipswich District Authority: Environment Agency, Anglian Region Pollutant: Chemicals - Other Organic Note: Not Supplied Incident Date: 27th January 1997 Incident Reference: 2808 Catchment Area: Not Given Receiving Water: Potential River Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8SW (S)	691	2	618800 245695
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A11NE (W)	0	3	618459 246521

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A12NW (E)	0	3	619000 246521
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: High	A15SE (N)	0	3	618459 247000
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: High	A15NE (N)	0	3	618484 247249
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A11NE (W)	0	3	618459 246521
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A11NE (W)	0	3	618459 246521
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A15NE (N)	0	3	618484 247249
7	**Source Protection Zones** Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A11NE (W)	0	2	618459 246521
8	**Source Protection Zones** Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A16NW (NE)	170	2	618967 247266

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Source Protection Zones** Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A16NW (NE)	342	2	619013 247399
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
10	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A12NW (E)	0	4	618772 246552
11	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 117.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Not Supplied Primacy: 2	A15SW (N)	0	4	618377 246817
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 239.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A12NW (E)	1	4	618787 246574
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16SW (NE)	2	4	618798 246872
14	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 205.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16SW (NE)	3	4	618744 246914
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 135.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16SW (NE)	4	4	618904 246785
16	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 23.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16SW (NE)	98	4	618857 247082

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 261.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16NW (NE)	122	4	618803 247250
18	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 25.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A12NE (E)	244	4	619147 246715
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 55.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A12NE (E)	248	4	619146 246716
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 133.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14SE (NW)	280	4	618037 246824
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14SE (NW)	325	4	618018 246796
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 232.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A12NE (E)	327	4	619310 246752
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 195.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14SE (NW)	327	4	618019 246930
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 42.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14SE (NW)	333	4	618009 246784
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 405.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Deben Primacy: 1	A16NW (NE)	358	4	619052 247256

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14SE (NW)	482	4	617839 246920
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 77.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A10NE (W)	598	4	617749 246692
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A10NW (W)	674	4	617676 246665
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 165.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A10NW (W)	678	4	617672 246664
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 50.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14NW (NW)	854	4	617400 247237
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 137.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14NW (NW)	854	4	617425 247280
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 83.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A10NW (W)	917	4	617445 246579
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14NW (NW)	935	4	617383 247445
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 53.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A13NE (NW)	941	4	617356 247399

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A14NW (NW)	941	4	617378 247447
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A13NE (NW)	948	4	617353 247393
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 94.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A13NE (NW)	949	4	617310 247308
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 73.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A13NE (NW)	972	4	617275 247244
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Gipping Primacy: 1	A13NE (NW)	998	4	617274 247242

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Tuddenham Road, Ipswich Name: Tuddenham Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD00691 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: OFSI14, IPS14	A15SW (NW)	32	2	618205 247063
41	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Ipswich Name: Aberdeen Way - Gretna Gardens Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD03025 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 3500/0017 BGS Ref: Not Supplied Other Ref: OFSI19, IPS19, 3500/5148	A11SE (SE)	326	2	618663 246120
42	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Norbury Road, Ipswich Name: Norbury Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD03016 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 3500/0015 BGS Ref: Not Supplied Other Ref: OFSI13, IPS11	A8SW (S)	865	2	618812 245503
	Local Authority Landfill Coverage Name: Suffolk County Council - Has supplied landfill data		0	5	618459 246521
	Local Authority Landfill Coverage Name: Ipswich Borough Council - Has supplied landfill data		0	7	618459 246521
	Local Authority Landfill Coverage Name: Suffolk Coastal District Council - Had landfill data but passed it to the relevant environment agency		0	6	618608 246794
43	**Local Authority Recorded Landfill Sites** Location: Tuddenham Road, Tuddenham Road, Westerfield, Ipswich Reference: IPS14 Authority: Ipswich Borough Council, Environmental Health Department **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: Pre 1974 Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Moderate	A15SW (NW)	36	7	618199 247062
44	**Local Authority Recorded Landfill Sites** Location: Aberdeen Way / Gretna Gardens, Aberdeen Way / Gretna Gardens, Ipswich Reference: IPS19 Authority: Ipswich Borough Council, Environmental Health Department **Last Reported Status:** **Not Supplied** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Applicable	A11SE (SE)	288	7	618600 246200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
45	**Local Authority Recorded Landfill Sites** Location: Norbury Road, Norbury Road, Ipswich Reference: IPS13 Authority: Ipswich Borough Council, Environmental Health Department **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: Pre 1974 Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Moderate	A8SW (S)	830	7	618794 245548
46	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A10NW (W)	641	-	617708 246675

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Thames Group	A11NE (SE)	0	1	618507 246467
	BGS 1:625,000 Solid Geology Description: Neogene To Quaternary Rocks (Undifferentiated)	A11NE (W)	0	1	618459 246521
	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: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (SE)	0	1	618487 246482
	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: 20 - 40 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A15SW (NW)	0	1	618204 246930
	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	A11NE (W)	0	1	618459 246521
	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: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (N)	76	1	618470 247332
	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: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16NW (NE)	218	1	618884 247328

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (E)	246	1	619376 246205
	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: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (NW)	409	1	617912 247346
	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: 20 - 40 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A14SW (W)	595	1	617609 246836
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A4NW (S)	936	1	618898 245389
47	**BGS Recorded Mineral Sites** Site Name: Allen'S Farm Pit Location: Westerfield, Ipswich, Suffolk Source: British Geological Survey, National Geoscience Information Service Reference: 213149 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Lowestoft Formation Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A16SW (NE)	125	1	618879 247099
48	**BGS Recorded Mineral Sites** Site Name: Sidegate Lane Nursery Pit Location: Ipswich, Suffolk Source: British Geological Survey, National Geoscience Information Service Reference: 213169 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Lowestoft Formation Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A7SE (S)	847	1	618568 245591

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**BGS Recorded Mineral Sites** Site Name: Rushmere Road Pit Location: Ipswich, Suffolk Source: British Geological Survey, National Geoscience Information Service Reference: 213125 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Lowestoft Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A8SW (S)	909	1	618746 245482
50	**BGS Recorded Mineral Sites** Site Name: Redhouse Farm Sand Pit Location: Ipswich, Suffolk Source: British Geological Survey, National Geoscience Information Service Reference: 213162 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Lowestoft Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A10NW (W)	931	1	617413 246701
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 619222, 246221 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 12.20 mg/kg Cadmium Measured Concentration: 0.10 mg/kg Chromium Measured Concentration: 44.90 mg/kg Lead Measured Concentration: 31.40 mg/kg Nickel Measured Concentration: 17.40 mg/kg	A12SE (E)	123	1	619222 246221
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 618210, 246775 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 13.60 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 48.80 mg/kg Lead Measured Concentration: 44.90 mg/kg Nickel Measured Concentration: 19.90 mg/kg	A11NW (NW)	132	1	618210 246775
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 618574, 246251 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 13.60 mg/kg Cadmium Measured Concentration: 0.40 mg/kg Chromium Measured Concentration: 56.10 mg/kg Lead Measured Concentration: 40.50 mg/kg Nickel Measured Concentration: 26.40 mg/kg	A11SE (SE)	255	1	618574 246251

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 619177, 245901 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 11.90 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 39.80 mg/kg Lead Measured Concentration: 30.10 mg/kg Nickel Measured Concentration: 15.30 mg/kg	A8NE (SE)	410	1	619177 245901
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 618296, 246109 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 13.50 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 45.00 mg/kg Lead Measured Concentration: 87.20 mg/kg Nickel Measured Concentration: 18.80 mg/kg	A11SW (S)	524	1	618296 246109
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 618949, 245741 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 14.60 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 43.40 mg/kg Lead Measured Concentration: 62.50 mg/kg Nickel Measured Concentration: 17.20 mg/kg	A8SW (SE)	594	1	618949 245741
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 617708, 246312 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 14.80 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 54.70 mg/kg Lead Measured Concentration: 64.30 mg/kg Nickel Measured Concentration: 28.00 mg/kg	A10SE (W)	782	1	617708 246312
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 619380, 245416 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 14.00 mg/kg Cadmium Measured Concentration: 0.10 mg/kg Chromium Measured Concentration: 36.60 mg/kg Lead Measured Concentration: 44.70 mg/kg Nickel Measured Concentration: 13.80 mg/kg	A4NE (SE)	926	1	619380 245416

