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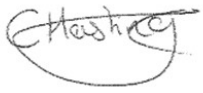
8 MOOR ROAD, BAUGLEY

GEO-ENVIRONMENTAL APPRAISAL

SUMO DEVELOPMENTS LTD

SEPTEMBER 2024

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PROJECT	*8 MOOR ROAD, BAGULEY*	
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SUMMARY

Site Details		
Site Location		*The site is located circa 0.6 kilometres north of Baguley Town and is approximately centred on National Grid Reference 380389, 390007.*
Site Area		*The site is circa 0.14 hectares in area and the topography of site is generally level. Current site features include a residential bungalow with an associated tarmac surfaced driveway. The majority of site is occupied by soft landscaping.*
Preliminary Risk Assessment		
History		*A large pond has historically occupied the central/northern area of site before being backfilled in the 1930s. Unspecified outbuildings have been located on the eastern area. The outbuildings were demolished by the 1990s and the current bungalow was constructed.*
Geology/Hydrogeology		*The site is underlain by superficial Glaciofluvial Sand and Gravel deposits (Secondary A Aquifer) and the bedrock is the Tarporley Formation (Secondary B Aquifer).*
Mining		*The site is not located on the coalfield.*
Environmental Setting		*The nearest watercourse is Baguley Brook 98m east of the site.* *There are no surface water, groundwater or potable water abstractions within 2000m of site.* *The are no landfill sites within 250m.*
Pollution Linkage (PL) Assessment	Human Health	*The human health risk is considered to be Moderate based on the backfilled pond beneath the site.*
	Controlled Waters	*The risk to controlled waters is considered to be Low mobile contamination is not anticipated.*
	Permanent Ground Gas	*A Moderate permanent ground gas risk is present due to the onsite and offsite sources identified.*
Ground Model		
Made Ground		*Made Ground has been encountered beneath the site to depths of between 0.38m and 6.5m bgl and was generally deeper in the northern area of site beneath the former pond.* *The Made Ground generally consisted of reworked topsoil over dark brown variably gravelly clayey silty sand and clay with minor constituents of brick, glass, pottery and wood.*
Natural Soils		*Very loose to loose Sand was in BH01, WS02 and WS05 to depths of between 2.0m and 6.0m bgl. Medium dense brown Sand and Gravel was in BH01, WS01 and WS02 to depths of between 2.5m and 7.5m bgl.* *Stiff brown silty Clay was observed in WS05 to a depth of 3.5m bgl. In addition, firm and firm to stiff Clay was present in BH01 and BH01A between 6.7m and 10.2m bgl.*

Bedrock	*Weak Mudstone was encountered in BH01A at 10.2m bgl.*
Groundwater	*Groundwater strikes were observed in all exploratory holes at depths of between 0.5m and 2.0m bgl in the Made Ground and natural Sand.*
Ground Engineering Assessment	
Foundations	*Deep Made Ground in excess of 6.5m bgl has been encountered in the area of the former pond. The most suitable foundations for the proposed two-storey apartments are considered to be pile foundations end bearing within the Mudstone bedrock which has been encountered at circa 10.0m bgl.* *A suspended floor slab is recommended as part of the proposed development.*
Highways	*CBR values of less than 2.5% should be assumed for untreated Made Ground and 5% for the natural granular soils.*
SuDS	*Poor infiltration rates have been recorded and SuDS drainage is not considered feasible.*
Constraints	*The main limitation is the deep Made Ground encountered to depths in excess of 6.5m bgl beneath the footprint of the proposed apartment building associated with the backfilling of the former pond. In addition, shallow groundwater has been encountered beneath much of the site which would result in the instability of any shallow foundation excavations. Significant dewatering of excavations would also be required.*
GQRA and Revised (PL) Assessment	
Human Health	*Exceedances of lead and PAHs have been recorded in the topsoil and the cohesive Made Ground situated beneath the position of the former pond in the north. In addition, low concentrations of pesticides were recorded in the topsoil of WS01 in the west. All other CoC were recorded at concentrations below the relevant screening values for the site, and no asbestos was detected.* *The risk to human health is Moderate as elevated contamination is in the area of the former pond.*
Controlled Waters	*Significant mobile contamination has not been encountered as part of the Ground Investigation and the risk to controlled waters is Low.*
Permanent Ground Gas	*Final ground gas monitoring results place the site within CS2 and gas precaution measures are required as part of the proposed development. In addition, radon precautions are not required. The risk from permanent ground gases is Moderate.*
Final Appraisal	

The following further work is required to commence the project to the construction phase:

- *Demolition Asbestos survey*
- *Design of remedial strategy, if required*
- *Detailed foundation design*
- *Confirmation of the recommendations made within this report with the Regulators*

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Objectives 1
1.2 Proposed Development 1
1.3 Limitations 1
2.0 SITE SETTING 3
2.1 Location 3
2.2 Site Description 3
3.0 ENVIRONMENTAL SETTING 5
3.1 Site History 5
3.2 Geology 6
3.3 Hydrogeology 7
3.4 Hydrology 7
3.5 Environmental Consultations 7
3.6 Radon 8
3.7 Coal Authority Consultation 8
4.0 CONCEPTUAL SITE MODEL AND RISK ASSESSMENT 9
4.1 Introduction 9
4.2 Potential Contamination Sources 9
4.3 Pollution Linkages 10
4.4 Receptors 10
4.5 Preliminary Conceptual Site Model (CSM) 10
5.0 SCOPE OF INVESTIGATION AND RATIONALE 16
5.1 Project Objectives 16
5.2 Scope of Works 16
5.3 Soil Sampling 17
5.4 Geo-Environmental Analysis 17
5.5 Gas and Groundwater Monitoring 18
6.0 GROUND MODEL 19
6.1 Made Ground 19
6.2 Natural Topsoil 20
6.3 Natural Ground 20
6.4 Bedrock 20
6.5 Groundwater 20
6.6 Watching Brief 20
6.7 Excavation Stability 20
6.8 Excavation/Borehole Progress 20
7.0 GROUND ENGINEERING 21
7.1 Geotechnical Testing Results 21
7.2 Assessment Background 21
7.3 Geotechnical Parameters 22
7.4 Preliminary Foundation Design 22
7.5 Building Near Trees 23
7.6 Floor Slabs 23
7.7 Construction 24
7.8 Concrete Classification 24

7.9 Pavement / Highway Design 24
7.10 Sustainable Urban Drainage System (SuDS) 25

8.0 LAND QUALITY 26

8.1 Geo-Environmental Testing Results - Soils 26
8.2 Generic Quantitative Risk Assessment - Soils 27
8.3 Permanent Ground Gases 28
8.4 Revised Pollution Linkage Assessment 30
8.5 Outline Remedial Strategy 36
8.6 Asbestos in Soils 36
8.7 Health and Safety - Construction and Ground Workers 36
8.8 Waste Classification by Assessment 37
8.9 Waste Acceptance Criteria (WAC) Results 37

9.0 FINAL APPRAISAL 39

9.1 Land Quality 39
9.2 Ground Engineering 39
9.3 Required Supplementary Investigation 39

10.0 RELEVANT INDUSTRY REFERENCES 40

APPENDIX 1 - Plans
APPENDIX 2 - Site Photographs
APPENDIX 3 - Historical Plans
APPENDIX 4 - BGS Records
APPENDIX 5 - Groundsure Report
APPENDIX 6 - CIRIA Risk Assessment Methodology
APPENDIX 7 - Exploratory Hole Logs
APPENDIX 8 - Geo-Environmental Testing Results
APPENDIX 9 - Geotechnical Testing Results
APPENDIX 10 - Permanent Ground Gas Monitoring Results
APPENDIX 11 - Generalised Ground Model
APPENDIX 12 - Soil Infiltration Test Results
APPENDIX 13 - Generic Screening Values (Residential Without Plant Uptake)
APPENDIX 14 - Waste Classification Report
APPENDIX 15 - Relevant Legislative Background
APPENDIX 16 - Limitations

Plans		
Plan Reference	*Revision*	*Title*
GRO-21003-P01	-	*Project Location Plan*
GRO-21003-P02	-	*Preliminary Development Constraints Plan*
GRO-21003-P03	-	*Illustrative Preliminary CSM*
GRO-21003-P04	-	*Exploratory Hole Location Plan*
GRO-21003-P05	-	*Geotechnical Constraints Plan*
GRO-21003-P06	-	*Generalised Ground Model*
GRO-21003-P07	-	*Contamination Plan*
GRO-21003-P08	-	*Illustrative Revised CSM*

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by SUMO Developments Ltd to undertake a Geo-Environmental Appraisal for a site at 8 Moore Road in Bagley.

The objectives of the Preliminary Risk Assessment were to establish the sites environmental and geotechnical background in order to generate a Conceptual Site Model to identify any potential constraints and linkages which may affect the redevelopment of the site.

A main investigation was undertaken in accordance with BS 5930:2015, BS 10175:2013, BS 8576 and BS 22475 to revise the CSM and quantify the level of risk identified in the PRA. The Appraisal has been prepared in accordance with current UK Legislation and to discharge Land Quality pre-commencement planning conditions.

The report has been undertaken to fulfil the requirements of a preliminary risk assessment in accordance with LCRM "Land Contamination Risk Management".

1.2 Proposed Development

The proposed development is residential end use comprising the construction of a two-storey apartment building and the demolition of the existing bungalow.



Proposed Development

1.3 Limitations

This Preliminary Risk Assessment is based on information obtained from a number of sources, and the information is assumed to be correct.

Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

The assessment has been prepared for the exclusive use of the client. No third parties may rely on or reproduce the contents of the report without the written permission of Groundtech Consulting Limited. If any unauthorised third party comes into possession of the report, they rely on it at their own risk and Groundtech Consulting Limited will not be obliged to provide a duty of care.

2.0 SITE SETTING

2.1 Location

The site is located circa 0.6 kilometres north of Baguley Town Centre, as shown on the Project Location Plan *GRO-21003-P01* and is approximately centred on National Grid Reference *380389, 390007.*



Project Location

Access to the site is gained off Moor Road to the east of the site.

2.2 Site Description

The site is irregular in shape and approximately 0.14 hectares in area. The topography is generally level.

Site Features
A residential bungalow currently occupies the site to the east, accessed from a private tarmac surfaced driveway via Moor Road to the east. A small soft landscaped garden is present to the rear (west) of the bungalow. Remnants of the former outbuilding/garage are present at its former position immediately north west of the bungalow.

The majority of site is unoccupied and surfaced with soft landscaping in the form of grass and shrubbery, with trees and hedgerows present at the boundaries. A garden area is located in the central and northern part of site utilised horticulturally with crops and timber present.

Site Boundaries and Surrounding Areas
Wooden fencing forms the northern and southern site boundaries and palisade fencing and trees/hedgerows are along the western and north eastern boundaries.

The site is surrounded by following features/land uses:

- *North* - *Residential housing*
- *East* - *Moor Road followed by residential housing*
- *South* - *Residential housing/woodland*
- West - *Residential housing/woodland*

Site photographs are presented in *Appendix 2* and relevant features are recorded on the Preliminary Development Constraints Plan *GRO-21003-P02.*

3.0 ENVIRONMENTAL SETTING

3.1 Site History

Available historical maps have been obtained, a list of dates and scale are listed in the table below:

Scale	Date
1:1,250	*.1956, 1955/59, 1967/72, 1976/77, 1987/92, 1991/32, 1992/93, 1993, 1994, 1993/94, 1995 & 2003.*
1:2,500	*1876, 1893/98, 1907/10, 1922, 1935 & 1955/58.*
1:10,000/10,560	*1897, 1902, 1907, 1907/08, 1907/11, 1923, 1938, 1954/55, 1959, 1964/67, 1971/72, 1977/81, 1988/90, 1995, 2001, 2010 & 2021.*

The plans were examined and potential issues have been identified and summarised in the table below:

Date	Site	Surrounding Area
1876	*Woodland occupying the majority of site.* *Large **pond** encroaching site from the north, engulfing the north western area of site.*	*Woodland surrounds site to the north, south and west.* *Several **ponds** are present immediately north, c.25m north, c.10m west and c.65m to 150m south.* *Moor Road present immediately east with some residential buildings c.80m north* *Baguley Brook c.150m east flowing tom the north west.*
1893/98	*Woodland no longer indicated onsite.*	***Pond backfilled** c.25m north and c.150m south.* ***Allotment gardens** c.50m south west.* ***Firtree Farm** c.215m west of site and **Moor Farm** c.250m south east.*
1907-10	*No change.*	*Pond c.10m west mostly **backfilled.*** ***Smithy** c.85m west of site.*
1922	*No change.*	*Residential properties immediately west.* *Allotment gardens south west no longer indicated.* *Smithy no longer shown.*
1935	***Pond backfilled.***	***Woodwiss Farm** indicated c.200m north west.*
1945/55	*No change.*	*Moor Farm demolished and replaced with residential housing.*
1955/59	*Small building constructed in the central/eastern area.*	*Majority of **ponds backfilled** with three remaining c.100m and 135m south of site.* *Significant residential expansion east of Moor Road and to the south of the site.*
1987/92	*Small building appears to be **demolished.*** *Construction of residential building to east and associated outbuilding to north.*	*Two large **buildings/warehouses** labelled '**works**' constructed c.100m south west and 200m south west alongside **electricity substation** c.150m south west.* *Firtree Farm and Woodwiss Farm demolished.* *Residential expansion to the north, east and west.*
2022	*Outbuilding **demolished** onsite.*	*Surrounding land use is predominantly residential with the exception of two works buildings c.100m and c.150m south west.* *Three ponds lie c.100m south.*

The historical plans are presented in *Appendix 3.*

3.2 Geology

The following British Geological Survey (BGS) records and other available information were inspected to accurately determine the geology underlying the site:

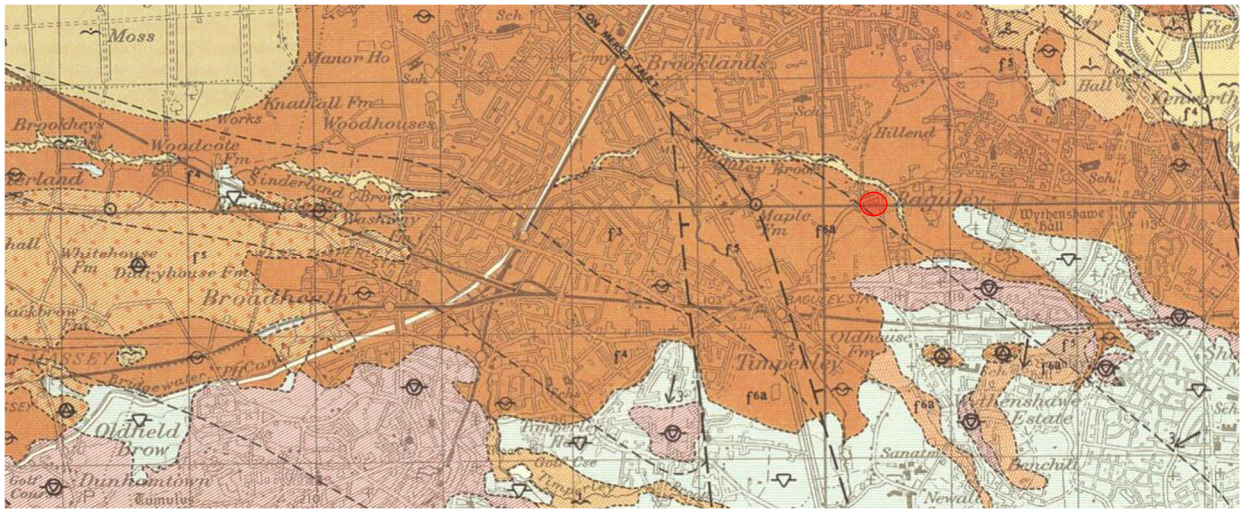
- *1:50,000 Scale Geological Sheet 98, Stockport – Solid and Drift Edition.*
- *BGS Records.*

Made Ground

Made Ground is not shown beneath the site on the available geological plans. However, shallow Made Ground is anticipated associated with the development onsite and deep Made Ground is likely to be present in the area of the former pond.

Superficial Deposits

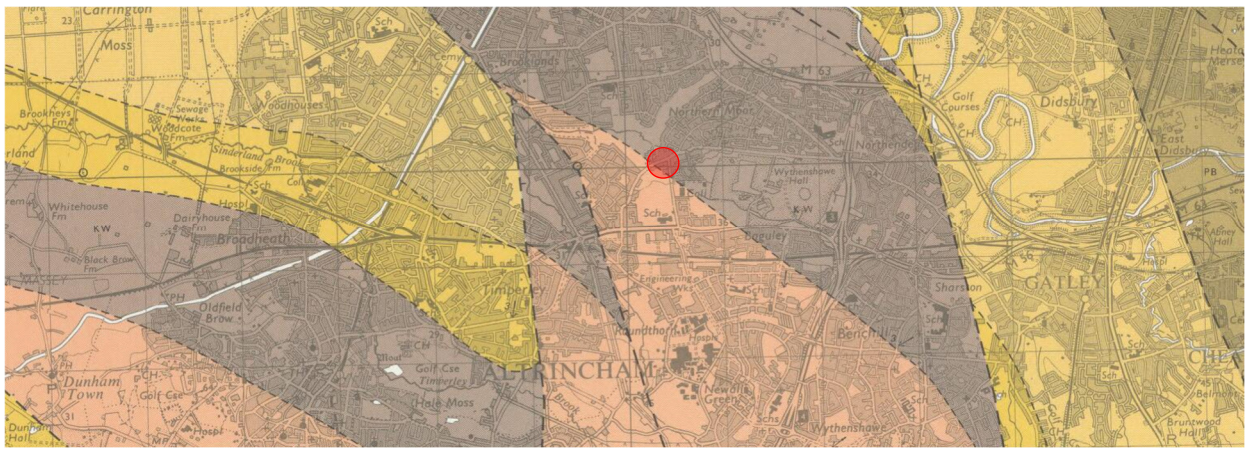
The site is indicated to be underlain by Glaciofluvial Sand and Gravel deposits.



Geological Map – Superficial Deposits

Solid Geology

The solid geology is the Tarporley Formation which comprises Siltstone and Sandstone.



Geological Map – Solid Geology

Geological Faults
No faults are shown on or within an influencing distance of the site.

BGS Records
There are several BGS boreholes located within 250m of site, and generally comprise Made Ground to a maximum depth of 2.0m bgl underlain by gravelly Sand to depths of between 2.4m and 4.0m bgl underlain by firm to stiff Clay to a depth of 10.1m bgl where siltstone was encountered. Competent bedrock deposits were present at 10.65m bgl as moderately strong Sandstone with clay bands.

The BGS records are presented in *Appendix 4.*

3.3 Hydrogeology

The superficial Glaciofluvial Sand and Gravel deposits in this area are classified by the Environment Agency as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The Tarporley Formation bedrock is classified as a Secondary B Aquifer. These are predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

The soils beneath the site are classified as being of high leaching potential.

There are no active groundwater or potable water abstraction licenses within 2000m of site.

The site does not lie within 500m of a Source Protection Zone (SPZ).

3.4 Hydrology

The nearest named watercourse is Baguley Brook located 98m east of site.

There are no surface water abstractions within 2000m of site and there are no active/historic discharge consent licences within 500m of site.

Environment Agency information indicates that the site is outside a flood risk zone and is not at risk of flooding.

3.5 Environmental Consultations

A request has been submitted to the Contaminated Land Officer at Manchester City Council for information pertaining to the site, this information will be forwarded upon receipt.

An environmental consultation has been conducted through Groundsure, which accesses British Geological Survey and Environment Agency databases. The complete Groundsure Report can be found in *Appendix 5* and a summary of the more relevant points is presented in the table below.

Record	<250m	250 – 500m	Description
Authorised Processes	*0*	*0*	-
Radioactive Substances	*1*	*0*	*Radioactive substance authorisation 199m south associated with Gv Instruments Ltd 'keeping and use of radioactive materials (was Rsa60 Section 1)', effective between 2004 and 2015.*
Pollution Incidents	*0*	*0*	-
Landfill and Waste Treatment	*0*	*0*	*No current/historic landfill sites indicated.*
Discharge Consents	*0*	*0*	-
Petrol Filling Stations	*0*	*0*	-
Current Industrial Uses	*7*	*N/A*	*Tram station indicated 118m north.* *Unspecified works 128m south west.* *Associated electricity substation 130m south.*

3.6 Radon

Map 13 'Northern Welsh Marches and Liverpool' from BRE 211 and HPA were examined which defines areas requiring radon protective measures. The probability is less than 1% and Moor Road in Baguley is not an area requiring radon precautions in foundations in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2015 Edition.

The radon data in the Groundsure report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland, the Groundsure report confirms the classification of less than 1% on the radon maps. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supersede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square.

3.7 Coal Authority Consultation

The site is outside the area of a designated coalfield, the Law Society and Coal Authority state a mining search is not required.

4.0 CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

4.1 Introduction

The potential level of risk posed by contaminants in soil and/or groundwater will be influenced by the type and concentration of the contamination at source, the likelihood of exposure occurring, the potential pollution linkages and the likely chronic or acute effects on the receptors.

A contaminant is defined as a substance that has the potential to cause harm, a risk is considered to exist if such a substance is present at sufficient concentrations to cause harm and if a pathway is present a receptor could be exposed to the contaminant.

Section 4.0 compiles the information from the previous sections to assemble a Conceptual Site Model to inform the risk assessment process. The potential sources identified on the site and off the site that are within influencing distance are assessed to determine if pollution linkages exist and an unacceptable risk is posed to human health and controlled waters. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model, the potential pollution linkages are displayed on *GRO-21003-P03* - Illustrative Preliminary CSM.

Three potential types of impacts exist for a site and all three need to be considered in the qualitative preliminary risk assessment:

- *Impacts from sources on the subject site.*
- *Impacts to the surrounding area from the subject site.*
- *Impacts to the subject site from the surrounding area.*

4.2 Potential Contamination Sources

Onsite Sources and Associated Contaminants
From the information obtained during the preliminary risk assessment, possible sources of contamination have been identified which may affect the redevelopment of the site for residential end use.

Made Ground is anticipated onsite associated with the demolition of the outbuildings as well as the backfilling of the former pond which covered a large area of the site. Contaminants of Concern linked with Made Ground may include heavy metals, speciated Polycyclic Aromatic Hydrocarbons (PAHs), asbestos and permanent ground gases.