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 618182, 245691 Soil Sample Type: Topsoil Sample Area: Ipswich Arsenic Measured Concentration: 37.90 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 44.00 mg/kg Lead Measured Concentration: 133.80 mg/kg Nickel Measured Concentration: 17.50 mg/kg	A7SW (S)	936	1	618182 245691
	BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: Ipswich Count Id: 200 Arsenic Minimum Concentration: 5.00 mg/kg Arsenic Average Concentration: 13.00 mg/kg Arsenic Maximum Concentration: 48.00 mg/kg Cadmium Minimum Concentration: 0.10 mg/kg Cadmium Average Concentration: 0.50 mg/kg Cadmium Maximum Concentration: 4.80 mg/kg Chromium Minimum Concentration: 18.00 mg/kg Chromium Average Concentration: 39.00 mg/kg Chromium Maximum Concentration: 115.00 mg/kg Lead Minimum Concentration: 12.00 mg/kg Lead Average Concentration: 119.00 mg/kg Lead Maximum Concentration: 954.00 mg/kg Nickel Minimum Concentration: 3.00 mg/kg Nickel Average Concentration: 15.00 mg/kg Nickel Maximum Concentration: 54.00 mg/kg	A11NE (W)	0	1	618459 246521
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	159	1	618032 246667
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A15NW (N)	0	1	618355 247254
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A16NW (NE)	171	1	618853 247234

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A15NE (N)	0	1	618484 247249
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	1	618459 246521
	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	A11NE (W)	0	1	618459 246521
	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	A11NE (W)	0	1	618459 246521

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**Contemporary Trade Directory Entries** Name: Ipswich Pet Cemetery Location: Cemetery Lodge, Tuddenham Road, Ipswich, IP4 3QH Classification: Pet Cemeteries & Crematoria **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (NW)	76	-	618209 247092
52	**Contemporary Trade Directory Entries** Name: Cleanitz Llp Location: 116, Renfrew Road, Ipswich, IP4 3HP Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (SE)	110	-	618828 246281
53	**Contemporary Trade Directory Entries** Name: R E Denison & Son Ltd Location: Villa Farm, Tuddenham Lane, Rushmere St. Andrew, Ipswich, IP5 1DT Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	264	-	619219 246718
53	**Contemporary Trade Directory Entries** Name: Denison & Son Ltd Location: Villa Farm, Tuddenham Lane, Rushmere St. Andrew, IPSWICH, IP5 1DT Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	264	-	619219 246718
54	**Contemporary Trade Directory Entries** Name: Promark Location: 9, Sherborne Avenue, Ipswich, IP4 3DR Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A11SW (SW)	268	-	618332 246402
55	**Contemporary Trade Directory Entries** Name: J Mann Location: 34, Renfrew Road, Ipswich, IP4 3EZ Classification: Refrigerators & Freezers - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	550	-	618907 245804
56	**Contemporary Trade Directory Entries** Name: A Better Clean Location: 85, Colchester Road, Ipswich, IP4 4ST Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A6NE (SW)	755	-	617981 246062
57	**Contemporary Trade Directory Entries** Name: Sharman Caravans Ltd Location: The Caravan Centre, 134, Colchester Road, Ipswich, IP4 4RU Classification: Caravans - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	781	-	618131 245910
58	**Contemporary Trade Directory Entries** Name: East Coast Plants Ltd Location: 242, Colchester Road, Ipswich, IP4 4QY Classification: Horticultural Equipment Maintenance & Repair **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	822	-	618821 245546
59	**Contemporary Trade Directory Entries** Name: Stylish Wood & Stone Kitchens Location: Red House Farm, Tuddenham Road, Ipswich, IP4 3QL Classification: Kitchen Furniture Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A10NW (W)	892	-	617457 246656
60	**Contemporary Trade Directory Entries** Name: A Carpet Clean 4 U Location: 2, Digby Road, Ipswich, IP4 3ND Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A4NW (SE)	895	-	618997 245422
60	**Contemporary Trade Directory Entries** Name: S & E Brazier & Sons Location: 6, Digby Road, Ipswich, IP4 3ND Classification: Cash Registers & Check-Out Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A4NW (SE)	930	-	619028 245383

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**Contemporary Trade Directory Entries** Name: S & E Brazier & Sons Location: 6, Digby Road, Ipswich, IP4 3ND Classification: Cash Registers & Check-Out Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A4NW (SE)	930	-	619028 245383
61	**Contemporary Trade Directory Entries** Name: Ian Kenny Location: 238, Brunswick Road, Ipswich, IP4 4DB Classification: Cabinet Makers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6NE (SW)	951	-	617809 245950
62	**Points of Interest - Commercial Services** Name: Vitavia Location: Unit 2 Tuddenham Road Business Centre, Tuddenham Road, Ipswich, IP4 3QN Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A15SW (N)	13	8	618337 247028
63	**Points of Interest - Commercial Services** Name: Denison & Son Ltd Location: Villa Farm, Tuddenham Lane, Rushmere St. Andrew, Ipswich, IP5 1DT Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A12NE (E)	264	8	619219 246718
63	**Points of Interest - Commercial Services** Name: R E Denison & Son Ltd Location: Villa Cottage, Tuddenham Lane, Rushmere St. Andrew, Ipswich, IP5 1DT Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A12NE (E)	270	8	619279 246703
64	**Points of Interest - Education and Health** Name: Pet Cemetery Location: IP4 Category: Animal Welfare Class Code: Pet Cemeteries and Crematoria Positional Accuracy: Positioned to address or location	A15NW (NW)	94	8	618176 247121
64	**Points of Interest - Education and Health** Name: Pet Cemetery Location: Not Supplied Category: Animal Welfare Class Code: Pet Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A15SW (NW)	99	8	618175 247105
65	**Points of Interest - Manufacturing and Production** Name: Business Centre Location: IP4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A15SW (N)	0	8	618380 247097
65	**Points of Interest - Manufacturing and Production** Name: Solar Panel Location: IP4 Category: Industrial Features Class Code: Energy Production Positional Accuracy: Positioned to an adjacent address or location	A15SW (N)	0	8	618346 247082
66	**Points of Interest - Manufacturing and Production** Name: Stone Age Granite Location: 213 Rushmere Road, Ipswich, IP4 3LN Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A8SE (SE)	634	8	619184 245676
67	**Points of Interest - Public Infrastructure** Name: Pet Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A15NW (NW)	95	8	618175 247122
68	**Points of Interest - Public Infrastructure** Name: Garden of Remembrance Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	325	8	618027 246853

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
68	**Points of Interest - Public Infrastructure** Name: Millennium Cemetery Location: IP4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	337	8	618016 246860
68	**Points of Interest - Public Infrastructure** Name: Garden of Remembrance Location: IP4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	340	8	618011 246852
68	**Points of Interest - Public Infrastructure** Name: Garden of Remembrance Location: IP4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	408	8	617944 246863
69	**Points of Interest - Public Infrastructure** Name: Millennium Cemetary Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	484	8	617861 246829
69	**Points of Interest - Public Infrastructure** Name: Millennium Cemetery Location: IP4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	498	8	617847 246829
70	**Points of Interest - Public Infrastructure** Name: Suffolk Fire Service Location: Colchester Road, Ipswich, IP4 4SS Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A7NW (SW)	718	8	618086 246023
70	**Points of Interest - Public Infrastructure** Name: Colchester Road Fire Station Location: Fire Station, Colchester Road, Ipswich, IP4 4SS Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A7NW (SW)	718	8	618086 246023
71	**Points of Interest - Recreational and Environmental** Name: Play Area Location: IP4 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	476	8	619089 245833
72	**Points of Interest - Recreational and Environmental** Name: Playground Location: Colchester Road, IP4 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A7NW (S)	674	8	618301 245925
72	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7NW (S)	680	8	618291 245925

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
73	**Environmentally Sensitive Areas** Name: Suffolk River Valleys (decommissioned) Multiple Areas: Y Total Area (m2): 46059991.71 Source: Natural England	A16NW (NE)	340	9	619018 247283
74	**Nitrate Vulnerable Zones** Name: Bucklesham Mill River Nvz Description: Surface Water Source: Environment Agency, Head Office	A11NE (E)	0	3	618600 246521
75	**Nitrate Vulnerable Zones** Name: Sandlings And Chelmsford Description: Groundwater Source: Environment Agency, Head Office	A11NE (W)	0	3	618459 246521
76	**Nitrate Vulnerable Zones** Name: Lark/Fynn Nvz Description: Surface Water Source: Environment Agency, Head Office	A11NE (NE)	0	3	618518 246595
77	**Nitrate Vulnerable Zones** Name: River Gipping Nvz Description: Surface Water Source: Environment Agency, Head Office	A11NE (N)	0	3	618450 246550