Offsite Sources and Associated Contaminants
Several potential offsite sources of contamination have been identified during the PRA and include the following:

- *Backfilled ponds c.10m west, c.25m north and 100m to 135m south*
- *Former allotment gardens c.50m south*
- *Smithy c.85m west*
- *Unspecified works c.100m to 200m south west*
- *Electricity substation c.130m south*
- *Historic farms c.200m north west, 215m west and 250m east*

The backfilled ponds are considered to be sources of permanent ground gases depending on the nature of the backfill material.

The historic farms and allotment gardens are considered to be sources of pesticides, metals and PAHs. The farms may also be a source of fuel/oil if they were stored onsite.

The nearby Smithy could be a potential source of metals and PAHs.

The electricity substation may be a source of PCBs depending on the age of the transformers.

Contaminants associated with the unspecified works may include metals, PAHs, SVOC/VOCs, asbestos, ground gases and fuels/oils.

4.3 Pollution Linkages

The definition of a pollution linkage is a medium which allows a contaminant to impact a receptor. Potential pollution linkages have been recognised for the residential development from the identified contamination sources that exist.

At this stage, the potential contaminants identified above are considered to pose an unacceptable risk to human health and controlled waters through the following pollution linkages:

- *Direct soil and dust ingestion*
- *Dermal contact with soil both indoors and outdoors*
- *Indoor air inhalation from soil and vapour*
- *Outdoor inhalation of soil and vapour*
- *Migration and accumulation of ground gas into internal spaces*
- *Impaction of groundwater from soil contamination (diffuse and point)*
- *Impaction of groundwater from groundwater plume*
- *Migration of soil and groundwater contamination impacting surface waters*

4.4 Receptors

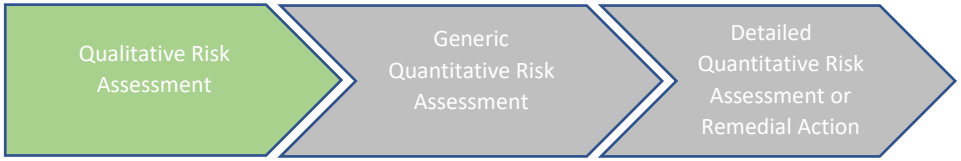
Receptors generally fall into the categories of human health or controlled waters within the river basin system. The recognised receptors are listed below:

- *Residential site end users*
- *Baguley Brook c.98m east*
- *Superficial Secondary A Aquifer and bedrock Secondary B Aquifer*
- *Clean potable water supply pipes*

4.5 Preliminary Conceptual Site Model (CSM)

The factual information obtained from the searches and summarised in Section 2.0 and 3.0 has been used to compile a Preliminary CSM. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. An Illustrative Preliminary CSM is presented as Plan GRO-21003-P03 and the risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in *Appendix 6.*

Human Health Pollution Linkage Assessment



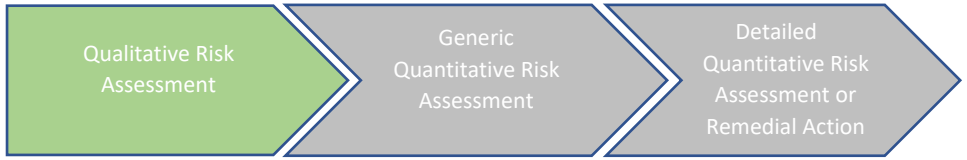
- The table below represents the first stage in the land quality risk assessment process - **the Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					*Qualitative Risk Assessment*	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Likely	Medium	Moderate	*Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.* *The site is currently occupied by a residential bungalow to the east, the rest of site is undeveloped and formed by hedgerow, woodland and grassed areas. The proposed development is a two-storey apartment building.* *Made Ground is likely to be present beneath areas of site due to the backfilled pond and the demolished outbuilding/garage which were situated in the central area. Heavy metals, PAHs and asbestos may be present in the Made Ground soils.* *The former Smithy c.85m west of site is considered to be a source of metals and PAHs and the historic allotment gardens c.50m west could be a source of metals, PAHs and pesticides. However, these are relatively immobile contaminants and will not have migrated onto site.*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
						All of the remaining potential sources of contamination are all at distances where they are unlikely to have impacted to the subject site due the migration distances involved. *The site is to be developed with apartments and soft landscaped garden areas therefore, a viable pollution linkage is considered to exist.*
PL2	Contaminated Soils	Inhalation of vapour.	Unlikely	Medium to Severe	Low	*Volatile vapours have the potential to migrate into confined spaces within the proposed development. No onsite sources of hydrocarbon contamination have been identified through the PRA and a viable pollution linkage is not considered to exist.*
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	*No sources of mobile contamination have been identified onsite and a viable pollution linkage to adjacent site users is not considered to exist.*
PL4	Contaminated Soils	Attacking potable water supply pipe.	Likely	Medium	Moderate	*Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site end users of the tainted water supply. Made Ground may be present at installation depth in the area of the former pond.* *A local water company risk assessment is required prior to construction to advise on the level of protection required for the potable water supply.*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Likely	Medium to Severe	Moderate to High	*Deep Made Ground may be present beneath the site associated with the backfilling of the former pond, depending on the composition of the backfill material ground gases may be generated. The decay of organic material associated with the pond is also a possible source of ground gas.* *Furthermore, several ponds have been identified in the vicinity of the site which have been backfilled and could be a source of ground gases.* *Due the considerable sources of ground gas in the vicinity of the site, an intrusive investigation including the installation and monitoring of ground gas wells will be required.* *The site is not within an area requiring radon precautions within foundations.*

Controlled Waters Pollution Linkage Assessment



- The table below represents the first stage in the land quality risk assessment process – **Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					*Qualitative Risk Assessment*	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	*The site has been occupied by a bungalow and outbuildings. Significant sources of mobile contamination have not been identified however a backfilled pond is present onsite.* *Geological maps indicate that the site is underlain by Glaciofluvial Sand and Gravel (Secondary A Aquifer) and the bedrock is the Tarporley Formation which comprises Siltstone and Sandstone (Secondary B Aquifer).* *The site is not within 500m of a SPZ and the groundwater is not considered to be a sensitive resource. In addition, there are no potable water abstractions within 2000m of site.* *Furthermore, the proposed development is to be mostly covered in hardstanding and a new drainage system installed. This will considerably reduce infiltration and leaching of potential contaminants and a realistic pollution linkage is not considered to exist.*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	*Pollution Linkage 7 refers to the impaction of Baguley Brook 98m east of the site from contaminated soils and groundwater.* *The site is indicated to be underlain by Glaciofluvial sand and gravel which are permeable deposits that provide a pathway to nearby receptors. However, no sources of mobile contamination have been identified onsite by the Preliminary Risk Assessment therefore a pollution linkage is not considered to exist.*

5.0 SCOPE OF INVESTIGATION AND RATIONALE

5.1 Project Objectives

The aim of the fieldwork was to:

Determine the stratification beneath the site.
Maintain a watching brief for visual and olfactory evidence of contamination.
Obtain samples using methodology in current guidance for contamination analysis.
Identify realistic pollution linkages to groundwater.
Obtain relevant geotechnical parameters for preliminary foundation design to address both ULS and SLS conditions.
Determine soil infiltration rates.
Determine if targeted supplementary investigation in areas of concern is required and for remedial design.
Install monitoring standpipes for gas and groundwater monitoring.
Assess the identified pollution linkages in the CSM.

5.2 Scope of Works

The following scope of works was completed on 5th February 2021:

- *6 No. windowless sample boreholes (WS01 to WS06) were drilled to depths of between 2.5m and 6.5m bgl using a Dando Terrier rig.*
- *3 No. trial pits (SuDS1, SuDS2 and SuDS2A) were excavated to depths of between 1.1m and 1.15m bgl.*
- *2 No. soil percolation tests were carried out at positions SuDS1 and SuDS2A.*

Additional Ground Investigation was carried out on 22nd and 23rd August 2022, and comprised:

- *2 No. cable percussion boreholes (BH01 and BH01A) were drilled to depths of between 9.9m and 10.3m bgl.*

The exploratory hole locations are presented on Groundtech Plan *GRO-21003-P04*, and the borehole and trial pit logs are presented in *Appendix 7.*

The exploratory holes were positioned to establish the stratification beneath the site, and target any areas of concern as summarised in the table below:

Location	Target Rationale
WS01 to WS04, BH01 and BH01A	*Proposed apartments*
WS03, WS04, BH01 and BH01A	*Former pond*
SuDS1, SuDS1A and SuDS2	*SuDS drainage areas*
SuDS2	*Former outbuilding*
WS05	*Proposed access driveway*

The exploratory holes were logged by a suitably experienced geo-environmental engineer in general accordance with the following current guidance:

- *BS 5930 'Code of Practice for Site Investigations' 2015.*
- *BS EN 14688-1:2002 'Geotechnical Investigation and Testing – Identification and classification of soil'.*
- *BS EN ISO 14689:2002 'Geotechnical investigation and testing – Identification and classification of rock'.*

5.3 Soil Sampling

During the intrusive investigation, representative samples were taken at regular intervals, changes of strata and where evidence of contamination existed. Laboratory analysis was scheduled on the samples obtained.

The samples obtained are summarised in the table below:

Soil Sample	Number
Environmental Sample	*25*
Disturbed Sample	*18*

The samples have been obtained in accordance with current environmental and geotechnical guidance. The sampling plan has been designed to obtain samples from all required strata using the correct methodology.

Disturbed samples of soil for chemical analysis were placed in the correct sampling containers as required by the laboratory in accordance with their MCERTS and UKAS Accreditation. Transportation was arranged in a timely manner and the samples were at the correct temperature.

The sample locations and depths are recorded on the exploratory logs.

5.4 Geo-Environmental Analysis

To inform the Generic Quantitative Risk Assessment, the following geo-environmental testing was scheduled to assess the risk from contamination on the site. The testing is based on the potential sources identified in the PRA and observations made during the Ground Investigation.

Contaminants of Concern	Matrix	Number
Arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, zinc, sulphate and pH.	*Soil*	*6*
Speciated PAHs	*Soil*	*6*
Asbestos Screen	*Soil*	*6*
Pesticides	*Soil*	*3*

The Geo-Environmental Laboratory Testing Results are presented in *Appendix 8.*

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' 1990. The following tests were scheduled:

British Standard	Test Method	Number
Part 2	*Water Content*	*2*
Part 2	*Plasticity Index Analysis*	*2*
Part 3	*pH Value*	*3*
Part 3	*Water Soluble Sulphate Content*	*3*

The Geotechnical Laboratory Testing Results are presented in *Appendix 9.*

5.5 Gas and Groundwater Monitoring

Gas and groundwater monitoring installations were constructed in the boreholes. The standpipes consisted of polyvinyl chloride (PVC) and high-density polyethylene (HDPE) pipe - a bentonite seal was placed around the plain pipe and a clean gravel pack was placed around the slotted pipe. A summary of the installation construction is presented in the table below:

Location	Depth (m bgl)	Response Zone (m bgl)	Targeted Strata	Reason
BH01A	*5.0*	*1.0 – 5.0*	*Made Ground*	*Ground Gas*
WS02	*3.0*	*1.0 – 3.0*	*Made Ground, Sand and Clay*	*Ground Gas*
WS03	*4.0*	*1.0 – 4.0*	*Made Ground*	*Ground Gas*
WS04	*4.0*	*1.0 – 4.0*	*Made Ground*	*Ground Gas*

Permanent gas and flow rate monitoring was carried out using a GFM 436 infrared gas monitor with integral electronic flow analyser. The measurements taken are listed below:

- *Oxygen (O_2), carbon dioxide (CO_2) and methane (CH_4) as the percentage volume in air (%v/v).*
- *Hydrogen sulphide (H_2S) and carbon monoxide (CO) as the percentage volume in air (%v/v).*
- *Lower Explosive Limit (%LEL) of methane.*
- *Atmospheric and borehole pressure, including pressure trend.*
- *Flow measurements (l/hr).*
- *Weather and ground surface conditions.*

Both peak and steady state conditions were monitored to understand the behaviour of the permanent ground gas, the steady state conditions were recorded by allowing the gas monitor to run for a minimum of 3 minutes.

Permanent gas and groundwater monitoring results are presented in *Appendix 10.*

6.0 GROUND MODEL

6.1 Made Ground

Made Ground has been encountered beneath the site to depths of between 0.38m and in excess of 6.5m bgl. The deepest Made Ground was observed in WS03, WS04, BH01 and BH01A in the area of the former pond in the northern part of the site.

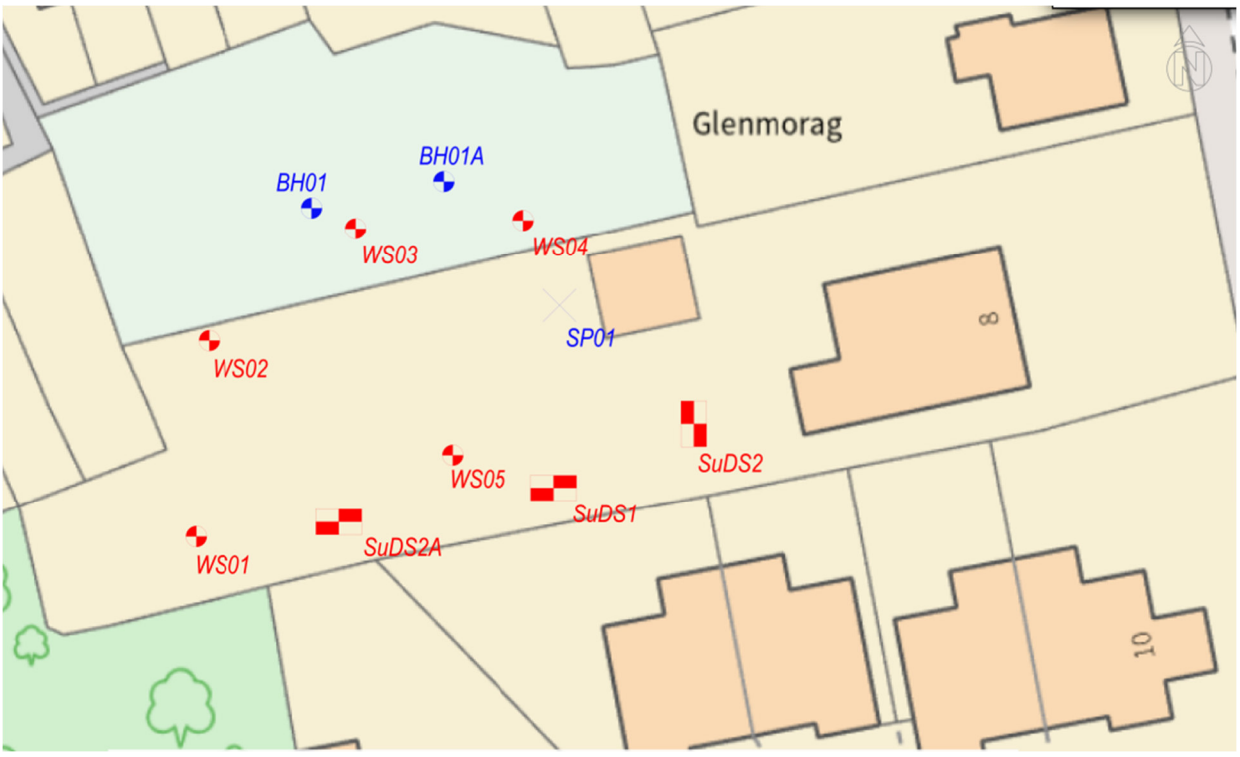
The surfacing of the Made Ground consisted of slightly gravelly slightly clayey sandy topsoil with common minor constituents of brick, glass, mudstone, siltstone and chert to a maximum depth of 1.0m bgl.

Three main Made Ground populations were encountered during the investigation and are described below:

1. *Dark brown slightly gravelly slightly clayey silty sand with minor constituents of brick, glass, pottery, wood and plant material was encountered within WS03, WS04, BH01 and BH01A from depths of between 0.3m and 1.55m bgl to depths of between 5.0m and 6.5m bgl.*

2. *Dark brown/black occasionally silty gravelly sand with minor constituents of brick, pottery and wood was present in WS05 and SuDS2 to depths of between 1.1m and 1.6m bgl.*

3. Soft clay with minor constituents of brick, wood and plant material was present locally in WS03 at depths of between 1.0m and 1.55m bgl and firm grey mottled brown slightly sandy silty clay was observed locally in WS05 at 0.9m to 1.1m bgl.



Exploratory Hole Locations

6.2 Natural Topsoil

Natural dark brown slightly silty slightly sandy topsoil was encountered locally in WS01 (0.35m) and WS02 (1.0m) in the west of the site.

6.3 Natural Ground

The natural strata encountered generally confirmed the published geological records.

Three main natural stratification were encountered during the investigation and are described below:

- *Very loose to loose Sand was present in BH01 (5.0m to 6.0m bgl), WS02 (1.0m to 2.0m bgl) and WS05 (1.6m to 2.95m bgl).*
- *Medium dense brown Sand and Gravel was present in BH01 (6.0m to 7.5m bgl), WS01 (0.35m to 2.5m bgl) and WS02 (2.0m to 2.8m bgl).*
- *Stiff brown silty Clay was observed in WS05 to a depth of 3.5m bgl. In addition, firm and firm to stiff Clay was present in BH01 and BH01A between 6.7m and 10.2m bgl.*

6.4 Bedrock

Bedrock was encountered in BH01A at 10.3m bgl and comprised extremely weak brown residually weathered Mudstone recovered as firm to stiff slightly gravelly clay.

A refusal also occurred in BH01 at 9.9m bgl which may have been on the Mudstone bedrock.

6.5 Groundwater

Groundwater strikes were observed in all exploratory holes from depths of between 0.5m and 2.0m bgl within the Made Ground and Sand deposits.

6.6 Watching Brief

A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination.

No visual or olfactory evidence of contamination was noted.

6.7 Excavation Stability

Pit side collapse was commonly observed while excavating the trial pits within the natural sand deposits.

6.8 Excavation/Borehole Progress

Slow progress while excavating the trial pits was not experienced.

Chiselling was undertaken while excavating the cable percussion boreholes within the firm cobbly Clay at a minimum depth of 9.0m bgl inhibiting the progression of BH01.

7.0 GROUND ENGINEERING

7.1 Geotechnical Testing Results

Comparison of water content and the value of 0.4 times the Liquid Limit in accordance with BRE Digest 412 'Desiccation in Clay Soils' suggests significant desiccation has taken place when 0.4 times the Liquid Limit is greater than the actual water measured water content. This is a rudimentary method but also a good guide.

Results of the plasticity testing and the volume change potential of the Clay is summarised in the table below:

Reference	Depth (m bgl)	Modified PI	Volume Change Potential	Desiccated Y/N
BH01	*7 – 7.5*	*14.7*	*Low*	*N*
BH01	*9.0*	*19*	*Low*	*Y*

7.2 Assessment Background

The ground engineering investigation has been undertaken to formulate an accurate ground model in order to undertake preliminary foundation design. The ground model has been constructed with a moderate to high level of confidence and has evolved from the information obtained by the PRA.

The proposed development comprises the demolition of the existing residential dwelling and construction of a two-storey apartment block.

Historically, the site has been developed residentially with a bungalow located present in the east and a recently demolished garage also in the east. The rest of site has generally been undeveloped however a large pond occupied the central and northern areas which was infilled in the 1930s.

Deep Made Ground has been encountered in the area of the former pond in WS03, WS04, BH01 and BH01A to depths in excess of 6.5m bgl. Outside of the pond, Made Ground was present to a maximum depth of 1.6m bgl. The natural ground consisted of very loose to loose Sand and Gravel to depths of up to 2.95m bgl and medium dense Sand and Gravel to depths of 7.5m in BH01. Firm to stiff Clay was observed to 10.2m bgl in BH01A and was underlain by weak Mudstone.

Groundwater has been encountered beneath the site from depths of between 0.5m and 2.0m bgl and was present in the Made Ground and natural Sand.

The main limitation is the deep Made Ground encountered to depths in excess of 6.5m bgl beneath the footprint of the proposed apartment building associated with the backfilling of the former pond. Made Ground is not considered a suitable bearing stratum and therefore traditional strip/trench and pad foundations are not considered a feasible option.

In addition, shallow groundwater has been encountered beneath much of the site which would result in the instability of any shallow foundation excavations. Significant dewatering of excavations would also be required.

A geotechnical constraints plan detailing the area of deep Made Ground is presented on Plan *GRO-21003-P05.*

As part of the enabling works, the existing bungalow will need to be demolished and all foundations grubbed up. In addition, the topsoil materials will need to be stripped and stockpiled separately. This may result in

the requirement for granular soils to replace the topsoil materials at the surface of the site to act as a construction platform.

7.3 Geotechnical Parameters

The geotechnical test results have been evaluated to derive geotechnical parameters for the soils underlying the site. A 'depth to SPT N' value graph is presented on Plan *GRO-21003-P06* in *Appendix 11* to provide a generalised ground model for the site.

Characterisation of the geotechnical parameters has been undertaken to select a characteristic value, which is a cautious estimate of the value affecting the occurrence of the limit state.

The characteristic values of the strata have been selected based on correlation with SPT 'N' Values. The characteristic values for Ultimate Limit State (ULS) selected are presented in the table below.

Stratum	Parameter	Selected Characteristic Value
Very loose to loose Sand and Gravel	*Drained Angle of Friction (ϕ')*	*28°*
Medium dense Sand & Gravel	*Drained Angle of Friction (ϕ')*	*32°*
Firm to stiff Clay	*Undrained shear strength (C_u)*	*90kN/m^2*
Weak Mudstone	*Undrained shear strength (C_u)*	*200kN/m^2*

7.4 Preliminary Foundation Design

Traditional shallow foundations are not considered feasible at the site due to significant thickness of Made Ground positioned beneath the proposed apartment building in the area of the former pond. Additionally, varying ground conditions and shallow groundwater have been encountered precluding the use of shallow foundations for the apartments.

The most suitable foundations are considered to be pile foundations.