Data Currency

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Babergh District Council - Environmental Services	January 2020	Annual Rolling Update
Environment Agency - Head Office	June 2020	Annually
East Suffolk Council	March 2015	Annual Rolling Update
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	October 2017	Annual Rolling Update
Ipswich Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Anglian Region	April 2022	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Anglian Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Anglian Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Anglian Region	April 2022	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	April 2014	Variable
Babergh District Council - Environmental Services	June 2014	Variable
East Suffolk Council	May 2014	Variable
Ipswich Borough Council - Environmental Health Department	October 2014	Variable
Local Authority Pollution Prevention and Controls		
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	April 2014	Annual Rolling Update
Babergh District Council - Environmental Services	June 2014	Not Applicable
East Suffolk Council	May 2014	Annual Rolling Update
Ipswich Borough Council - Environmental Health Department	October 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	April 2014	Variable
Babergh District Council - Environmental Services	June 2014	Variable
East Suffolk Council	May 2014	Variable
Ipswich Borough Council - Environmental Health Department	October 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	May 2022	
Pollution Incidents to Controlled Waters		
Environment Agency - Anglian Region	September 1999	
Prosecutions Relating to Authorised Processes		
Environment Agency - Anglian Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Anglian Region	March 2013	
Registered Radioactive Substances		
Environment Agency - Anglian Region	June 2016	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register		
Environment Agency - Anglian Region - Eastern Area	April 2022	Quarterly
Water Abstractions		
Environment Agency - Anglian Region	July 2022	Quarterly

Data Currency

Agency & Hydrological	Version	Update Cycle
Water Industry Act Referrals Environment Agency - Anglian Region	October 2017	
Groundwater Vulnerability Map Environment Agency - Head Office	June 2018	As notified
Groundwater Vulnerability - Soluble Rock Risk Environment Agency - Head Office	June 2018	As notified
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	May 2021	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2022	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2022	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	May 2022	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	May 2022	Quarterly
Flood Defences Environment Agency - Head Office	May 2022	Quarterly
OS Water Network Lines Ordnance Survey	April 2022	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	April 2022	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Anglian Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Anglian Region - Eastern Area	April 2022	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Anglian Region - Eastern Area	April 2022	Quarterly
Local Authority Landfill Coverage		
Babergh District Council - Environmental Services	February 2003	Not Applicable
East Suffolk Council	February 2003	Not Applicable
Ipswich Borough Council - Environmental Health Department	February 2003	Not Applicable
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	February 2003	Not Applicable
Suffolk County Council	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Babergh District Council - Environmental Services	October 2018	
East Suffolk Council	October 2018	
Ipswich Borough Council - Environmental Health Department	October 2018	
Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department	October 2018	
Suffolk County Council	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - Anglian Region - Eastern Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Anglian Region - Eastern Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - Anglian Region - Eastern Area	June 2015	

Data Currency

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2022	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Suffolk County Council - Environment and Transport	February 2006	Annual Rolling Update
Babergh District Council - Planning Department	February 2016	Variable
East Suffolk Council	February 2016	Variable
Ipswich Borough Council	February 2016	Variable
Suffolk Coastal District Council (now part of East Suffolk Council)	February 2016	Variable
Planning Hazardous Substance Consents		
Suffolk County Council - Environment and Transport	February 2006	Annual Rolling Update
Babergh District Council - Planning Department	February 2016	Variable
East Suffolk Council	February 2016	Variable
Ipswich Borough Council	February 2016	Variable
Suffolk Coastal District Council (now part of East Suffolk Council)	February 2016	Variable

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2022	Bi-Annually
BGS Urban Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Urban Soil Chemistry Averages British Geological Survey - National Geoscience Information Service	December 2015	As notified
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	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	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
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

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	April 2022	Quarterly
Fuel Station Entries Catalist Ltd - Experian	June 2022	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	June 2022	Quarterly
Points of Interest - Education and Health PointX	June 2022	Quarterly
Points of Interest - Manufacturing and Production PointX	June 2022	Quarterly
Points of Interest - Public Infrastructure PointX	June 2022	Quarterly
Points of Interest - Recreational and Environmental PointX	June 2022	Quarterly
Underground Electrical Cables National Grid	May 2021	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	February 2021	Bi-Annually
Areas of Adopted Green Belt		
Babergh District Council - Planning Department	October 2020	Quarterly
East Suffolk Council	October 2020	Quarterly
Ipswich Borough Council	October 2020	Quarterly
Suffolk Coastal District Council (now part of East Suffolk Council)	October 2020	Quarterly
Areas of Unadopted Green Belt		
Babergh District Council - Planning Department	October 2020	Quarterly
East Suffolk Council	October 2020	Quarterly
Ipswich Borough Council	October 2020	Quarterly
Suffolk Coastal District Council (now part of East Suffolk Council)	October 2020	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	January 2021	Bi-Annually
Environmentally Sensitive Areas		
Natural England	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	February 2021	Bi-Annually
Marine Nature Reserves		
Natural England	July 2019	Bi-Annually
National Nature Reserves		
Natural England	January 2021	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2016	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	June 2017	Bi-Annually
Ramsar Sites		
Natural England	August 2020	Bi-Annually
Sites of Special Scientific Interest		
Natural England	February 2021	Bi-Annually
Special Areas of Conservation		
Natural England	July 2020	Bi-Annually
Special Protection Areas		
Natural England	February 2021	Bi-Annually

Data Suppliers

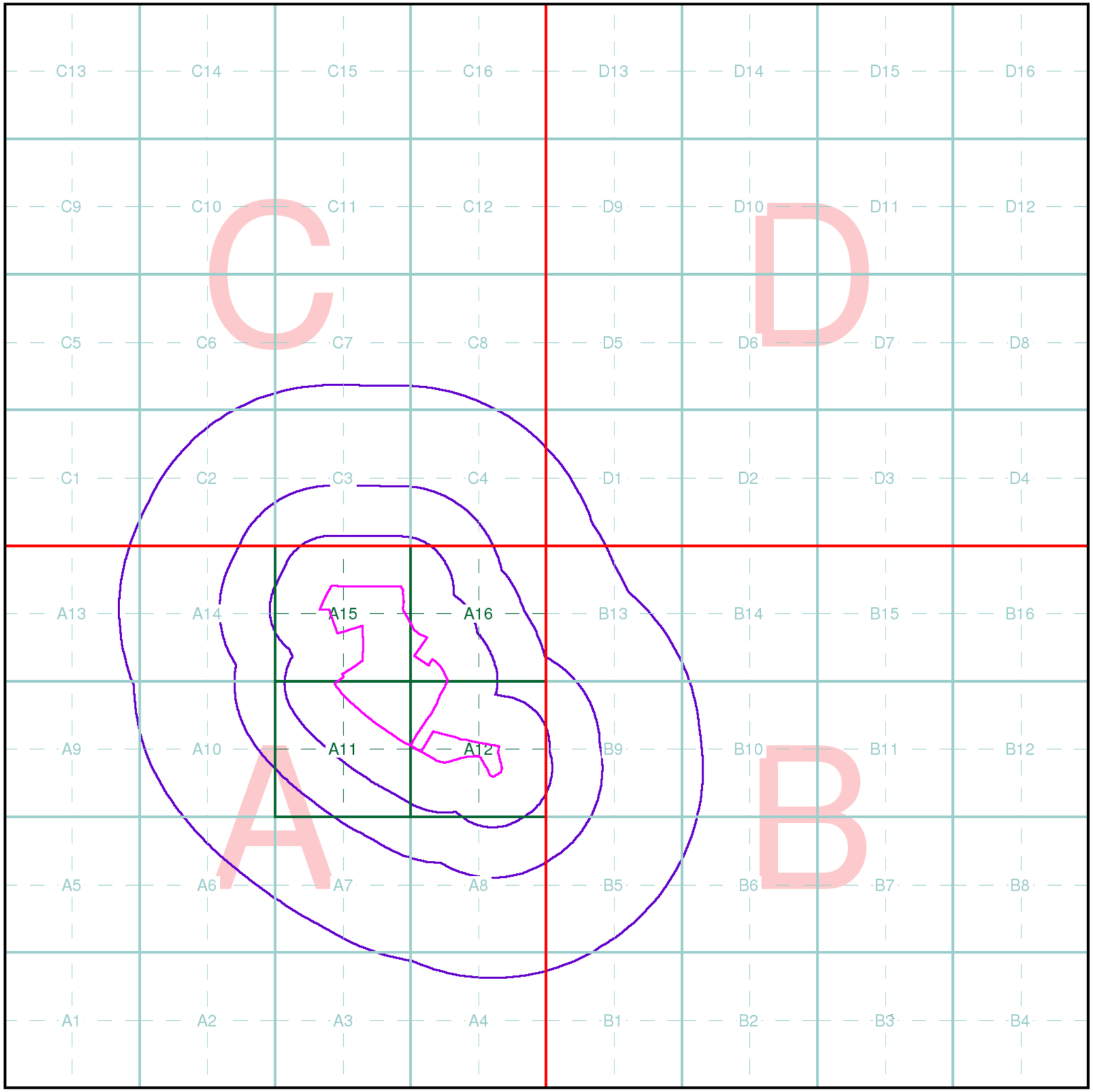
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**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
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.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	**Suffolk County Council** St Edmund House, County Hall, Ipswich, Suffolk, IP4 1LZ	Telephone: 01473 583000 Fax: 01473 230240 Website: www.suffolkcc.gov.uk
6	**Suffolk Coastal District Council (now part of East Suffolk Council) - Environmental Health Department** Council Offices, Melton Hill, Woodbridge, Suffolk, IP12 1AU	Telephone: 01394 383789 extn 2238 Fax: 01394 385100 Website: www.suffolkcoastal.gov.uk
7	**Ipswich Borough Council - Environmental Health Department** Grafton House, 15-17 Russell Road, Ipswich, Suffolk, IP1 2DE	Telephone: 01473 432000 Fax: 01473 432522 Email: enquiry@ipswich.gov.uk Website: www.ipswich.gov.uk
8	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	**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

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



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Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data · British Geological Survey · Environment Agency · NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

Client Details

Mr G Bell, RSA Geotechnics Ltd, Ashburnham House, 1 Maitland Road, Lion Barn Estate, Needham Market, Suffolk, IP6 8NZ

Order Details

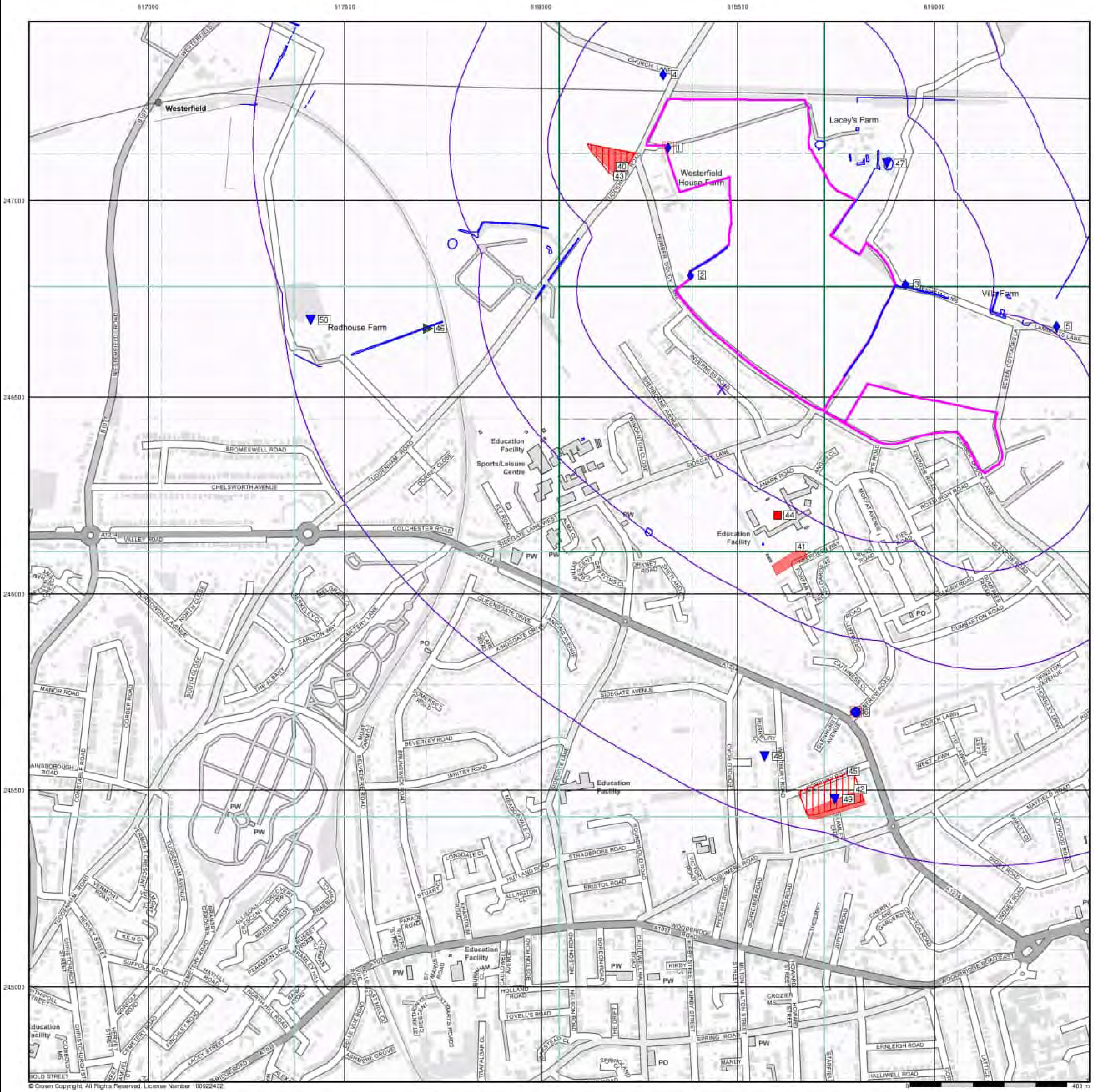
Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618650, 246830
Site Area (Ha):	31.74
Search Buffer (m):	1000

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

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



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RSA GEOTECHNICS LTD

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

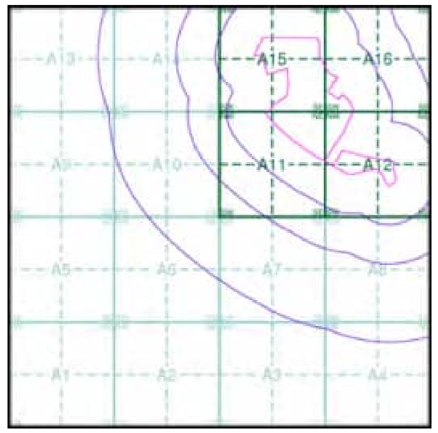
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- 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 - Slice A



Order Details

Order Number: 298514201_1_1
Customer Ref: 16118SI/RBIB
National Grid Reference: 618460, 246520
Slice: A
Site Area (Ha): 31.74
Search Buffer (m): 1000

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

Landmark INFORMATION GROUP

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

Industrial Land Use Map

General

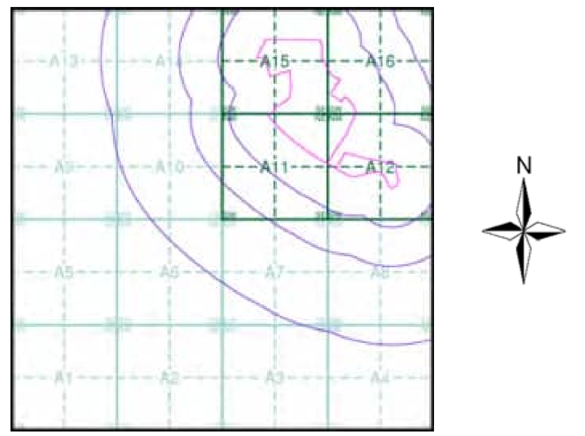
Specified Site | Specified Buffer(s) | Bearing Reference Point

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: 298514201_1_1
Customer Ref: 16118SI/RBIB
National Grid Reference: 618460, 246520
Slice: A
Site Area (Ha): 31.74
Search Buffer (m): 1000