Pile Foundations

Preliminary design by calculation has been carried out using due skill and care using the global factor of safety method. The most suitable and cost beneficial type of pile is considered to be a driven pile transferring loads to the underlying weak Mudstone bedrock which has been encountered at 10.2m bgl in BH01A.

At this stage, the loadings are not available. Pile caps should be constructed and a reinforced ring beam spanned between each pile cap to support the loadings from the walls and floor slab.

Design by Calculation
The preliminary design by calculation is based on the following ground model taken from BH01/BH01A:

- *Made Ground to 6.5m bgl*
- *Medium Dense Sand & Gravel to 7.5m bgl*
- *Firm to stiff Clay to 10.0m bgl*
- *Weak Mudstone to 11.0m bgl*

For a single driven concrete 225mm pile 10.5m in length end bearing in the weak Mudstone bedrock, an allowable load of 120kN has been calculated. If greater loads are required, consideration should be given to larger diameter piles or groups. The design should be confirmed with the preferred piling contractor.

If concrete piles are not considered to suitable to provide sufficient lateral stability, consideration should be given to the use of steel piles.

The ground conditions indicate downdrag is potentially an issue based on the deep Made Ground that has been encountered and should be taken into consideration by the detailed final design.

An appropriate working platform should be constructed in accordance with BR470 guidance.

Design Validation

The piling type, length, depth of reinforcement and design should be discussed with a specialist piling contractor. They can then undertake the detailed design including drawings and specifications to provide fitness for purpose design.

Static load testing on working piles is recommended as a minimum to validate the design for ULS and SLS conditions in accordance with Eurocode 7. Due to the size of the development and the associated loadings, static load testing is not economical and an appropriate Factor of Safety should be used in the design. The piles are likely to be driven to sett using pile driving formulae.

All piling work should be carried out in accordance with BS EN 12699:2015 'Execution of special geotechnical works. Displacement piles'.

Construction Recommendations

The recommendations in this appraisal are preliminary and the detailed design should be developed in advance and during the construction phase. If the ground conditions or groundwater regime encountered during the construction phase differ significantly to the conditions encountered during the Ground Investigation, work should cease and Groundtech Consulting contacted for further advice.

During the construction phase, supervision by a suitably qualified geotechnical engineer should be on a continuous basis to check the design assumptions are correct and construction conforms to design in accordance with EC7. Supervision should include inspections, Control Ground Investigations and monitoring by a suitably qualified geotechnical engineer.

7.5 Building Near Trees

It is unlikely that foundation excavations will encounter cohesive strata in the vicinity of existing, proposed or recently removed trees. Therefore, foundations will not require adjusting in accordance with NHBC Standards Chapter 4.2.

All foundations should be deepened below roots of greater than 5mm diameter during excavations for footings.

7.6 Floor Slabs

A suspended floor slab will be required as deep Made Ground is present beneath the proposed apartment block.

7.7 Construction

The trial pits indicate that instability of excavations is anticipated within the Made Ground and natural granular deposits. Instability of the ground should therefore be considered in the groundworks method statements.

Tracked high specification plant is recommended to maintain the build programme. Breaking equipment will also be required during the demolition works.

Consideration will also need to be given to the shallow groundwater conditions that exist beneath the site and dewatering of excavations for foundations and services is likely to be required.

7.8 Concrete Classification

Made Ground
Water soluble sulphate testing was undertaken on two samples of the Made Ground. The range of soluble sulphate (SO_4) recorded is 19.0mg/l to 22.9mg/l and associated pH values ranged between 7.16 and 7.22 indicating near neutral conditions.

For a dataset containing less than five results, the highest water-soluble sulphate value and the lowest pH value should be taken as the characteristic value. For the Made Ground, a characteristic sulphate concentration of 22.9mg/l and a pH value of 7.16 has been selected.

Natural Strata
Water-soluble sulphate testing was also undertaken on three samples of the natural ground. The range of soluble sulphate recorded is 7.1mg/l to 47.4mg/l and associated pH values ranged between 4.88 and 7.7.

A similar dataset was tested for the natural, the selected characteristic water soluble sulphate value is 47.4mg/l and the pH value is 4.88.

Groundwater has been encountered beneath the site at shallow depths within the natural granular deposits and is considered mobile.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-3z and sulphate class DS-1 conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site-specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

7.9 Pavement / Highway Design

CBR values of greater than 5% are likely to be achieved in undisturbed natural granular soils for pavement design purposes, unless proven otherwise by in-situ testing at sub-base level by a specialist geotechnical engineer. As a minimum, the subgrade should be proof rolled prior to construction. Some reengineering of the subgrade is required prior to highway construction to achieve the required design CBR value.

Untreated Made Ground should be assumed to have a CBR value of less than 2.5%, unless proven otherwise. Highways Agency document HD25 'Interim Advice Note 73/06 Revision 1' (2009) states that where a subgrade has a CBR value lower than 2.5%, it is considered unsuitable support for a pavement foundation since it would tend to deform under construction traffic and must be improved.

Where highways are proposed in areas underlain by Made Ground, it is recommended that Made Ground to a depth of 1.0m below subgrade level is excavated, sorted and classified in accordance with Series 600 (Earthworks) of the Highways Agency "Specification for Highways Works". Following the above, any suitable material which can be used as part of highway construction shall be compacted in accordance with the earthworks specification.

The soils are considered to be frost susceptible due to the fines content and pavement / highway construction should be a minimum thickness of 450mm to mitigate the risk.

7.10 Sustainable Urban Drainage System (SuDS)

Soil percolation testing was undertaken across the site at positions SuDS1 and SuDS2A at depths of between 1.1m and 1.15m bgl within the natural granular Sand deposits. The results are presented in *Appendix 12* and summarised below:

Location	Test No.	Soil Infiltration Rate (m/sec)
SuDS1	*1*	*1.14×10^{-7}*
SuDS2	*1*	*1.17×10^{-7}*

The soil infiltration rates indicate that poor drainage conditions exist within the natural soils. In addition, shallow groundwater is present beneath the site which will preclude the use as SuDS systems require a freeboard of 1.0m.

Based on the soil percolation test results, the use of SuDS drainage within the natural ground is not feasible.

8.0 LAND QUALITY

8.1 Geo-Environmental Testing Results - Soils

Six samples of Made Ground have been tested for a range of relevant Contaminants of Concern. In accordance with LCRM, a Generic Quantitative Risk Assessment (GQRA) has been undertaken to determine the significance of the concentrations as derived through Geo-Environmental analysis.

The GQRA process comprises the comparison of the actual concentrations measured on site with Generic Assessment Criteria (GACs) for the protection of human health.

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The GACs used for the assessment of soil concentrations have been derived using the CLEA model. The GACs used and their ranking of importance are listed below:

- *Soil Guideline Values (SGVs) which demonstrate minimal risk.*
- *LQM/CIEH S4ULs which use the same toxicological data as the SGVs but different exposure criteria.*
- *C4SLs which demonstrate low risk.*

In deriving the GACs for use on Brownfield sites, we have assumed a 1.0% Soil Organic Matter unless the results indicate otherwise.

The proposed end-use for the site is a residential development comprising a two-storey apartment building with areas of hardsurfacing and soft landscaping. We have therefore undertaken the GQRA on the basis that the proposed development site falls under the Residential (without Plant Uptake) land-use scenario as defined in SR3 (EA, 2009b).

The strata or sources of contamination targeted by the laboratory testing scheduled is summarised in the table below:

Strata	Number of Samples Tested	Locations
Cohesive Made Ground (Population1)	*2*	*WS03 and WS05.*
Topsoil (Population 2)	*3*	*WS01, WS02 and WS04.*
Stockpile (Population 3)	*1*	*SP01*
Former pond area	*3*	*WS03, WS04 and WS05*

A summary of the Geo-Environmental Testing results is presented below and the GQRA Screening Values are presented in *Appendix 13:*

Metals				
Contaminant	Range (mg/kg)	Screening Values (mg/kg)	Exceedances	Locations
Arsenic	*12.6 – 25.7*	*40*	-	-
Cadmium	*0.2 – 3.7*	*85*	-	-
Chromium	*12.8 – 42.5*	*910*	-	-
Hexavalent Chromium	*<0.3*	*21*	-	-
Copper	*48 – 154*	*7100*	-	-
Lead	*153 – 904*	*310*	*2*	*WS02 @ 0.1m, WS04 @ 0.1m.*
Mercury	*<0.1 – 1.2*	*1.2*	-	-

Nickel	*10.4 – 60.1*	*180*	-	-
Selenium	*<1 – 2*	*430*	-	-
Zinc	*115 – 330*	*40000*	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)				
Contaminant	Range (mg/kg)	Screening Values (mg/kg)	Exceedances	Locations
Naphthalene	*<0.04 – 0.57*	*2.3 f*	-	-
Acenaphthylene	*0.06 – 0.17*	*2900*	-	-
Acenaphthene	*<0.05 – 0.18*	*3000*	-	-
Fluorene	*<0.04 – 0.21*	*2800*	-	-
Phenanthrene	*0.66 – 2.87*	*1300*	-	-
Anthracene	*0.08 – 0.95*	*31000*	-	-
Fluoranthene	*1.06 – 9.02*	*2800*	-	-
Pyrene	*0.97 – 7.75*	*3700*	-	-
Benzo(a)anthracene	*0.58 – 5.85*	*11*	-	-
Chrysene	*0.54 – 5.04*	*30*	-	-
Benzo(b)fluoranthene	*0.73 – 6.83*	*3.9*	*2*	*WS03 @ 1.2m* *WS04 @ 0.1m.*
Benzo(k)fluoranthene	*0.28 – 2.66*	*110*	-	-
Benzo(a)pyrene	*0.49 – 5.16*	*3.2*	*1*	*WS03 @ 1.2m.*
Indeno(123cd)pyrene	*0.34 – 3.26*	*45*	-	-
Dibenzo(ah)anthracene	*0.06 – 0.46*	*0.31*	*2*	*WS03 @ 1.2m* *WS04 @ 0.1m.*
Benzo(ghi)perylene	*0.36 – 3.12*	*360*	-	-
Others				
Organic Matter (%) *pH*	*6.3 – 22.9* *7.16 – 7.76*			
Asbestos Screen				
Position	Depth (m bgl)		Result	
WS01	*0.15*		*None Detected*	
WS02	*0.10*		*None Detected*	
WS03	*1.20*		*None Detected*	
WS04	*0.10*		*None Detected*	
WS05	*1.00*		*None Detected*	
SP01	-		*None Detected*	

8.2 Generic Quantitative Risk Assessment - Soils

Made Ground has generally been recorded beneath the site to depths of between 0.38m and 1.6m bgl with minor constituents of brick, ceramics and wood. Deeper Made Ground is present in the north of the site in the area of the former pond to depths in excess of 6.5m bgl.

Heavy Metals

Elevated concentrations of lead have been recorded within two of the samples screened based on the site being redeveloped residentially with an apartment building. The two elevated concentrations of lead were recorded in WS02 (0.1m bgl) and WS04 (0.1m bgl) in the northern area of site, within the Made Ground (reworked topsoil) and Topsoil populations. The elevations at these positions are considered to be associated with the soils associated with backfilling of the former pond.

No other elevated metals were recorded.

Polycyclic Aromatic Hydrocarbons (PAHs)
Elevated concentrations of Benzo(b)fluoranthene and Dibenzo(ah)anthracene have been recorded in WS03 in the Made Ground clay and WS04 in the reworked topsoil. In addition, elevated levels of Benzo(a)pyrene have been recorded within WS03. The exploratory holes with the elevated levels are located within the footprint of the former pond and therefore, the contamination is again associated with the materials used to infill the pond.

No other elevated PAHs have been recorded.

Pesticides
Three samples of topsoil were screened for pesticides and no detectable levels of pesticides were recorded in two of the samples. Some minor detectable levels of pesticides of up to 82ug/kg were present within one of the samples screened from WS01 in the west of the site.

Asbestos
Asbestos has not been detected in any of the six Made Ground samples screened.

Stockpile Material
A soil sample (SP01) was taken from a stockpile that was present onsite. No elevated CoC were recorded and no asbestos was detected.

A contamination plan is presented in *GRO-21003-P07.*

8.3 Permanent Ground Gases

Six monitoring visits have been carried out to date on the 8th of September 2022 and the 7th of March 2023.

A maximum concentration of methane (CH_4) of 1.8%v/v was recorded. Carbon dioxide (CO_2) has been recorded at a maximum concentration of 6.7%v/v. Detectable levels of oxygen (O_2) were recorded in the standpipes at a minimum level of 10.2%v/v.

No positive gas flow rates were detected during the monitoring visits.

The atmospheric pressure recorded between 987mb to 1006mb during the monitoring visit which was completed during a periods of falling and steady barometric pressure.

Groundwater was recorded in BH10A and WS04 at depths of between 1.14m and 1.41m begl.

Characterisation of the Gas Screening Value (GSV)
Based upon the initial results recorded, in accordance with CIRIA Report C665, the risk to the site from ground gases has been assessed by converting the results to gas screening values (GSVs), calculated by multiplying the typical maximum gas concentrations with the recorded maximum positive flow rates. In addition, individual "hazardous gas flow rates" (Qhg) have been derived for each monitoring point. As no levels of methane have been recorded, a GSV for carbon dioxide only has been calculated.

GSV (l/hr) = max borehole flow rate (l/hr) x max gas concentration (%)

For this final assessment, the maximum recorded concentration of methane of 1.8%v/v and the maximum concentration of carbon dioxide of 6.7%v/v has been used. No positive gas flow rates have been detected therefore the limit of detection of the gas analyser of 0.1l/hr has been adopted to calculate the GSV.

Carbon Dioxide GSV = 0.067 (6.7%) x 0.1 = 0.0067 l/hr
Methane GSV = 0.018 (1.8%) x 0.1 = 0.0018 l/hr

In order to assess the ground gas regime beneath the site and the need to incorporate ground gas precautions, guidance was taken from CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'. Based on the site being developed with a college building, the Wilson and Card method has been used to carry out the assessment.

When considering the results, in accordance with CIRIA C665 (Section A Development and Table 8.5 – Modified Wilson and Card Classification) it can be seen that the GSV values for carbon dioxide correspond with CS1 criteria (GSV of less than 0.07 l/hr) however due to the concentrations of methane and carbon dioxide encountered at the site and the former pond present in the northern area a source of ground gas has been identified and therefore gas protection measures are required.

Characteristic Situation 2

Based on the final results, no gas protection measures will be required, the final assessment will determine whether an increase to CS2 is required based on the typical maximum carbon dioxide concentrations.

An extract of the Modified Wilson and Card table is presented below:

Characteristic Situation (Wilson and Card)	Methane		Carbon Dioxide	
	Wilson and Card		Wilson and Card	
	Gas Screening Value (l/hr)	Typical Maximum Concentration (%v/v)	Gas Screening Value (l/hr)	Typical Maximum Concentration (%v/v)
1	<0.07	<1	<0.07	<5
2	<0.7	Borehole flow rate not greater than 70l/hr	<0.7	Borehole flow rate not greater than 70l/hr
3	<3.5		<3.5	
4	<15	Quantitative Risk Assessment Required	<15	Quantitative Risk Assessment Required
5	<70		<70	
6	>70		>70	

The proposed residential development is classified as a Building Type A in accordance with BS 8485:2019 and the site is designated as CS2 therefore, 2.5 points of protection are required for the proposed development.

Protection Measure	Details	Points of Protection

Structural Barrier/Floor Slab	Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetration	1.5
Ventilation Protection Measures	Passive sub floor dispersal layer of good performance	1.5
Gas resistant Membrane	Gas resistant membrane (including methane) meeting the criteria outlined in Table 7 of BS 8485:2020	2.0

Validation

It is recommended that the gas protection measures installed within the proposed development are validated by a fully qualified person in accordance with CIRIA C735.

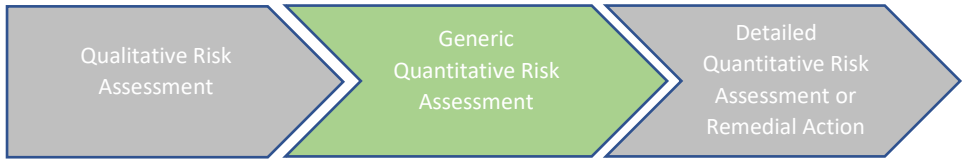
Radon

The site is an area not requiring radon precautions.

8.4 Revised Pollution Linkage Assessment

The CSM has been revised to inform the following pollution linkage assessment. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, the risk assessment has been devised to determine if a plausible pollution linkage exists between the identified contaminants and receptors based on the intrusive investigation and preliminary desk study information. An Illustrative Revised CSM is presented on Groundtech Consulting Plan *GRO-21003-P08.*

Human Health Pollution Linkage Assessment



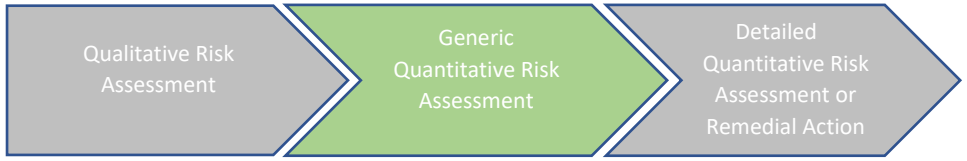
- The table below represents the second stage in the land quality risk assessment process - **the Generic Quantitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					*Generic Quantitative Risk Assessment*	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Likely	Medium	Moderate	*Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.* *Geo-Environmental testing has recorded elevations of Lead in the topsoil at the northern area of site. Additionally, minor elevations of Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(ah)anthracene have been detected within the topsoil population of WS04 and the cohesive Made Ground at WS03. All of the elevations are present in the area of the backfilled pond.* *Significant concentrations of pesticides have not been recorded and asbestos has not been detected.* *The proposed development is a two-storey apartment building with associated soft landscaping proposed to the west and at the site boundaries.*

Conceptual Site Model						*Generic Quantitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
						Elevated concentrations of metals and PAHs have been recorded in the near surface soils and low concentrations of pesticides were determined in the topsoil of WS01 in the west of the site. *A pollution linkage is considered to exist.*
PL2	Contaminated Soils	Inhalation of vapour.	Unlikely	Medium to Severe	Low	*Pollution linkage 2 refers to volatile vapours migrating into confined spaces within the proposed development. No sources of hydrocarbons have been identified through the PRA and no visual or olfactory evidence of hydrocarbon contamination has been identified during the Ground Investigation. A viable pollution linkage is not considered to exist.*
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	*No mobile contamination has been identified onsite or through the Geo-Environmental testing.* *A source or pollution linkage has not been identified.*
PL4	Contaminated Soils	Attacking potable water supply pipe.	Low Likelihood	Medium	Low to Moderate	*Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site end users of the tainted water supply. Deep Made Ground has been encountered to depths in excess of 6.5m bgl however, organic contamination has not been detected.*

Conceptual Site Model						*Generic Quantitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
						New water supply pipes will be laid in Made Ground soils and a local water company risk assessment will be required to confirm the correct type of potable water pipe.
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Likely	Medium to Severe	Moderate	*Made Ground of 6.5m bgl has been encountered at the site in the northern area associated with a backfilled pond.* *Final gas monitoring result place the site within CS2 and gas protection measures are required as part of the proposed development.* *The site is not within an area requiring radon precautions within foundations.*

Controlled Waters Pollution Linkage Assessment



- The table below represents the second stage in the land quality risk assessment process – **Generic Quantitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					*Generic Quantitative Risk Assessment*	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	*Deep Made Ground has been encountered locally beneath the site associated with a former pond in the northern area. However, mobile contamination has not been identified.* *Geological maps indicate that the site is underlain by superficial Glaciofluvial Sand and Gravel (Secondary A Aquifer) and the bedrock is the Tarporley Formation which comprises Siltstone and Sandstone (Secondary B Aquifer).* *The groundwater is not considered to be a sensitive resource in the vicinity of site and no sources of mobile contamination have been detected through the Ground Investigation or laboratory testing.* *The proposed development will be mostly covered with hardsurfacing and a new drainage system installed which will considerably reduce infiltration and leaching of potential contaminants.* *A realistic pollution linkage is not considered to exist.*

Conceptual Site Model						*Generic Quantitative Risk Assessment*
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	*Pollution Linkage 7 refers to the impaction of Baguley Brook 98m east of the site from contaminated soils and groundwater.* *Mobile contamination has not been identified through the Ground Investigation and no sources of mobile contamination have been noted through the desk study.* *A viable pollution linkage is not considered to exist.*

8.5 Outline Remedial Strategy

Soils

Based on the results of the Ground Investigation, specific remedial measures will be required with respect to the elevated lead and PAHs that have been recorded within the soils beneath the site. In addition, low levels of pesticides were recorded in the topsoil of WS01.

The topsoil is not considered suitable for the proposed residential end use and should be stripped as part of the enabling works and stockpiled separately before removal from site. However, the topsoil is considered to be suitable for reuse commercially, alternatively WAC testing can be undertaken to determine landfill waste acceptance.

In areas of proposed soft landscaping, a clean cover system will be required to break the pollution linkage to the potentially contaminated Made Ground soils. It is recommended that a 450mm cover system is placed comprising 150mm of topsoil underlain by 300mm of clean subsoil.

Any soils imported to site for use within the cover system should be tested for contaminants to ensure that they are suitably clean for their proposed end use. In addition, validation works will need to be carried out to prove that the required thickness has been placed.

Controlled Waters

Mobile contamination has not been identified and no remedial measures are required with respect to controlled waters.

Gas Monitoring

Initial gas monitoring results place the site in CS2 and it is likely that gas protection measures will be required within the proposed apartment development. This will be confirmed once the gas monitoring has been completed.

The site is not in an area where Radon precautions are required.

Watching Brief and Regulatory Approval

A watching brief should be in place during ground works and construction. If previously unidentified contamination is encountered, work should cease in that area and Groundtech Consulting contacted for advice.

The remedial recommendations should be approved with the Local Authority prior to the development commencing. A remedial specification should be produced to guide groundworks contractors on how to implement the proposed remedial requirements.

8.6 Asbestos in Soils

Asbestos screening was undertaken on six samples of the Made Ground and no asbestos has been recorded within any of the samples screened.

8.7 Health and Safety - Construction and Ground Workers

During the reclamation and construction phases of the site development it will be necessary to protect the health and safety of site personnel. The risk to construction and ground workers is assessed in the table below:

PL Ref	Potential Source	Pollution Linkage	Likelihood	Severity	Level of Risk
PL8	*Made Ground*	*Ingestion, direct contact, inhalation of dusts.*	*Likely*	*Medium*	*Moderate*

Elevated concentrations of lead and PAHs have been recorded in the northern area of site in the topsoil and cohesive Made Ground. In addition, low concentrations of pesticides were recorded in the topsoil of WS01 in the west of the site. Ground workers should be made aware of the risks through a site induction and through information on noticeboards. It is recommended that ground workers wear gloves when handling Made Ground soils and topsoil and hand washing facilities should be made available.

General guidance on these matters is given in the Health and Safety Executive (HSE) document "Protection of Workers and the General Public during the Redevelopment of Contaminated Land". In summary, the following measures are suggested to provide a minimum level of protection:

- *All ground workers should be issued with the relevant protective clothing, footwear and gloves. These protective items should not be removed from the site and personnel should be instructed as to why and how they are to be used.*
- *Hand-washing and boot-washing facilities should be provided.*
- *Care should be taken to minimise the potential for off-site migration of contamination by the provision of dust suppression control and wheel cleaning equipment during the construction works.*
- *Good practices relating to personal hygiene should be adopted on the site.*
- *The contractor shall satisfy the Health and Safety Executive with regard to any other matters concerning the health, safety and welfare of persons on the site.*

8.8 Waste Classification by Assessment

We have reviewed the testing results and inputted them into the HazWasteOnline model which allows users to code and classify waste as defined in the EWC (European Waste Catalogue 2002) based on EC Regulation 1272/2008 on the Classification, labelling and packaging of substances and mixtures (CLP) and latest Environment Agency guidance (WM3 "Guidance on the classification and assessment of waste (1st edition 2015)-Technical Guidance").

This is a useful tool as waste producers have the legal responsibility to classify any waste they produce.

Six samples were tested to assess whether they contained any contaminants in the hazardous range when screened against assessment criteria within WM3. The results are in the Waste Classification Report presented in *Appendix 14.*

Based on the HazWasteOnline assessment tool, the Made Ground soils and the stockpile have been classified as Non-Hazardous for waste disposal purposes.

Total testing was not undertaken on the natural soils and are assumed to be Non-Hazardous.

8.9 Waste Acceptance Criteria (WAC) Results

The Landfill Directive (Directive 1999/31/EC on the landfilling of waste) led to the establishment of a methodology for classifying wastes. Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. There are three different WAC, these are for:

- *Inert waste*
- *Non–Hazardous waste*
- *Hazardous waste*

Wastes should first be classified based on their total concentrations as detailed in the previous section. WAC testing is then required if the end disposal route is a landfill.

Waste Acceptance Criteria (WAC) testing was outside the scope of this investigation and the guidance given below is general.

The possibility of automatic inert classification of the natural soils should be explored in accordance with Section 4.3 of the EA guidance document. The Council Decision includes a list of wastes in Section 2.1.1 of the document that are assumed to be inert and therefore acceptable at a landfill for inert waste without testing, this is the case if:

- *They are single stream waste of a single waste type (although different waste types from the list may be accepted together if they are from a single source) and*
- *There is no suspicion of material or substances such as metals, asbestos, plastics, chemicals, etc to an extent which increases the risk associated with the waste sufficiently to justify contamination and they do not contain other their disposal in other classes of landfill.*

If any organic contaminated material is encountered during the construction phase, it is possible that this may be classified as hazardous, and testing should be undertaken at that time.

Materials should be segregated and where necessary sufficient time is allowed to further classify the material properly, including discussion with landfill sites and waste transfer stations to find the best disposal route. It is recommended that where possible that the soils could be recycled at a suitable local waste treatment plant or transfer station rather than a landfill disposal route.

The reuse of soils on the site this should be done in accordance with the CL:AIRE "Development Industry Code of Practice for the Definition of Waste" (CL:AIRE CoP). Any re-use scheme should be designed to minimise disposal costs.

After a cut and fill balance plan/volume calculation has been carried out, a U1 and T5 exemption could be registered. This will allow the use of the following soils without a waste permit or under Dow CoP MMP:

- *1,000 tonnes (c.600m^3) of non-hazardous soil*
- *5,000 tonnes (c.3,000m^3) of natural sand and gravels.*
- *50,000 tonnes (c.25,000m^3) of bituminous material to be used in roadways.*
- *5,000 tonnes (c.3,000m^3) of crushed concrete / stone.*

9.0 FINAL APPRAISAL

9.1 Land Quality

Made Ground has been recorded beneath much of the site to depths of up to 1.6m bgl however, deep Made Ground is present in the north to depths in excess of 6.5m bgl associated with a former pond.

Exceedances of lead and PAHs (benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(ah)anthracene) have been recorded based on the site having residential without plant-uptake end use. The exceedances have been recorded predominantly in the topsoil and the cohesive Made Ground situated beneath the position of the former pond. In addition, low concentrations of pesticides were recorded in the topsoil of WS01 in the west. As a result, the topsoil is not considered suitable for reuse as part of the proposed development.

All other Contaminants of Concern were recorded at concentrations below the relevant screening values for the site, and no asbestos was detected.

The risk to human health is considered to be *Moderate* based on the elevated concentrations recorded beneath the former pond area.

Significant mobile contamination has not been encountered as part of the Ground Investigation and the risk to controlled waters is *Low*.

Final ground gas monitoring results place the site within CS2 and gas precaution measures are required as part of the proposed development. In addition, radon precautions are not required. The risk from permanent ground gases is *Moderate*.

The Made Ground and material within the stockpile has been classified as *Non-Hazardous* for waste disposal purposes.

9.2 Ground Engineering

Deep Made Ground in excess of 6.5m bgl has been encountered in the area of the former pond. The most suitable foundations for the proposed two-storey apartments are considered to be pile foundations end bearing within the Mudstone bedrock which has been encountered at circa 10.0m bgl.

A suspended floor slab is recommended as part of the proposed development.

Poor infiltration rates have been recorded and SuDS drainage is not considered feasible.

9.3 Required Supplementary Investigation

The following further work is considered necessary to progress the site to construction phase:

Demolition Asbestos survey
Design of remedial strategy, if required
Detailed foundation design
Confirmation of the recommendations made within this report with the Regulators

10.0 RELEVANT INDUSTRY REFERENCES

British Standards Institution. *Investigation of Potentially Contaminated sites - code of practice*. BS 10175:2017.

British Standards Institution '*Code of Practice for Site Investigations*' BS 5930:2015

British Standards Institution "*Geotechnical investigation and testing – Identification and classification of soil*" BS EN ISO 14688:2002.

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Card & Steve Wilson in *"A pragmatic approach to ground gas risk assessment for the 21st Century"* - CIRIA/Environmental Protection UK Ground gas seminar 2011

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BS 8485:2015 '*Code of practise for the design of protective measures for methane and carbon dioxide ground gases for new buildings'*

The Hazardous Waste (England) Regulations 2005.

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Environment Agency "Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3"

NHBC Standards 2019.

CL:AIRE "*The Definition of Waste: Development Industry Code of Practice*" Version 2 March 2011.

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Department of the Environment. 1995. Industry Profiles - 48 separate publications available from The Stationery Office, London

BRE Report 465 "Cover Systems for Land Regeneration" 2004.

Privett, K D, Matthews, S C, & Hodges, R, A, 'Barriers, liners and cover systems for containment and control of land contamination' 1996. CIRIA Special Publication 124.

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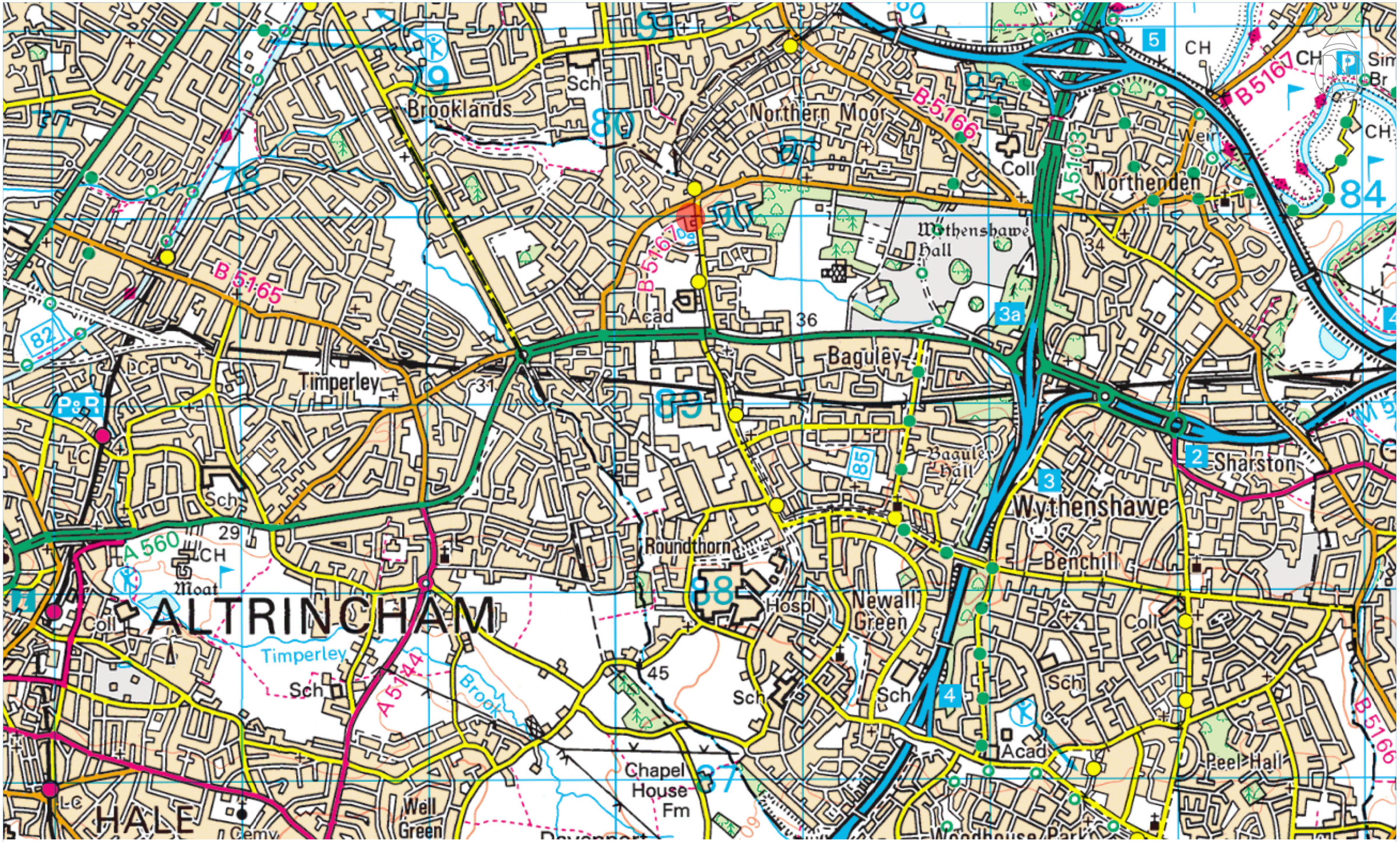
Total Petroleum Hydrocarbon Criteria Working Group Volume 2 Composition of Petroleum Mixtures May 1998.

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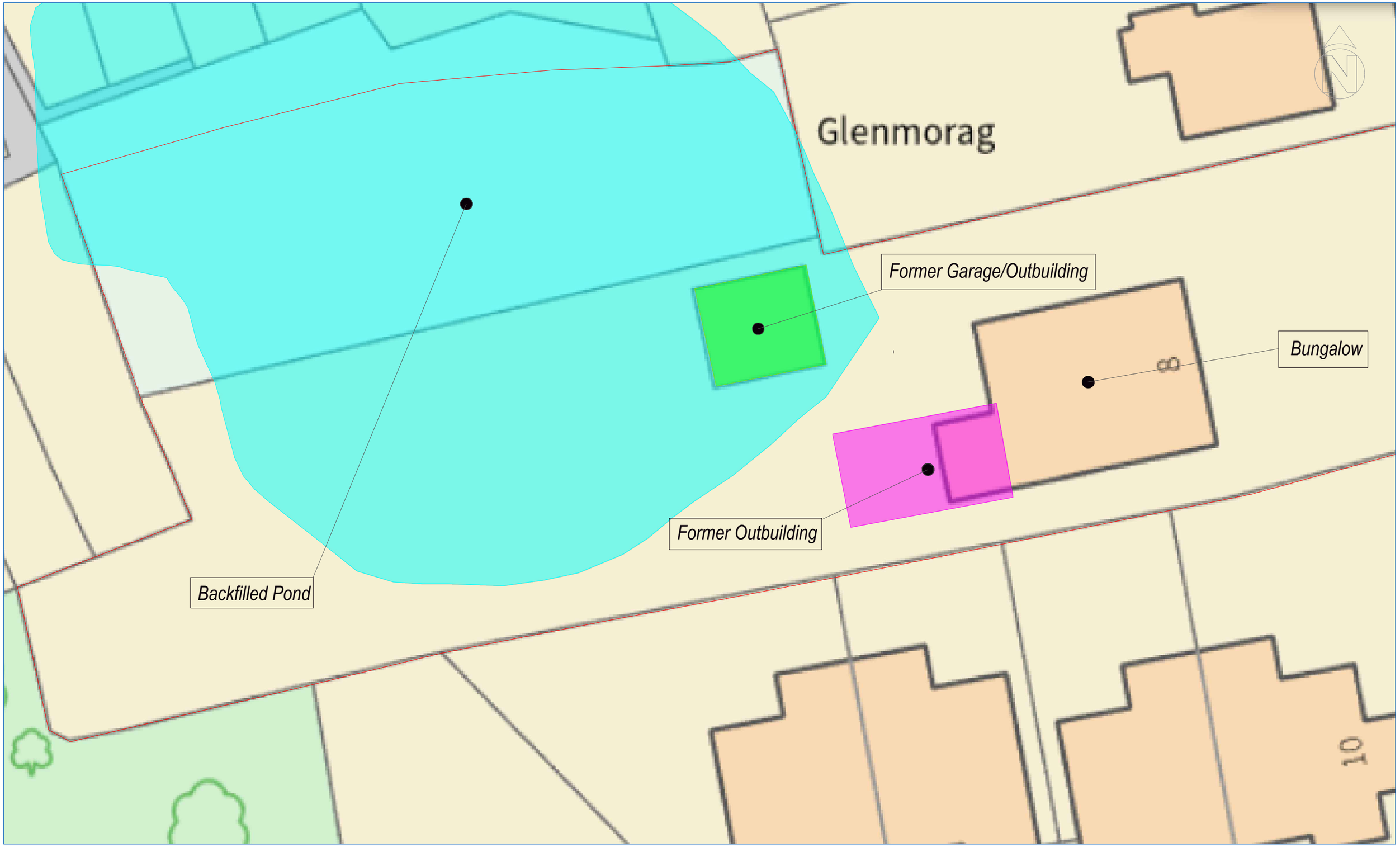
Total Petroleum Hydrocarbon Criteria Working Group Volume 4 Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).

Total Petroleum Hydrocarbon Criteria Working Group Volume 5 Human Health Risk-Based Evaluation of Petroleum Release Sites: Implementing the Working Group Approach June 1999.

APPENDIX 1 - Plans



GROUNDTECH CONSULTING	CLIENT	DATE				Status	Notes
	SUMO DEVELOPMENTS	SEPTEMBER 2022				Preliminary	Site Location
	PROJECT TITLE	SCALE				Draft	
	8 MOOR ROAD, BAGULEY	NTS				Issued	
	PLAN TITLE	PLAN NUMBER				For Comment	
	PROJECT LOCATION PLAN	GRO-21003-P01	Rev.	Details	Date	Approved	



GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	PRELIMINARY DEVELOPMENT CONSTRAINTS

DATE	SEPTEMBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P02

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

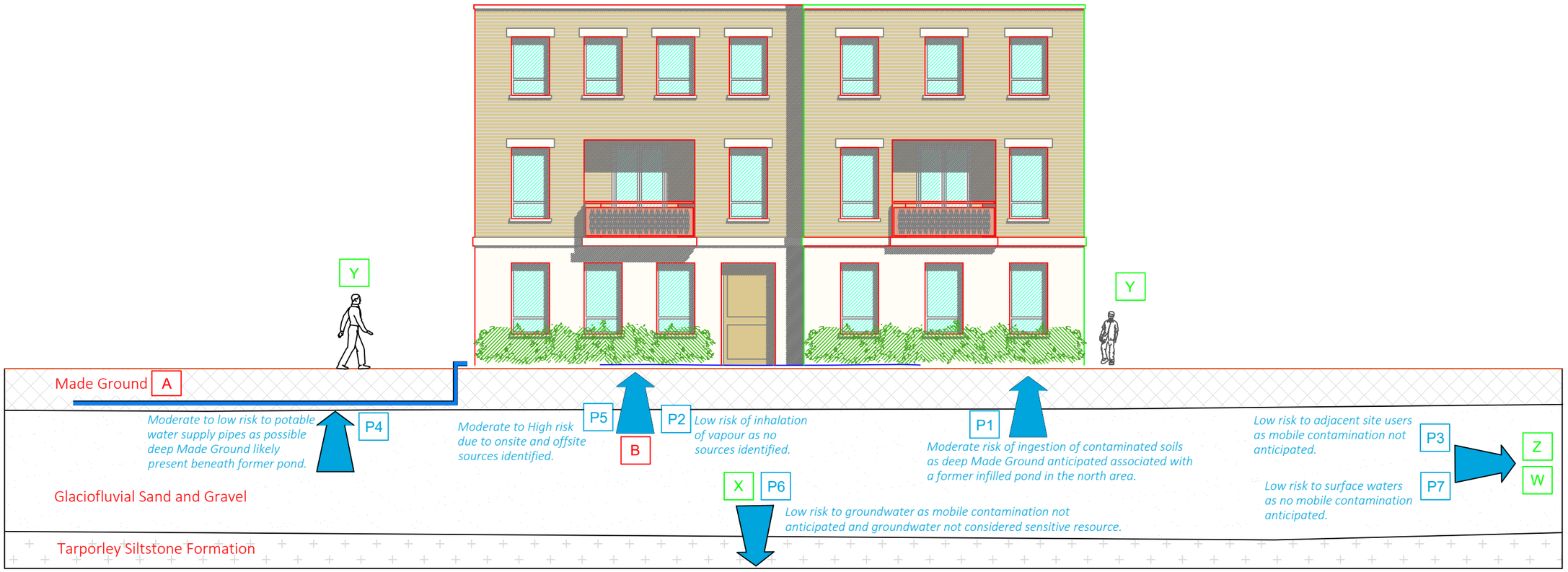
Approximate Site Boundary

SOURCES
A. Contaminated soils / Made Ground. B. Ground gas.

POLLUTION LINKAGES
P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.

RECEPTORS
W. Baguley Brook 98m east. X. Groundwater within the Secondary A and Secondary B Aquifer. Y. Site end users. Z. Adjacent site users.