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

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

RSA GEOTECHNICS LTD

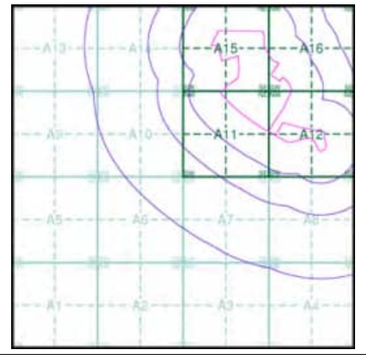
General

- 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

Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Search Buffer (m):	1000

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

Landmark INFORMATION GROUP

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

RSA GEOTECHNICS LTD

General

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

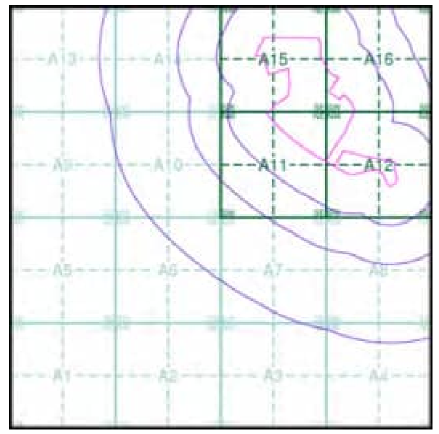
Agency and Hydrological (Boreholes)

- 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:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Search Buffer (m):	1000

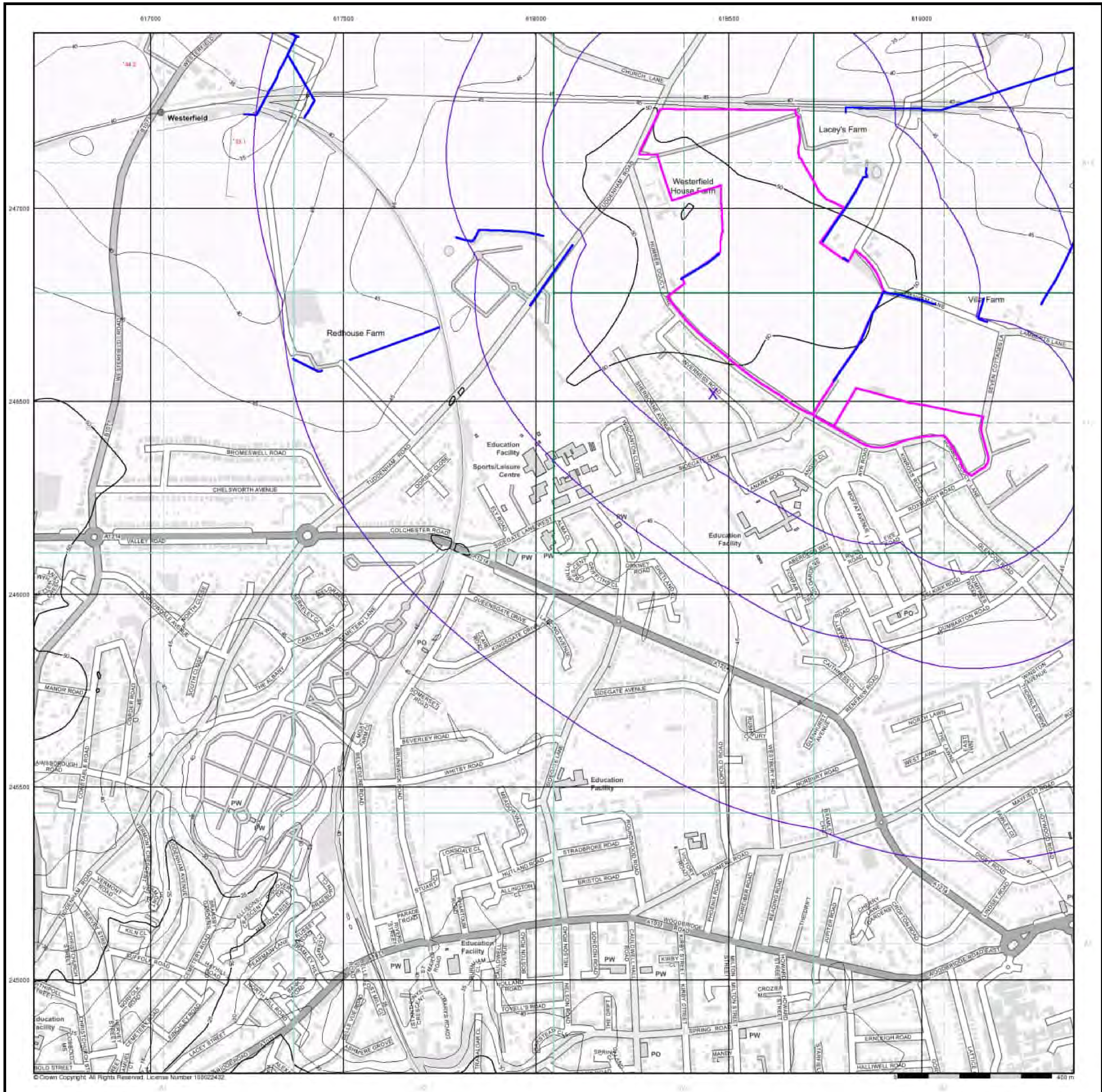
Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

Landmark INFORMATION GROUP

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

RSA GEOTECHNICS LTD



General

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

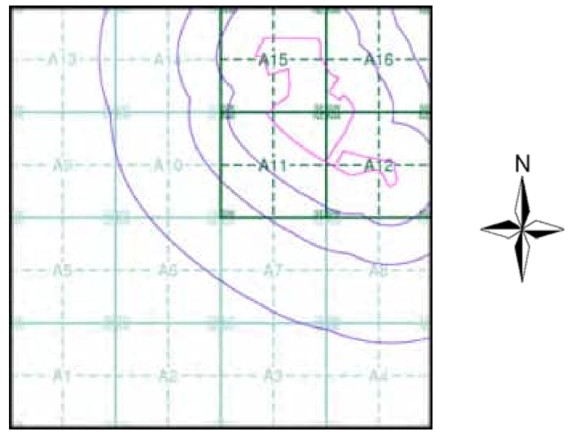
OS Water Network Data

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

Contours (height in meters)

- Standard Contour
- Master Contour
- Spot Height
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

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National Grid Reference: 618460, 246520
Slice: A
Site Area (Ha): 31.74
Search Buffer (m): 1000

Site Details

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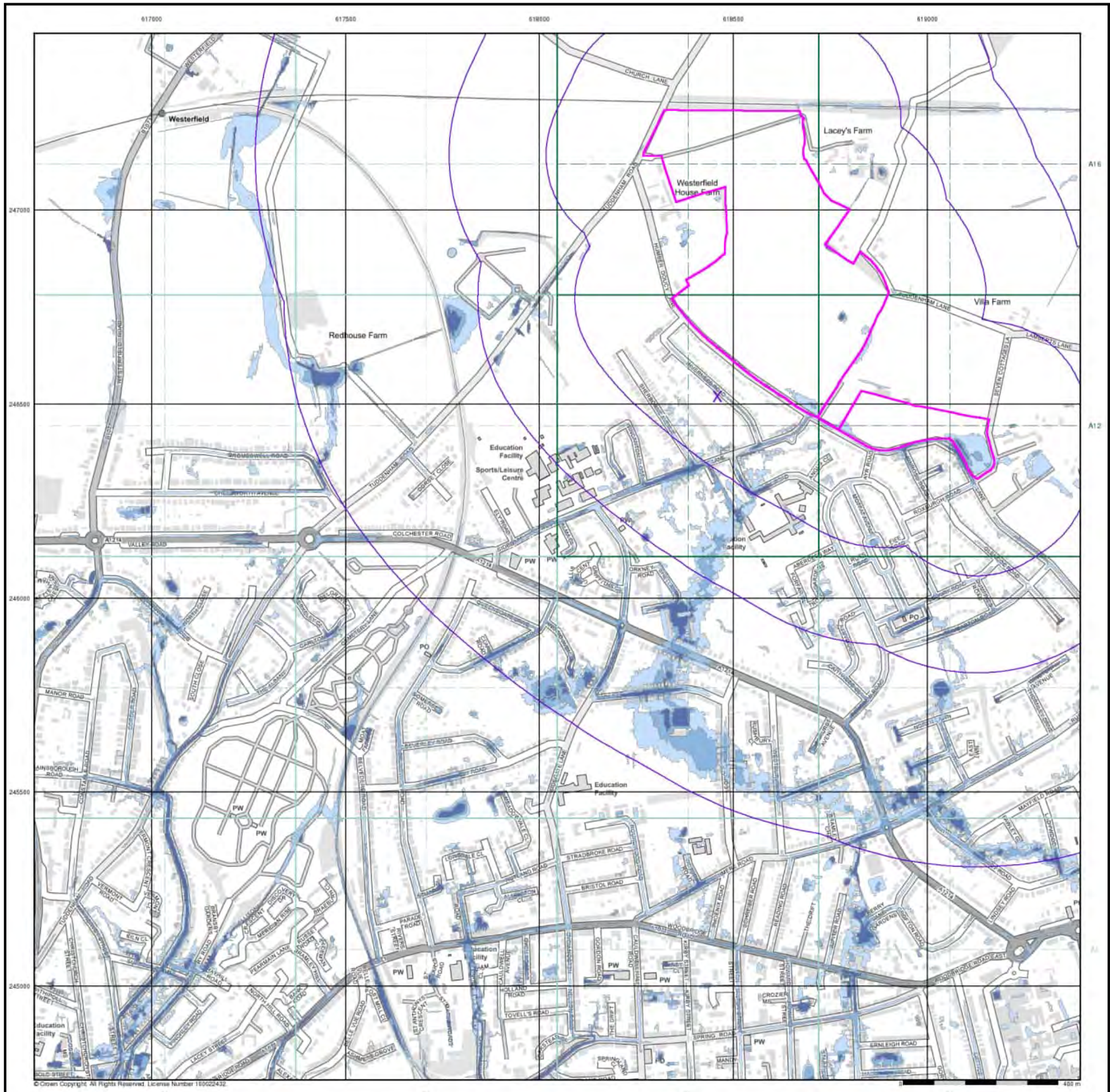