Proposed Apartments



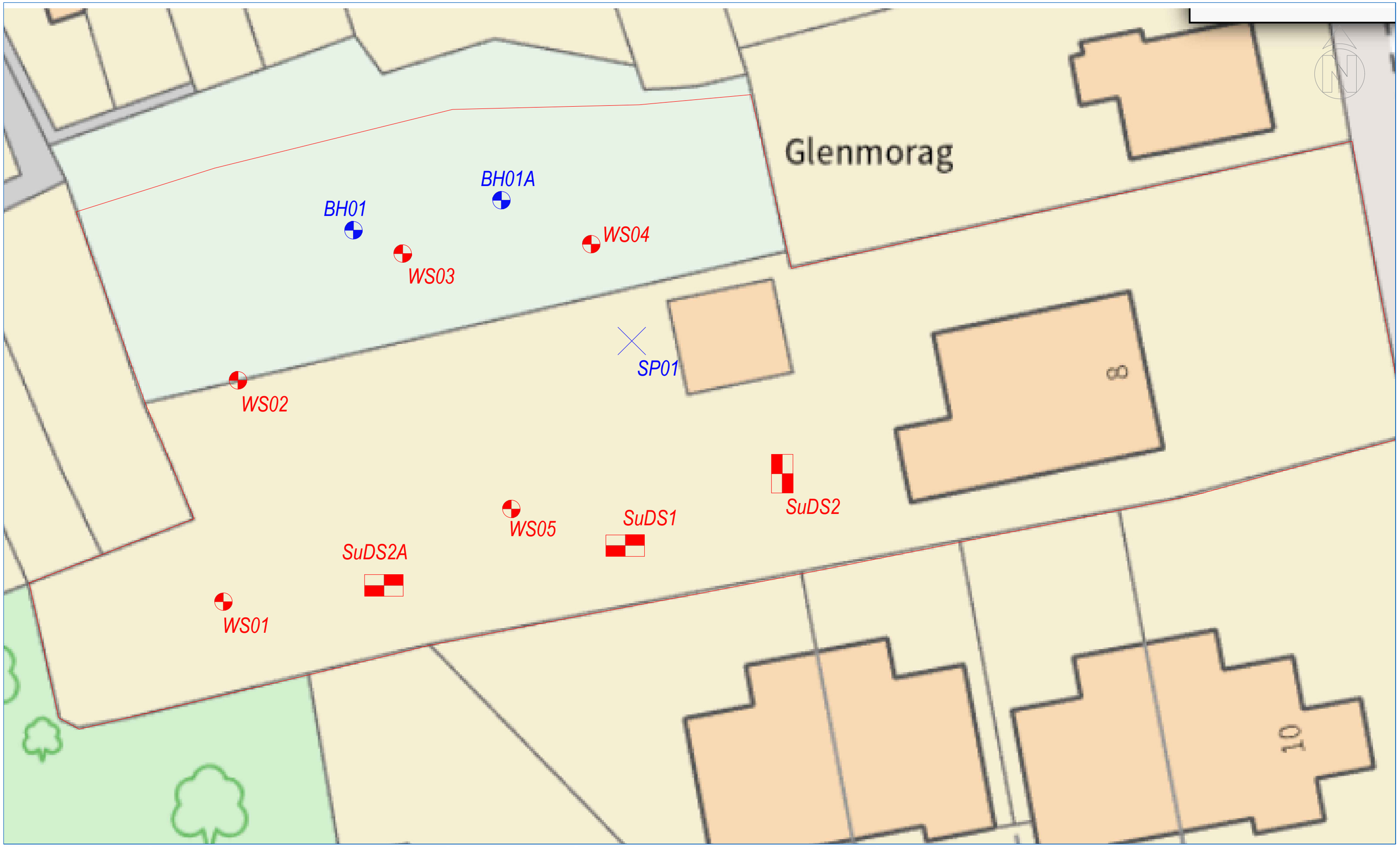
GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	PRELIMINARY ILLUSTRATIVE CSM
DATE	SEPTEMBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P03

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes



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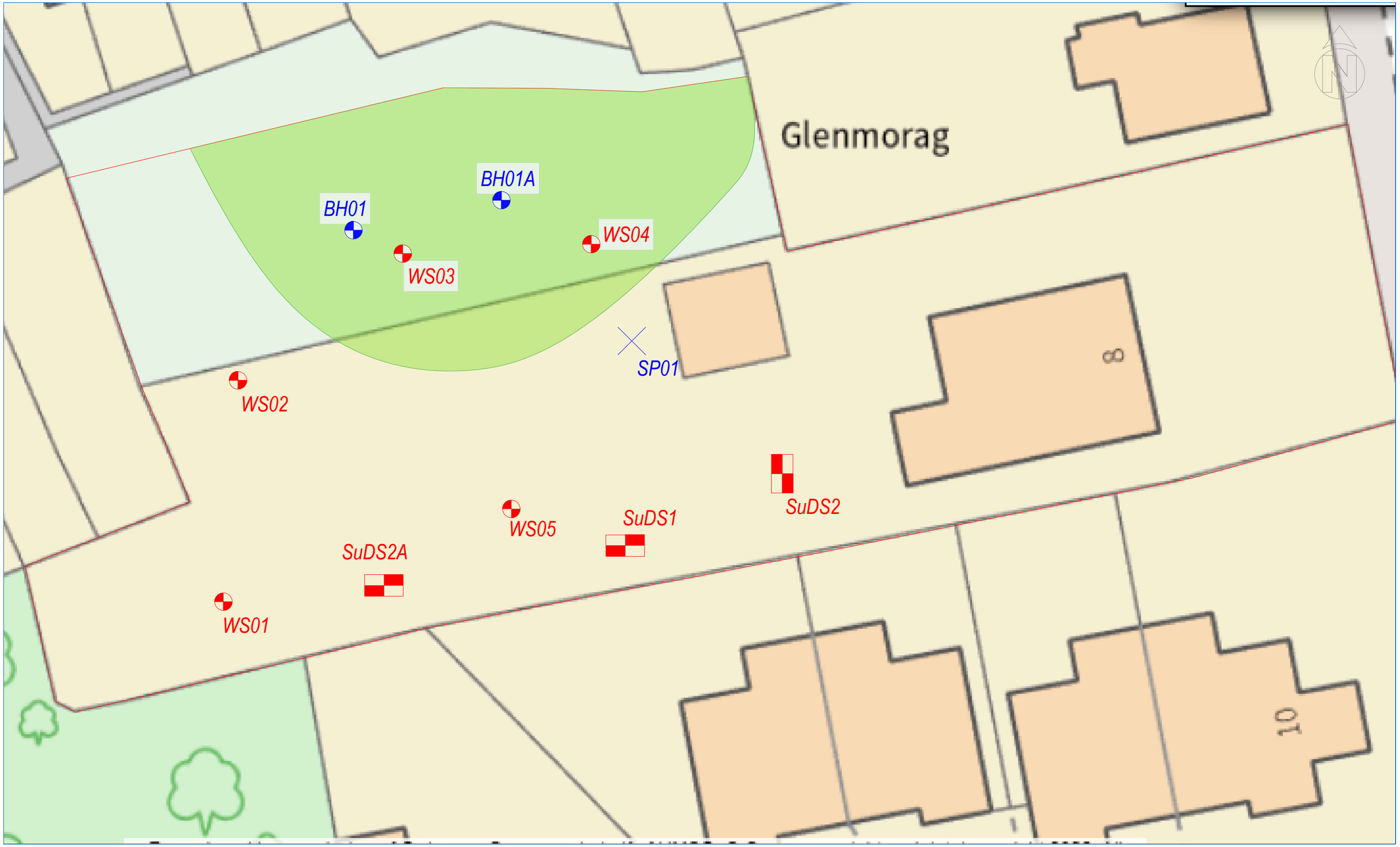
CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	EXPLORATORY HOLE LOCATION PLAN
DATE	OCTOBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P04

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

- Approximate soil infiltration test position
- Approximate position of cable percussion borehole
- Approximate position of windowless sample borehole
- Approximate position of stockpile



GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	GEOTECHNICAL CONSTRAINTS PLAN

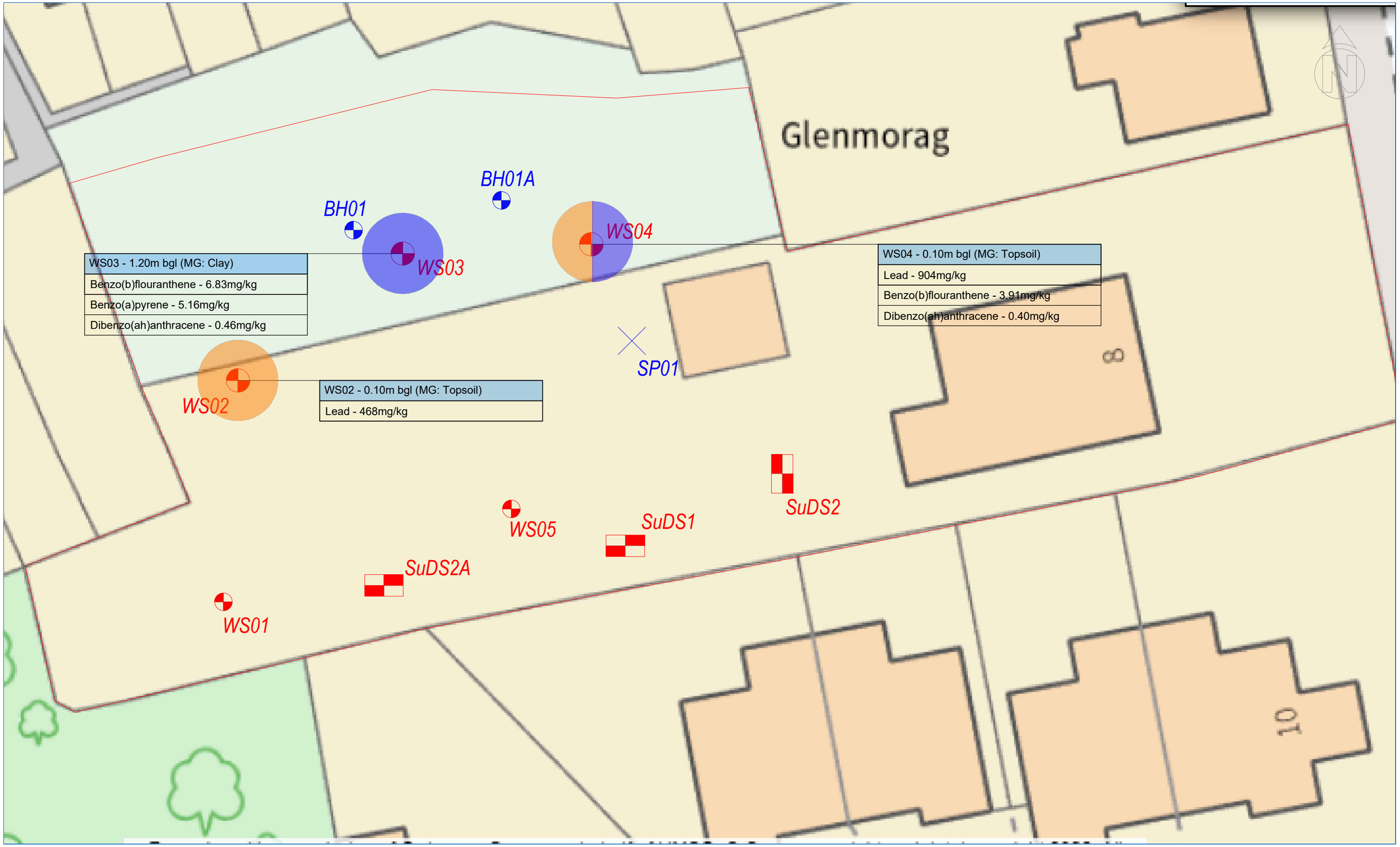
DATE	OCTOBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P05

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

- Approximate soil infiltration test position
- Approximate position of cable percussion borehole
- Approximate position of windowless sample borehole
- Approximate position of stockpile
- Approximate area of deep Made Ground



GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	CONTAMINATION PLAN
DATE	OCTOBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P07

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

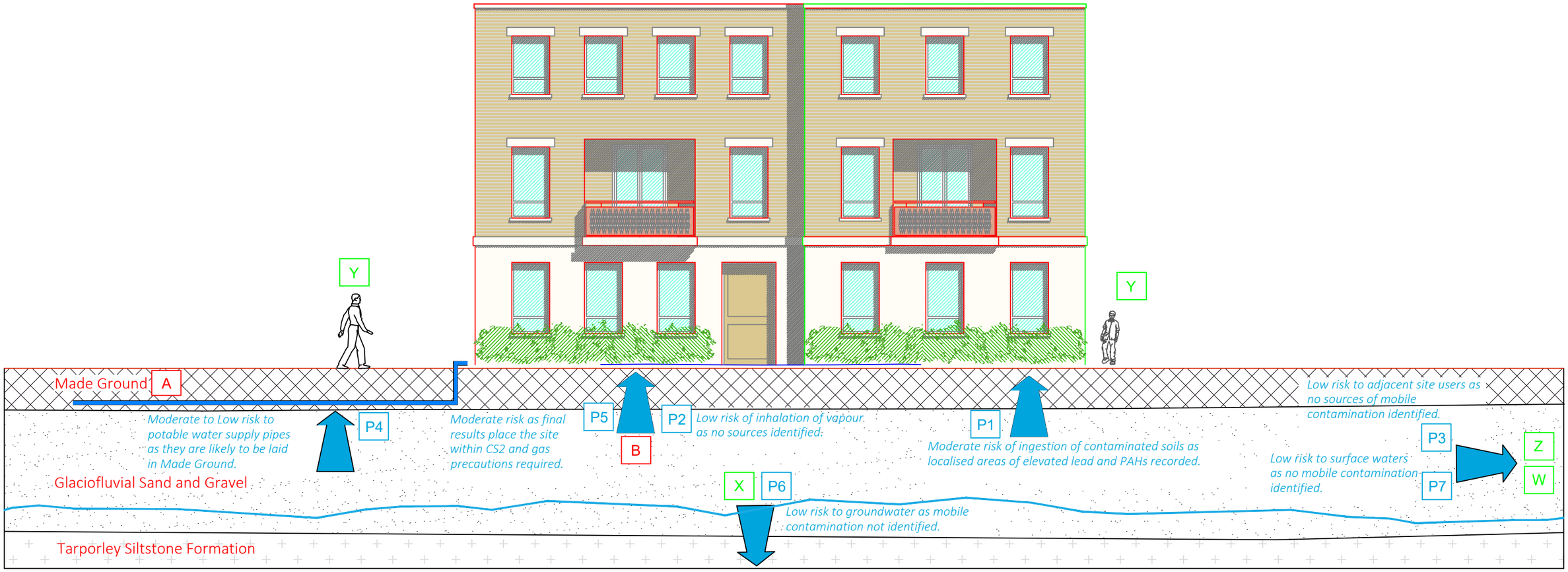
- Lead exceedances
- PAH exceedances

SOURCES
A. Contaminated soils / Made Ground. B. Ground gas.

POLLUTION LINKAGES
P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.

RECEPTORS
W. Baguley Brook 98m east. X. Groundwater within the Secondary A and Secondary B Aquifer. Y. Site end users. Z. Adjacent site users.

Proposed Apartments



GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	ILLUSTRATIVE REVISED CSM
DATE	SEPTEMBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P08

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

APPENDIX 2 - Site Photographs

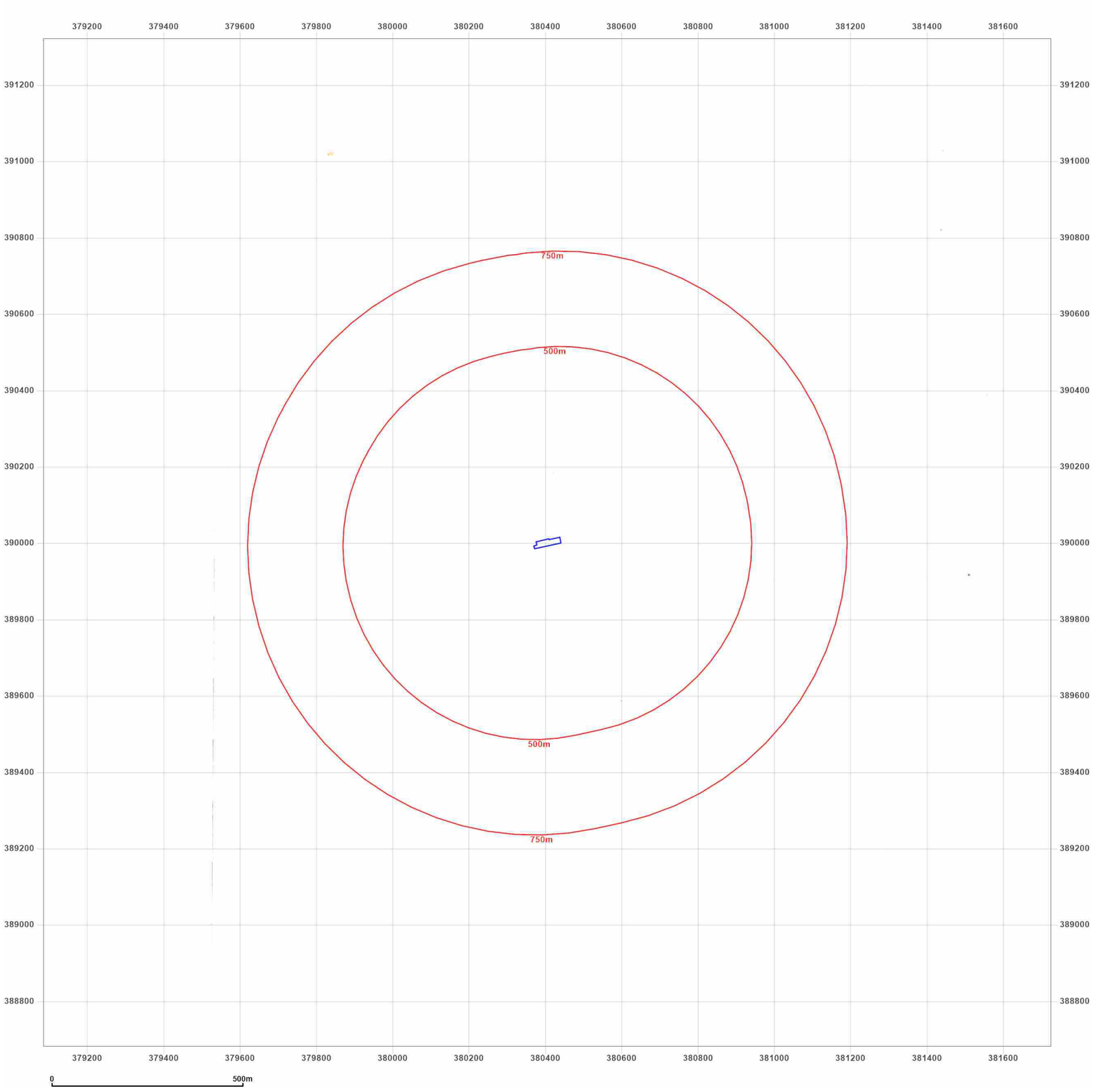


Photograph 1 – Bungalow (left) and site entrance.



Photograph 2 – Former garage/outbuilding.

APPENDIX 3 - Historical Plans



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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

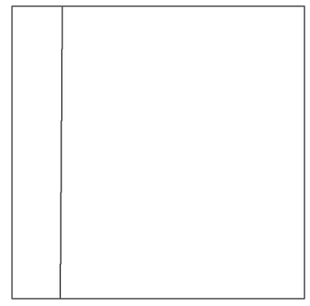
Map Name: County Series

Map date: **1892**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1892
Revised 1892
Edition 1892
Copyright N/A
Levelled N/A

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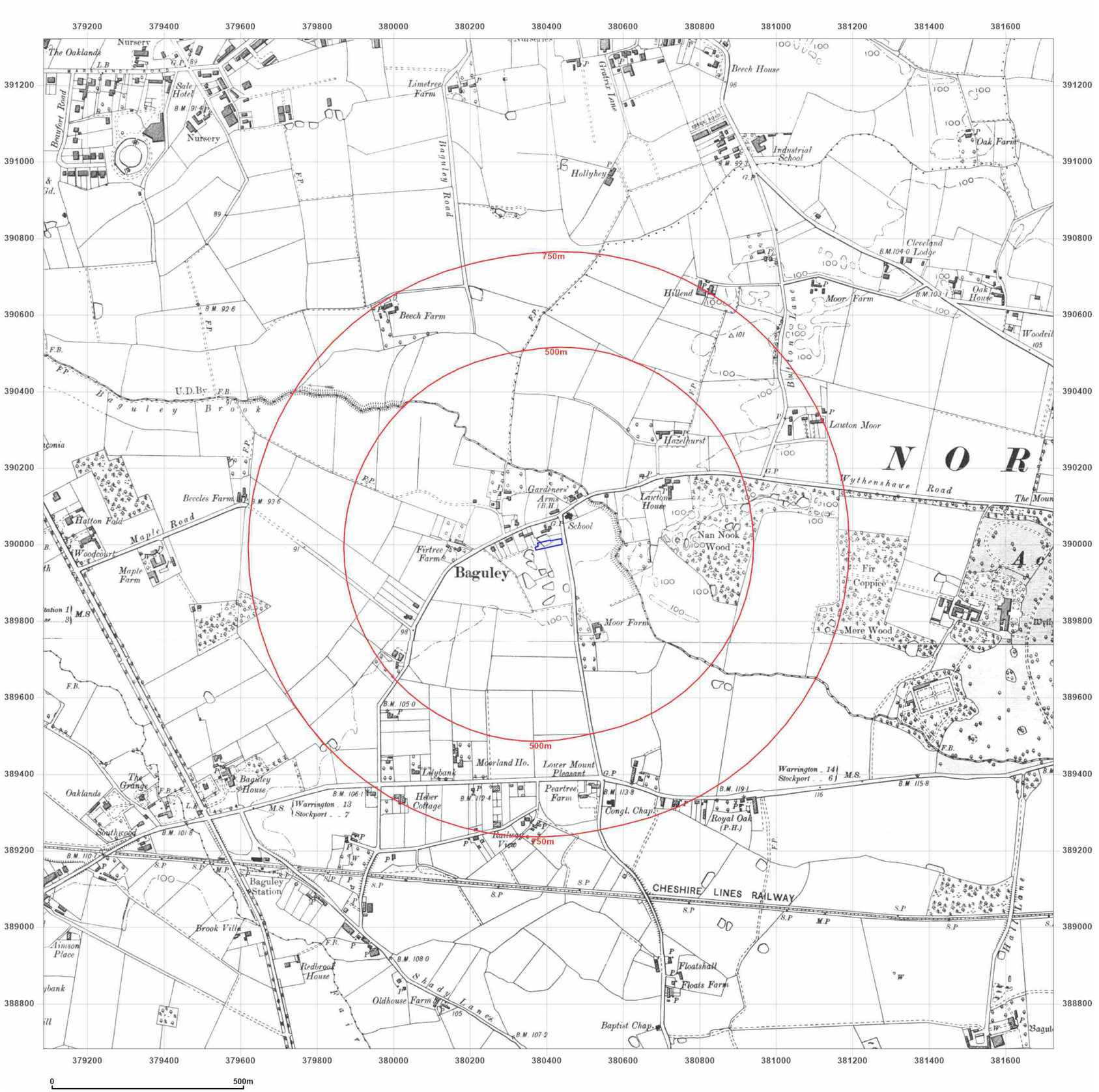
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

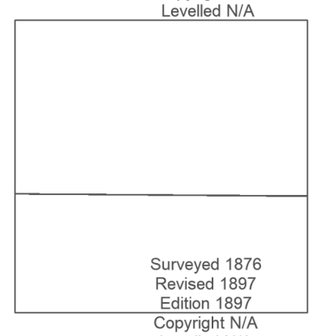
Map date: **1897**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1876
Revised 1897
Edition 1897
Copyright N/A
Levelled N/A