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General

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

Risk of Flooding from Surface Water

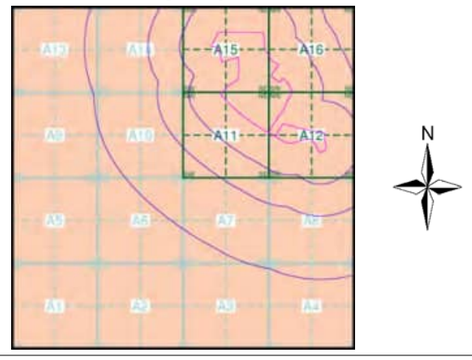
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

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



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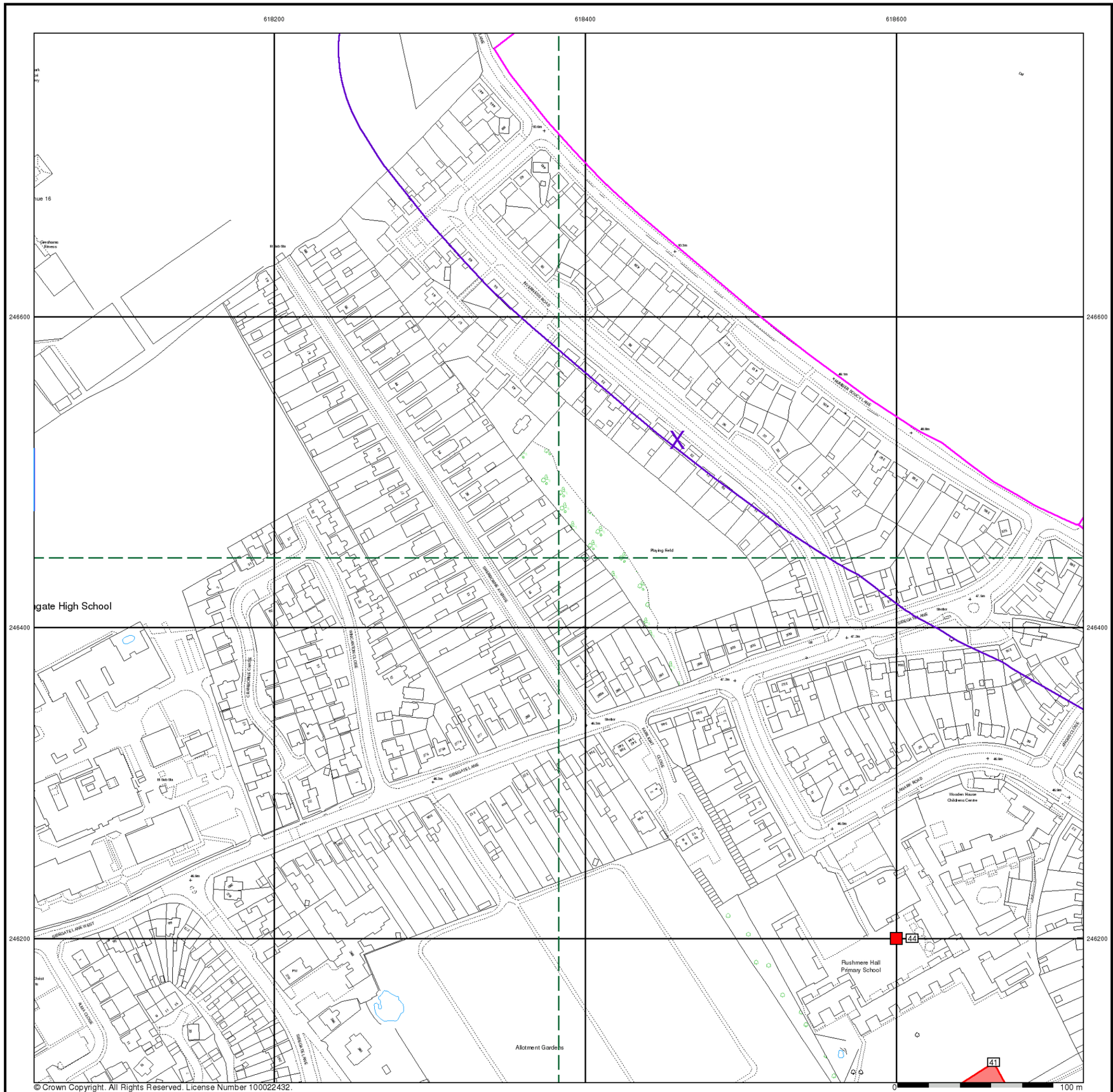