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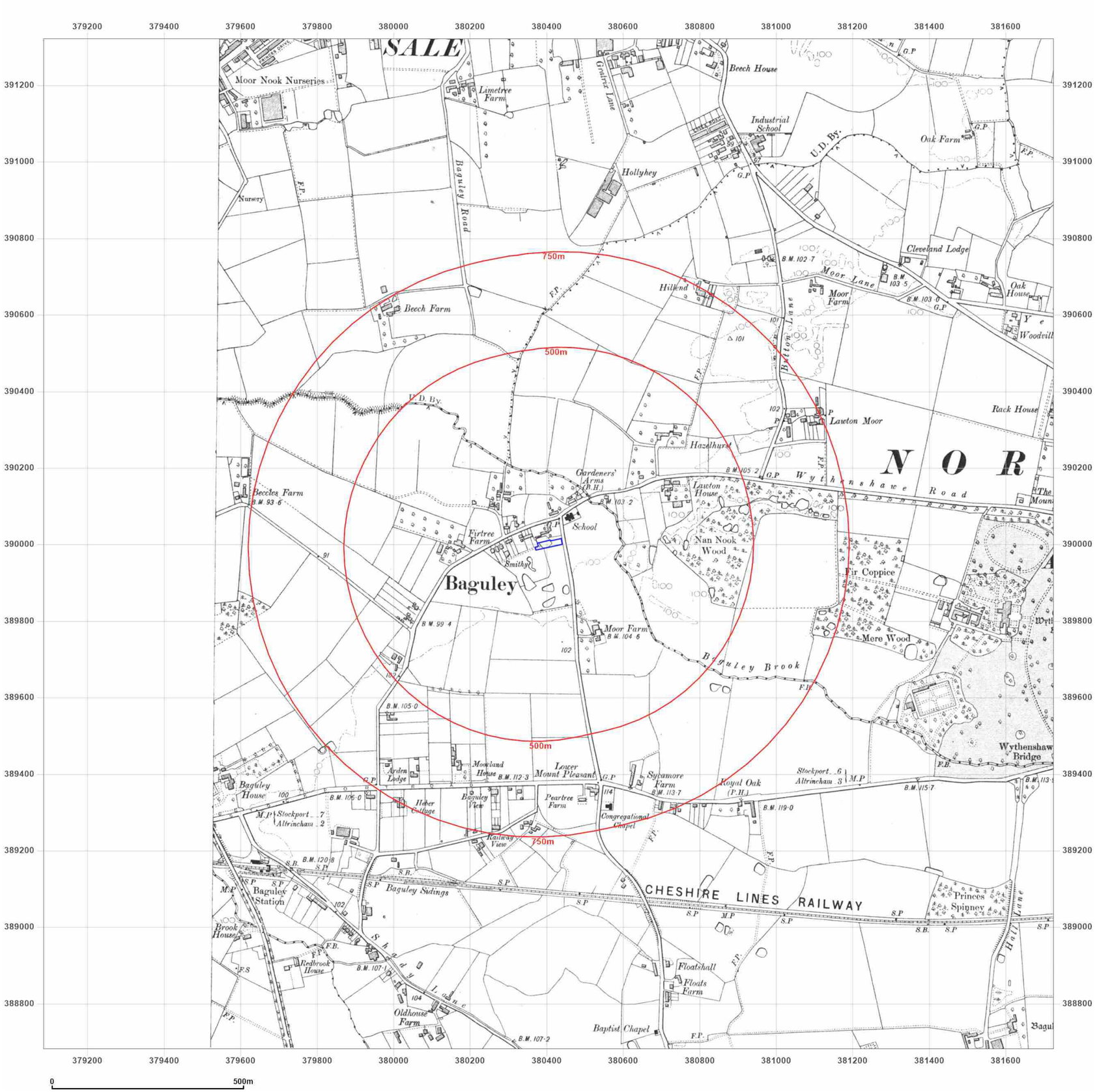
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1844
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

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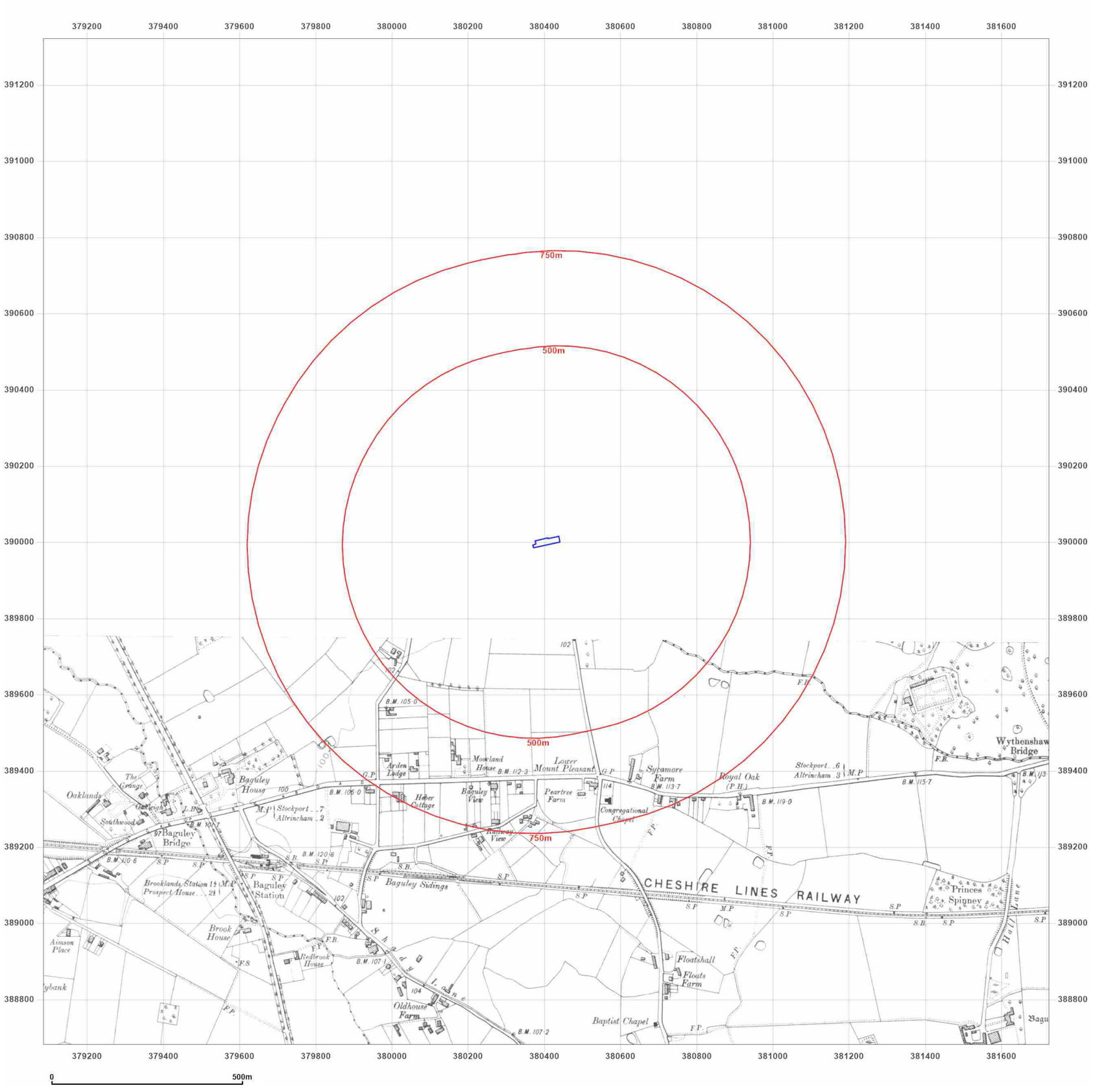
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1907**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1873
Revised 1907
Edition 1907
Copyright N/A
Levelled N/A

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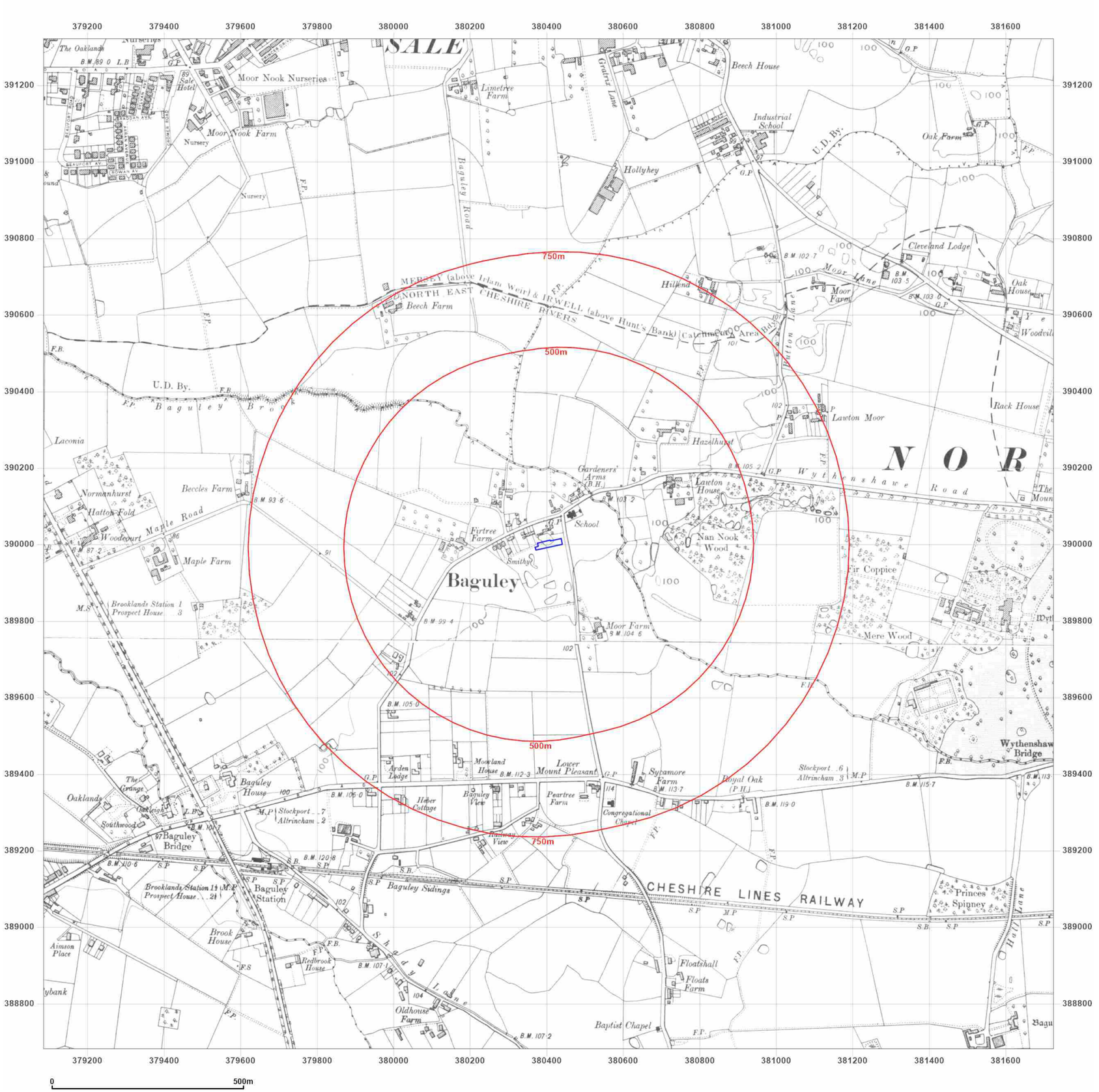
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1907-1908**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1873
Revised 1908
Edition 1908
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1907
Edition 1907
Copyright N/A
Levelled N/A

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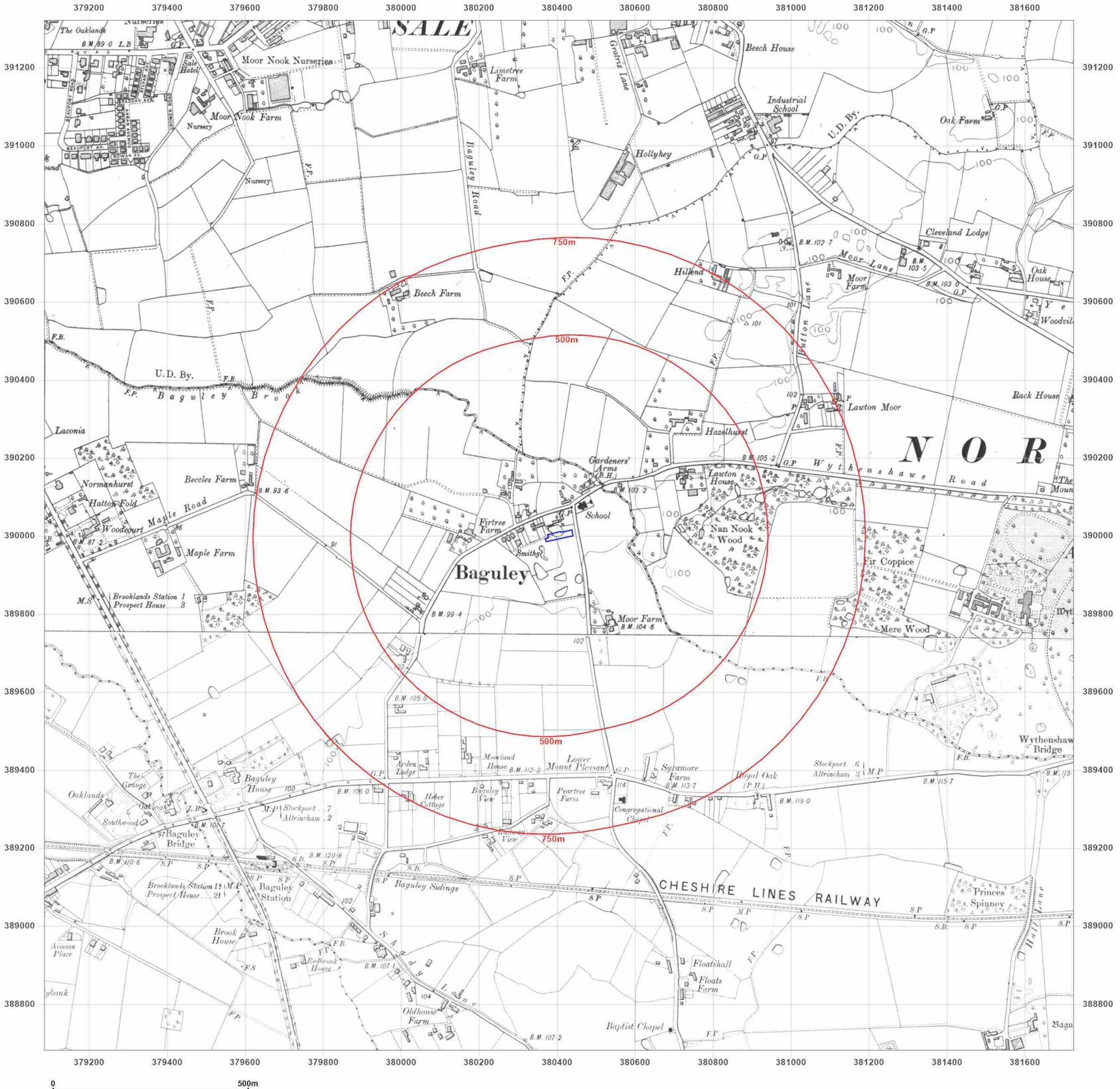
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1907-1911**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1908
Edition 1911
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1907
Edition 1907
Copyright N/A
Levelled N/A

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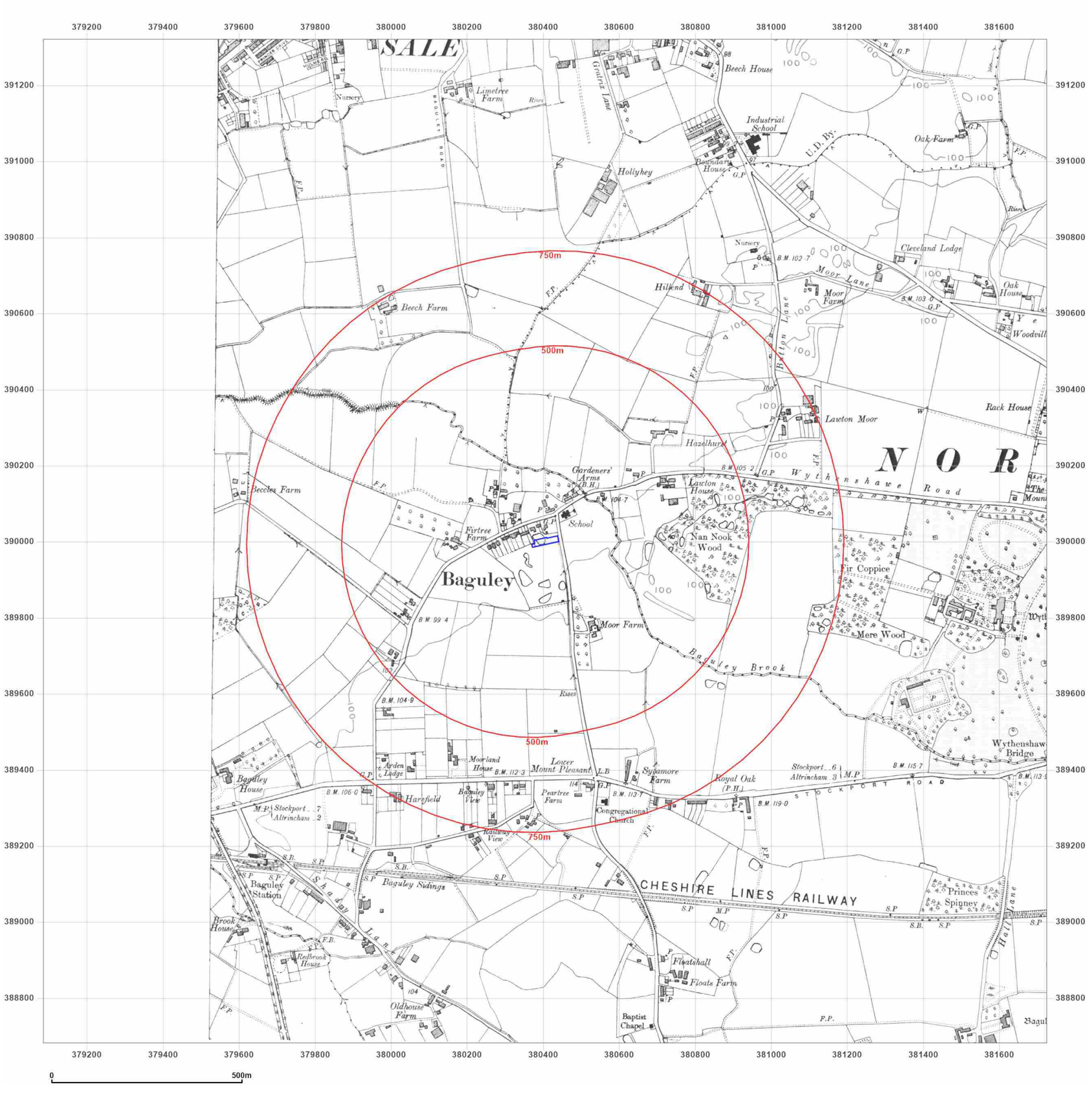
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

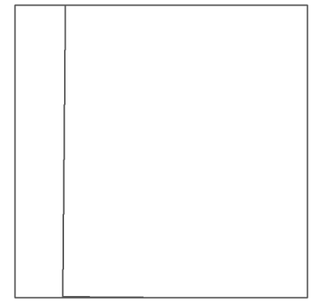
Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915



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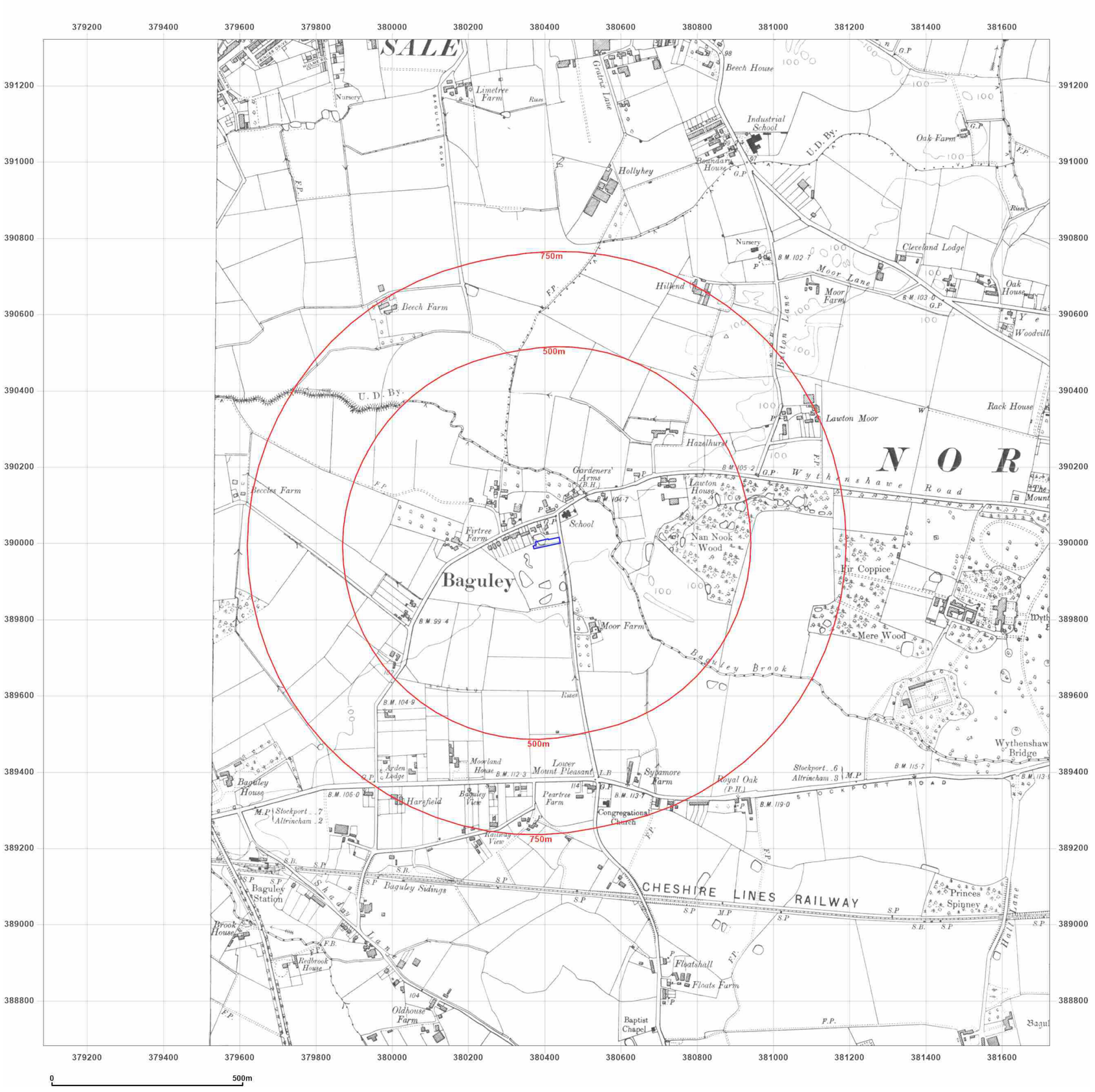
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