RSA GEOTECHNICS LTD

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

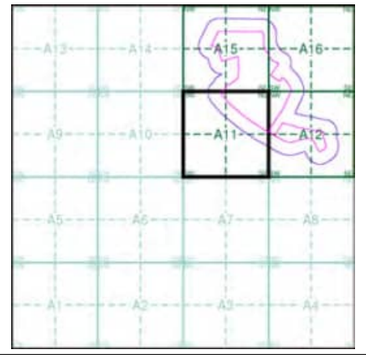
Geological

- 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 A11



Order Details

Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Plot Buffer (m):	100

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

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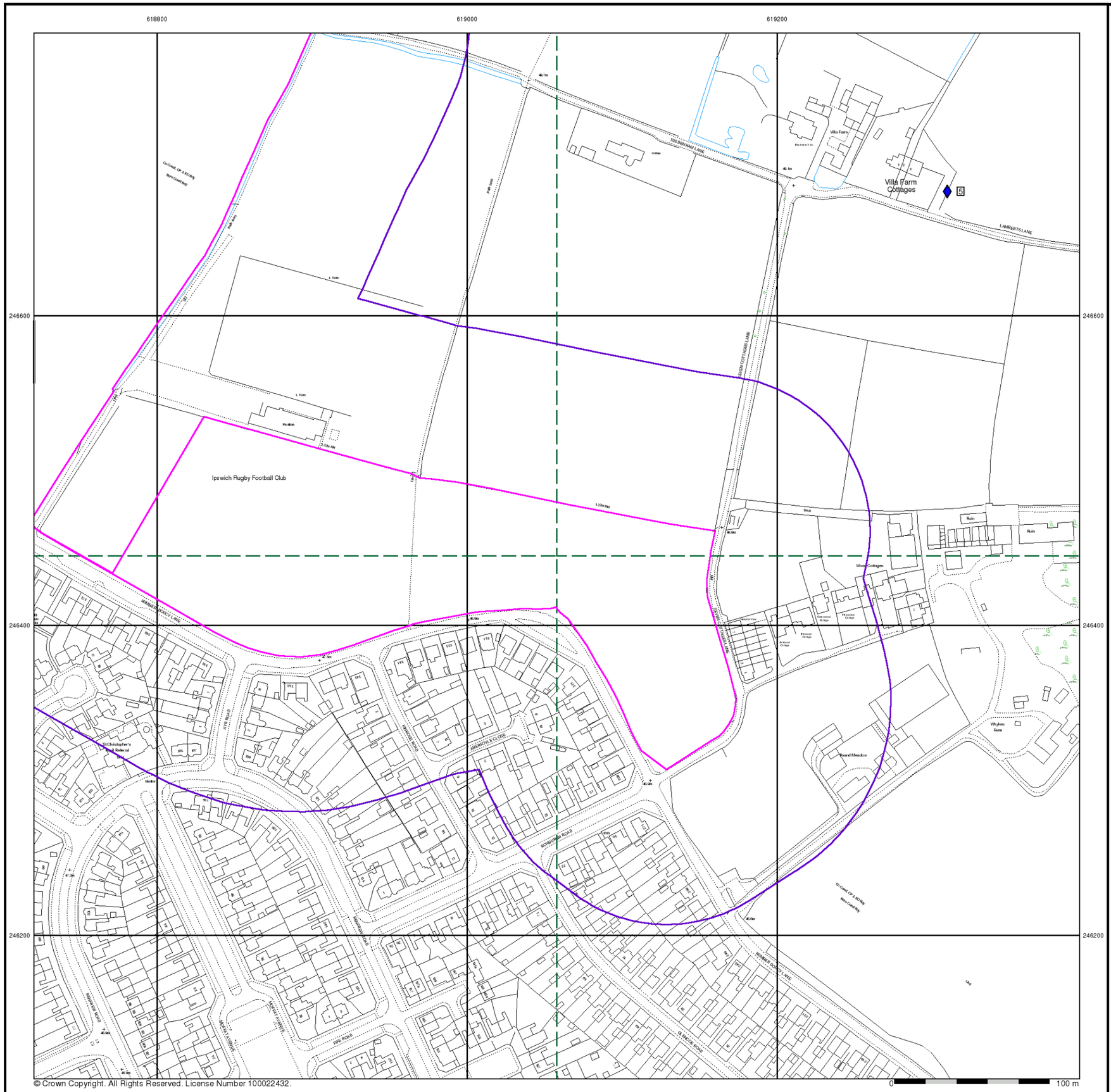

RSA GEOTECHNICS LTD

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

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- BGS Recorded Landfill Site
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- EA Historic Landfill (Polygon)
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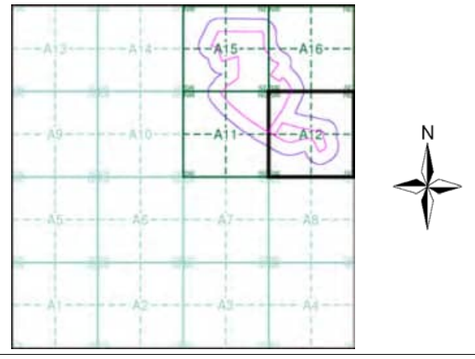
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled 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 A12



Order Details

Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Plot Buffer (m):	100

Site Details

Land North of Humber Doucy Lane, IPSWICH, IP4 3PZ

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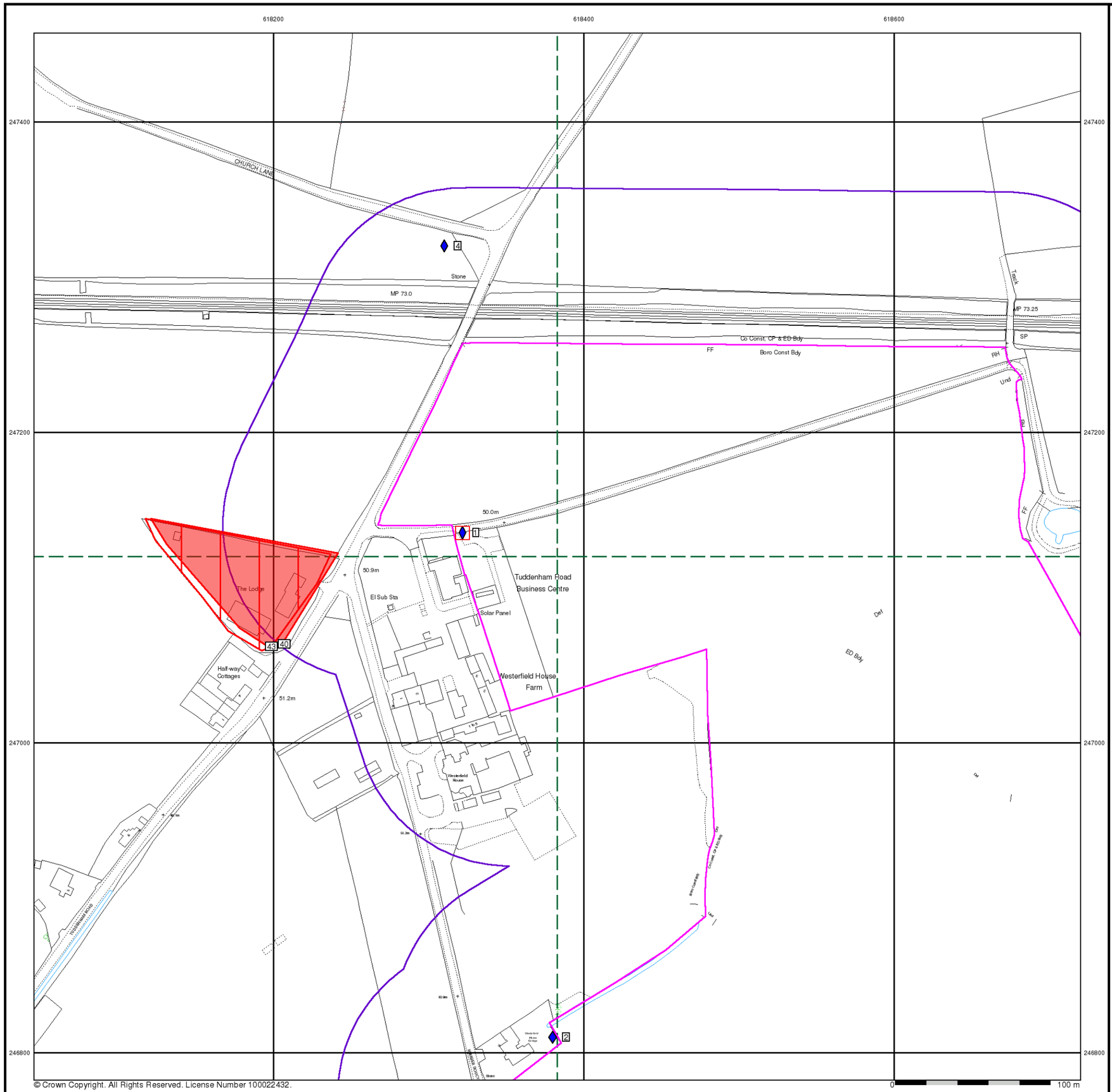

RSA GEOTECHNICS LTD

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
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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
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EA Historic Landfill (Polygon)
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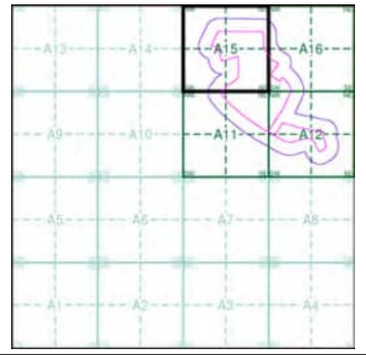
Local Authority Recorded Landfill Site (Location)
Local Authority Recorded Landfill Site
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
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 A15



Order Details

Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Plot Buffer (m):	100

Site Details

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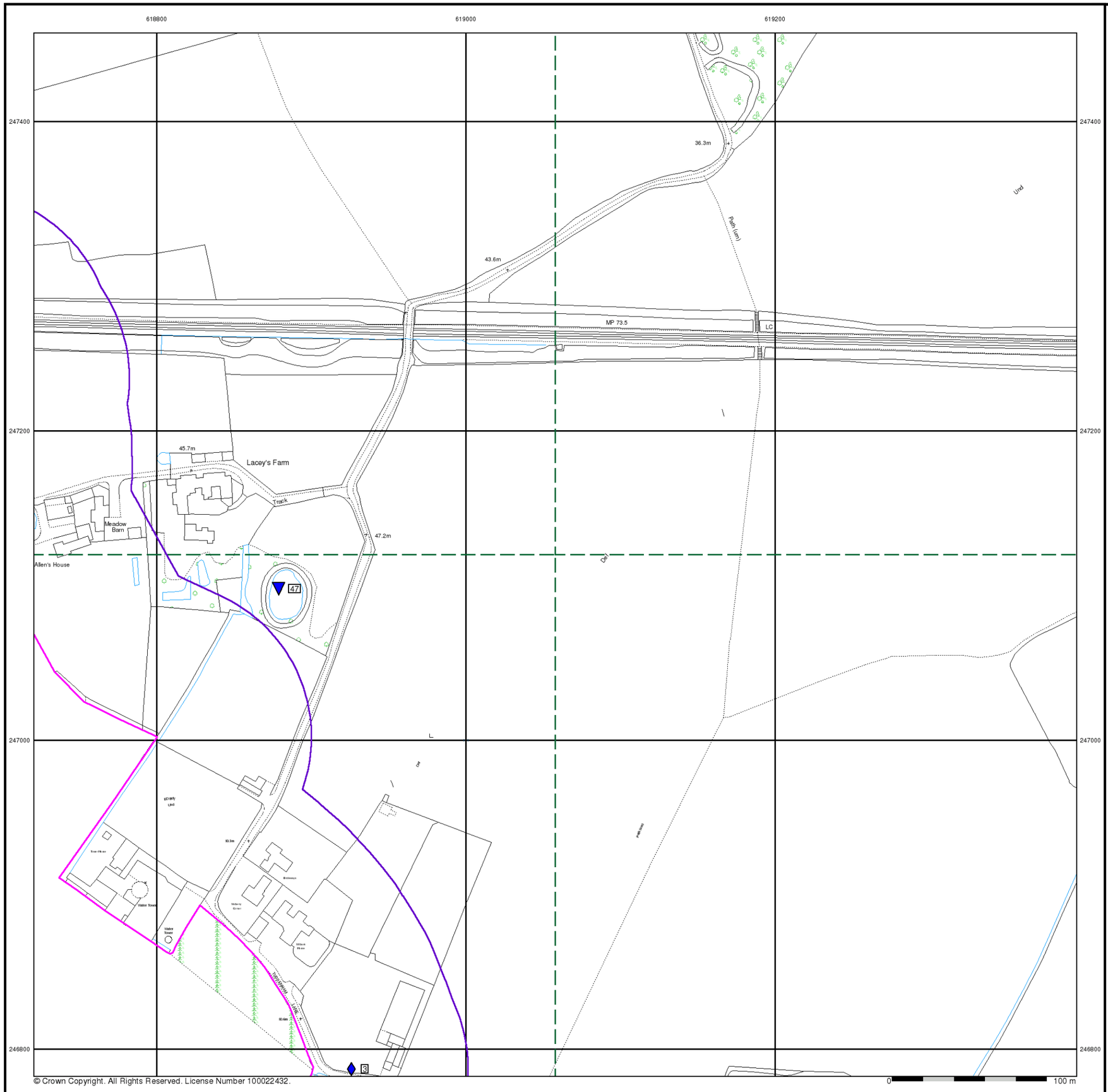

RSA GEOTECHNICS LTD

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
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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
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Local Authority Recorded Landfill Site
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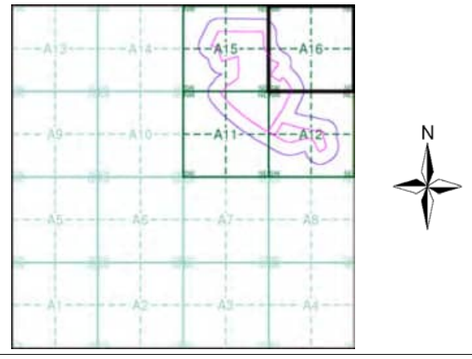
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
Registered Landfill Site
Registered Landfill Site (Location)
Registered Landfill Site (Point Buffered to 100m)
Registered Landfill 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 A16



Order Details

Order Number:	298514201_1_1
Customer Ref:	16118SI/RBIB
National Grid Reference:	618460, 246520
Slice:	A
Site Area (Ha):	31.74
Plot Buffer (m):	100

Site Details

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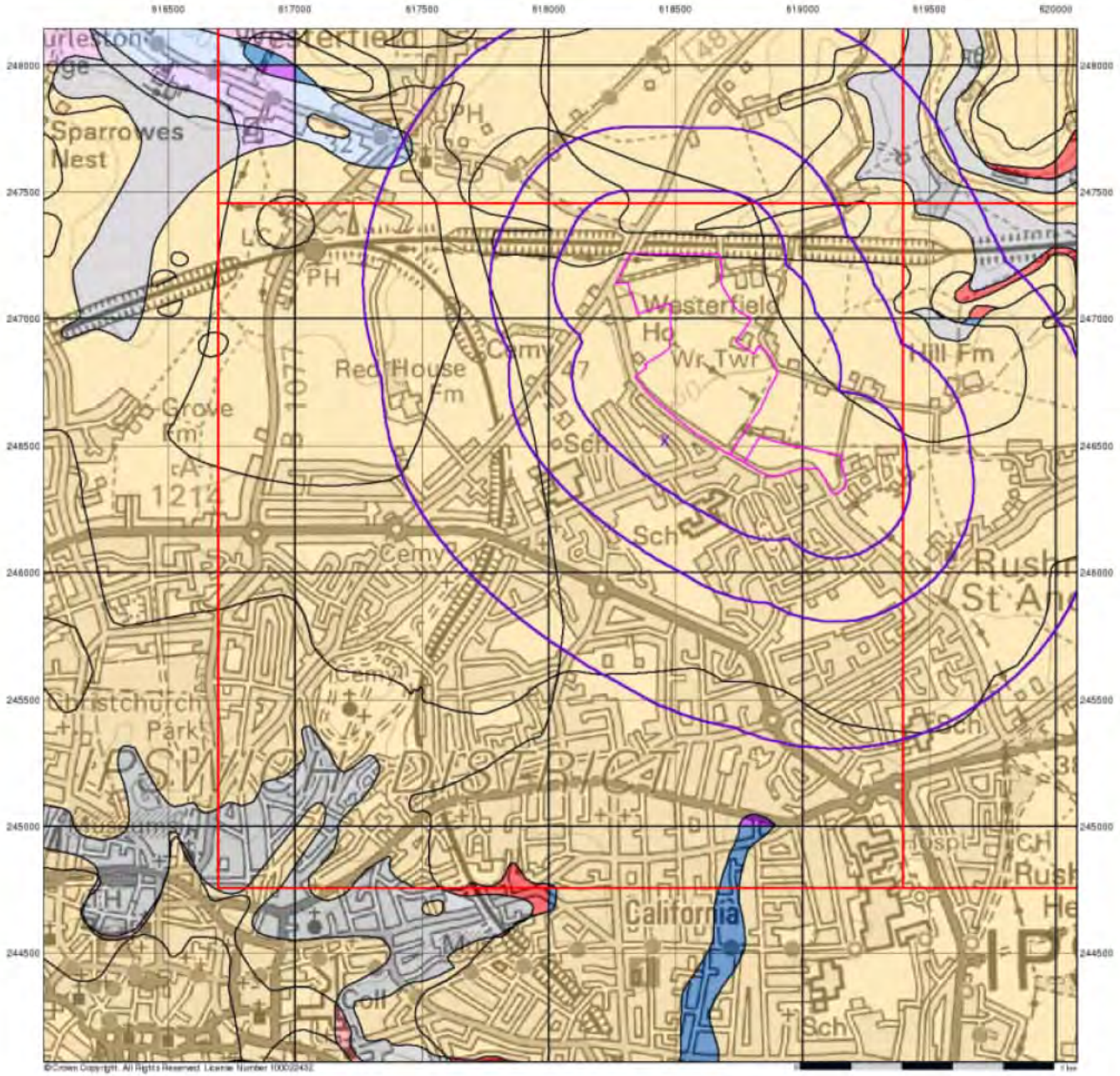

RSA GEOTECHNICS LTD

Groundwater Vulnerability

General

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

Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer
Soluble Rock

Site Sensitivity Context Map - Slice A

Order Details

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Slice:	A
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Search Buffer (m):	1000

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