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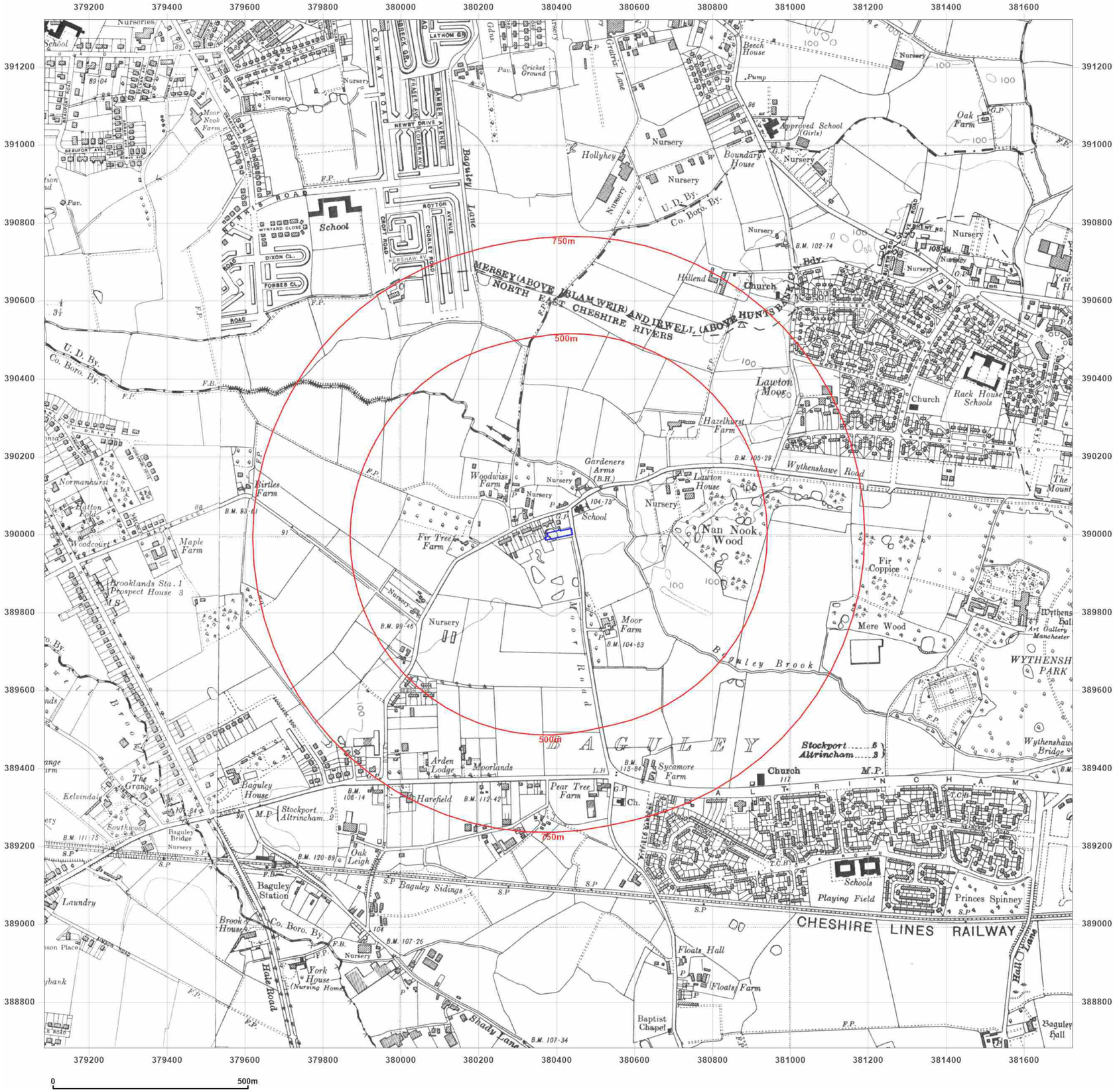
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

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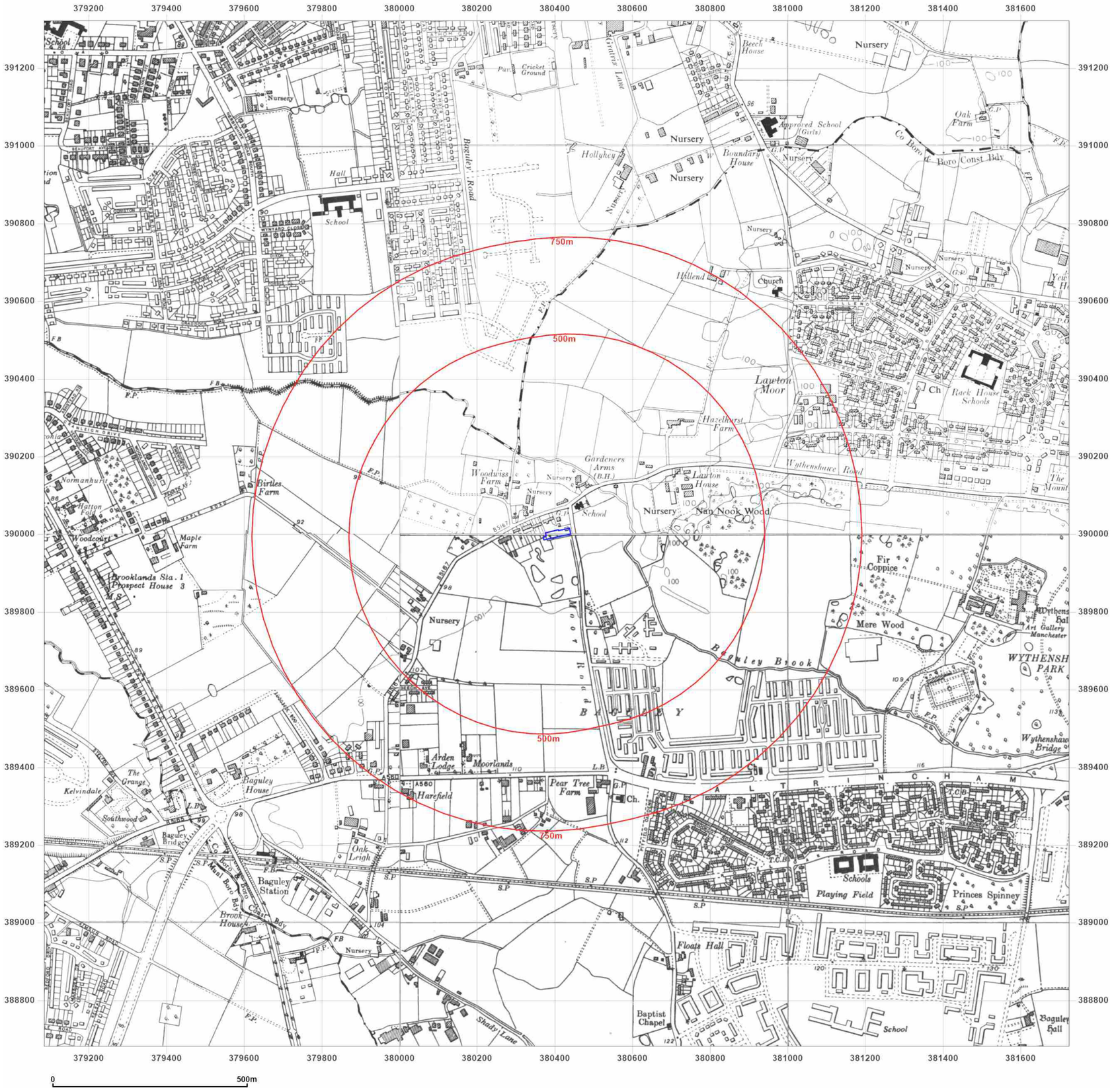
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: Provisional

Map date: **1954-1955**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright 1955
Levelled N/A

Surveyed N/A
Revised 1954
Edition N/A
Copyright 1954
Levelled N/A

Surveyed 1949
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

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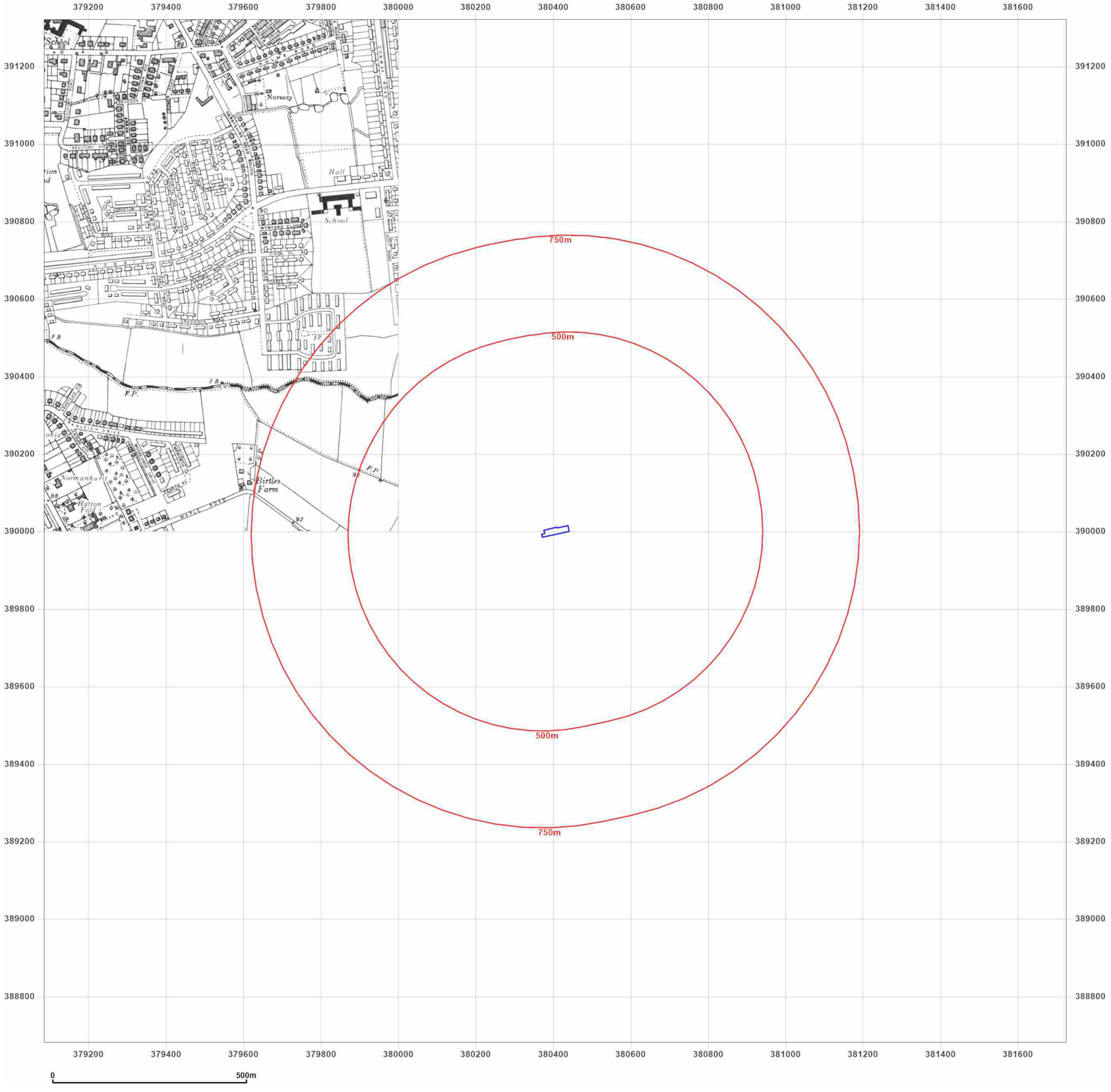
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: Provisional

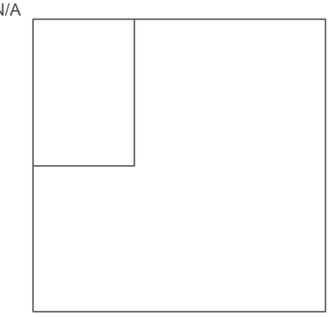
Map date: **1959**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed N/A
Revised 1959
Edition N/A
Copyright 1954
Levelled N/A



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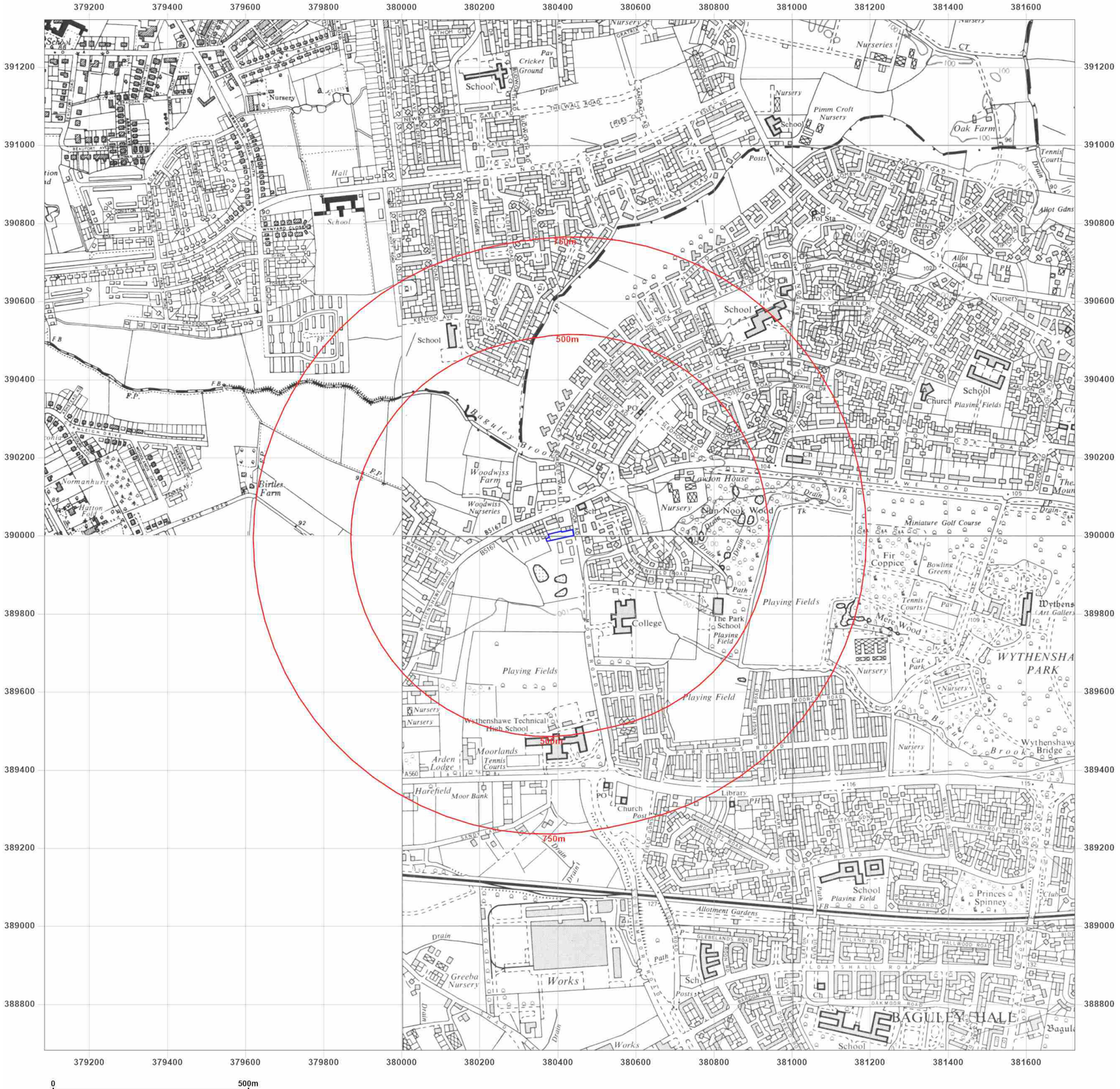
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: Provisional

Map date: **1964-1967**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed N/A
Revised 1964
Edition N/A
Copyright 1954
Levelled N/A

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1966
Levelled N/A

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1967
Levelled N/A

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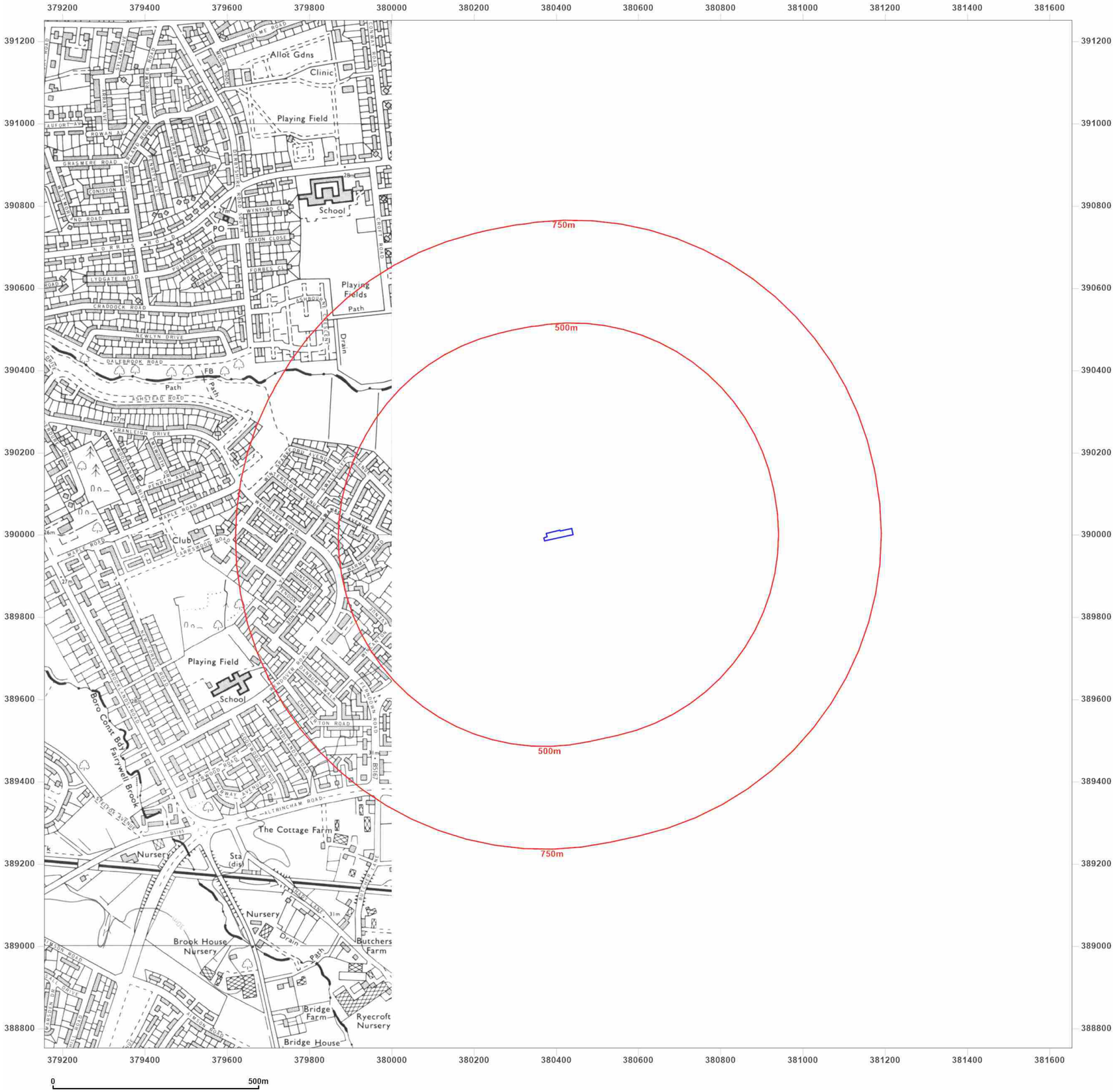
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1971-1972**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1969
Revised 1971
Edition N/A
Copyright 1971
Levelled 1964

Surveyed 1970
Revised 1971
Edition N/A
Copyright 1972
Levelled 1964

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1977-1981**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1977
Revised 1980
Edition N/A
Copyright 1980
Levelled 1976

Surveyed 1977
Revised 1981
Edition N/A
Copyright 1981
Levelled 1976

Surveyed 1976
Revised 1979
Edition N/A
Copyright 1980
Levelled 1976

Surveyed 1975
Revised 1977
Edition N/A
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Levelled 1964

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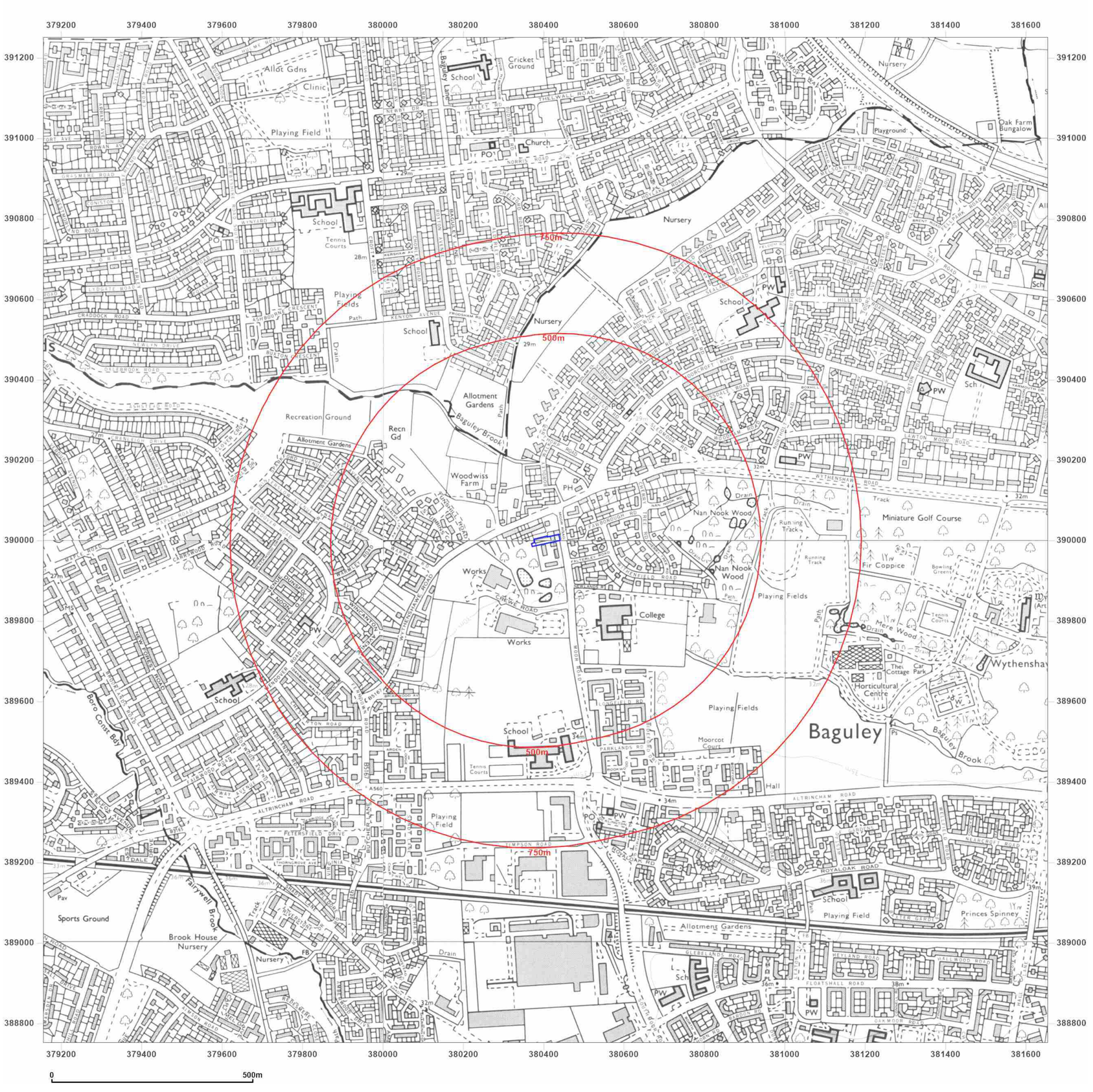
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1988-1990**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1989
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1985
Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

Surveyed 1988
Revised 1990
Edition N/A
Copyright 1990
Levelled 1981

Surveyed 1984
Revised 1989
Edition N/A
Copyright 1989
Levelled 1981

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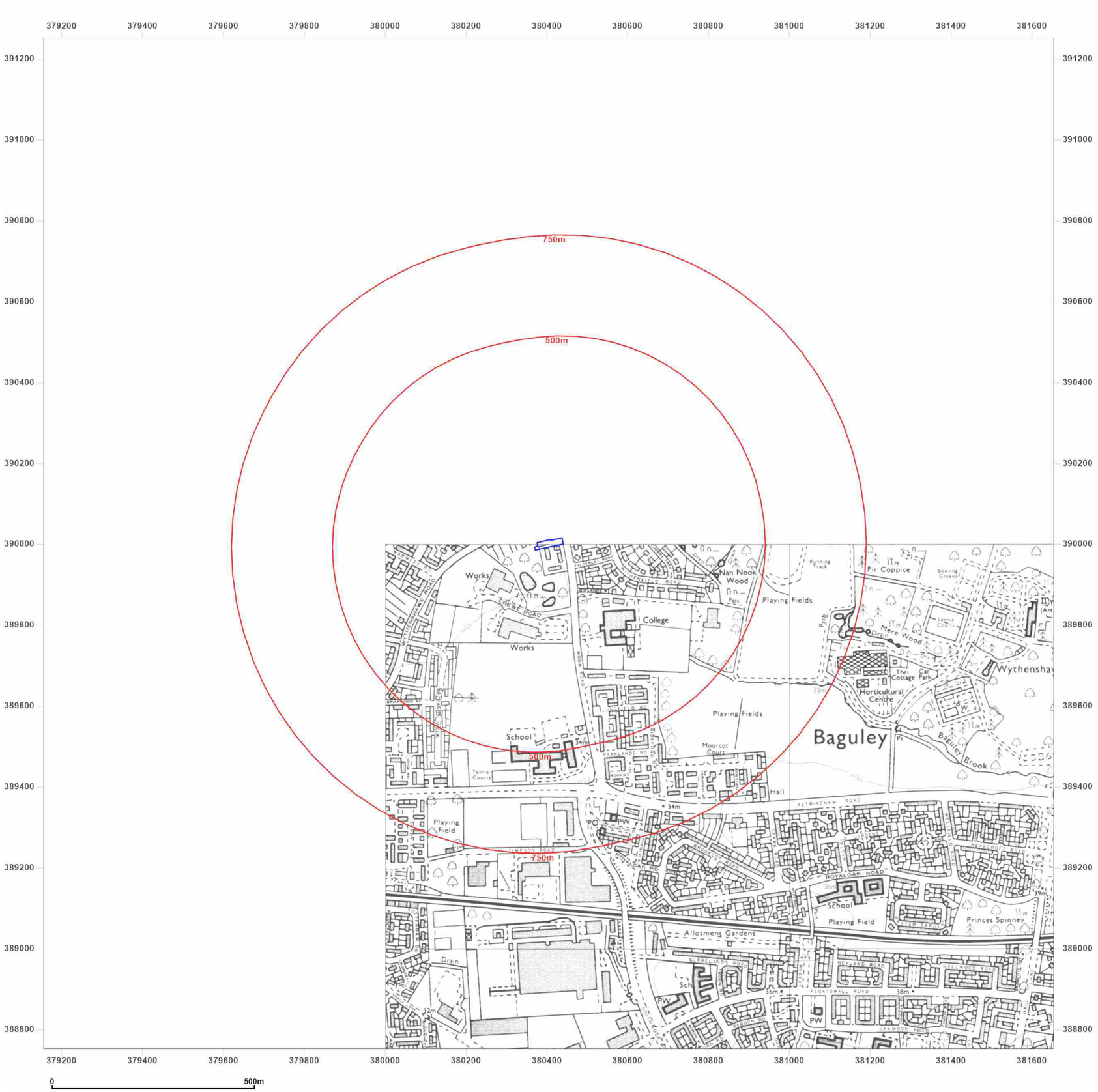
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

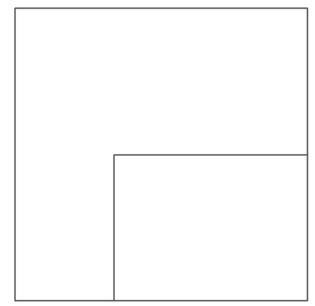
Map Name: National Grid

Map date: **1995**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S



Surveyed 1984
Revised 1995
Edition N/A
Copyright 1995
Levelled 1981

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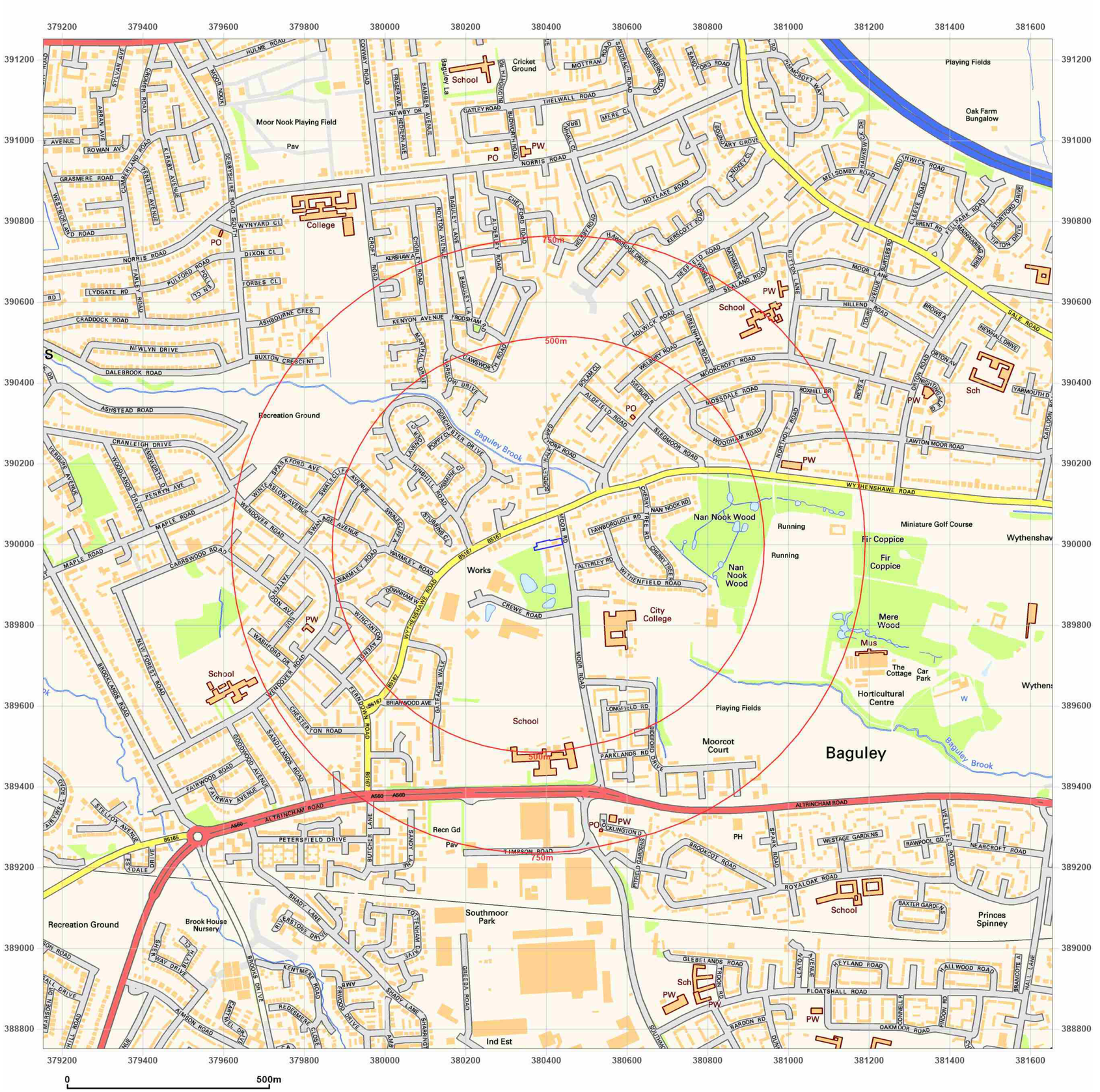
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2001

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

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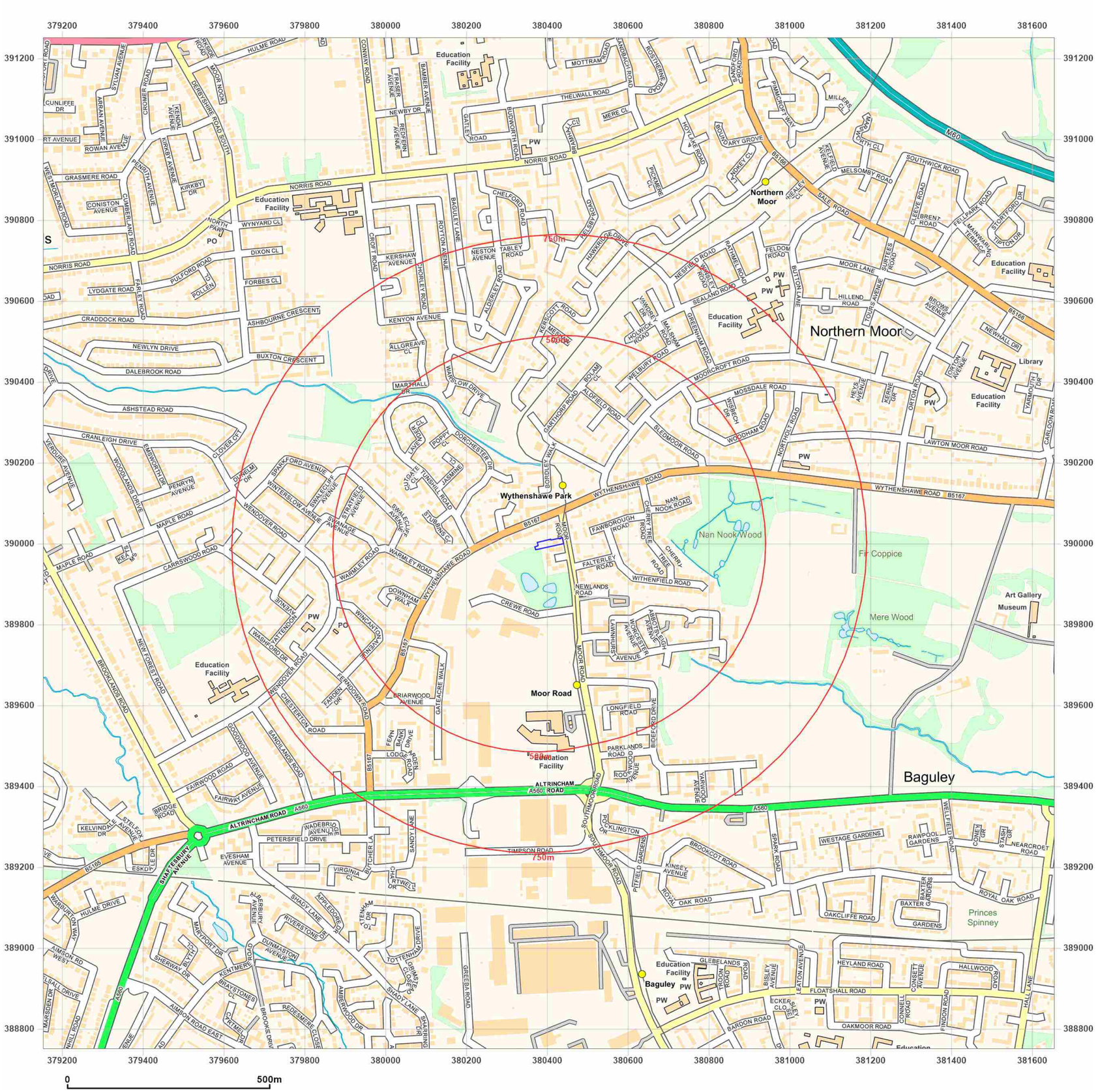
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Map legend available at:
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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

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2021

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www.groundsure.com

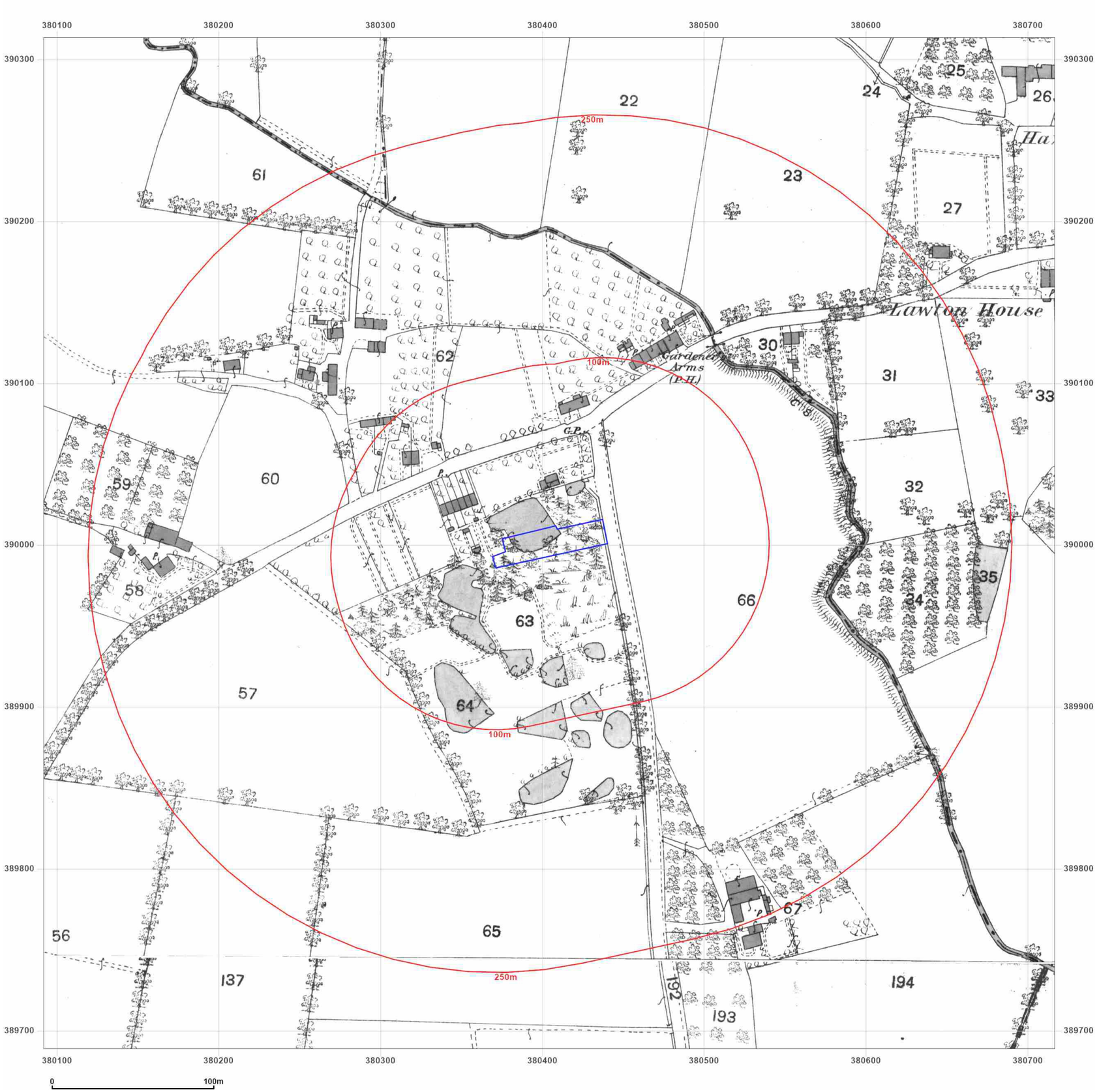
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

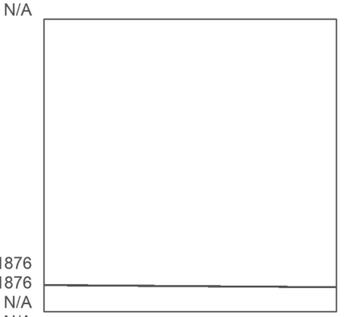
Map date: **1876**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

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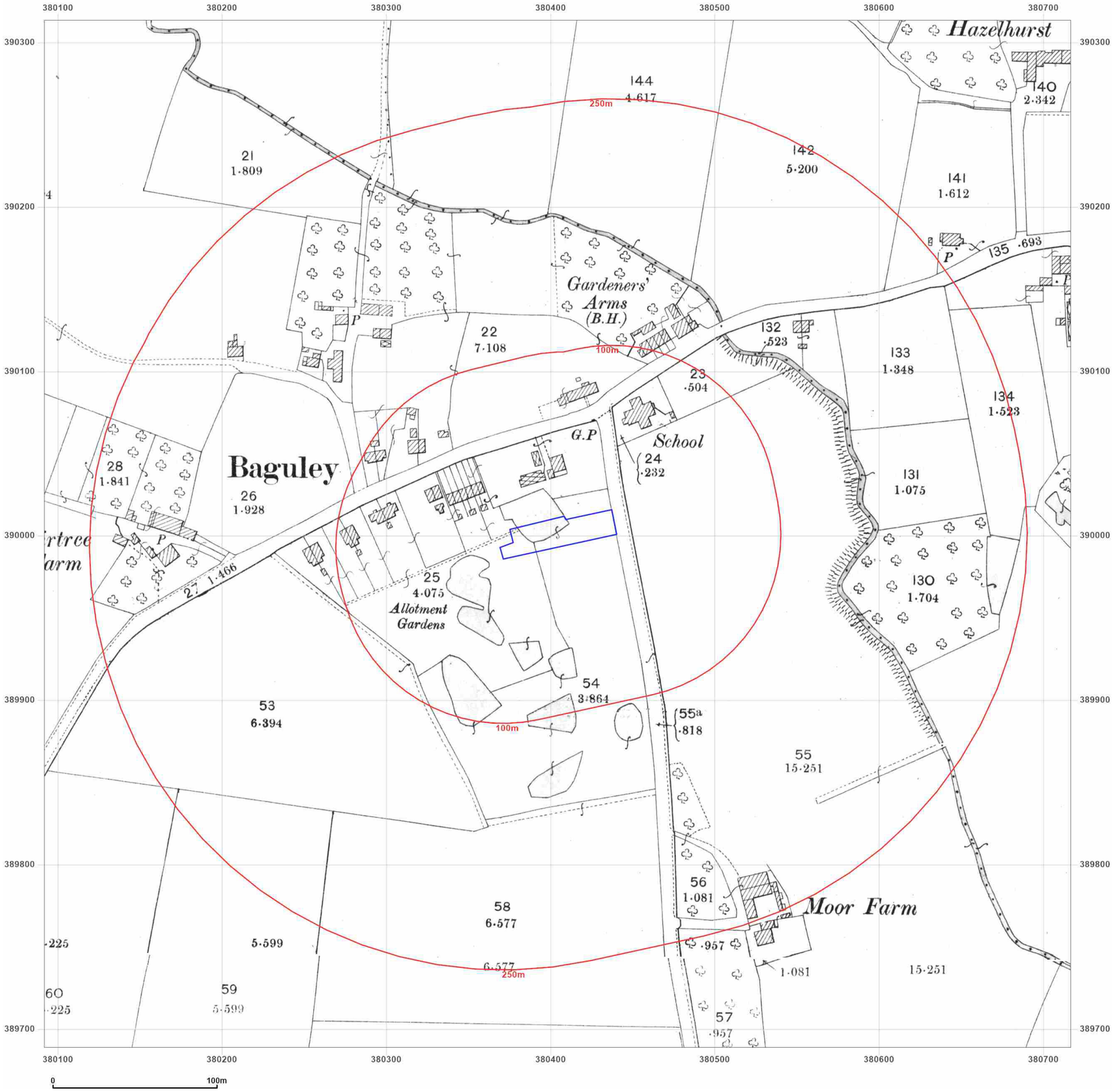
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Production date: 19 January 2021

Map legend available at:
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1893-1898**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised N/A
Edition 1893
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1897
Edition 1898
Copyright N/A
Levelled N/A

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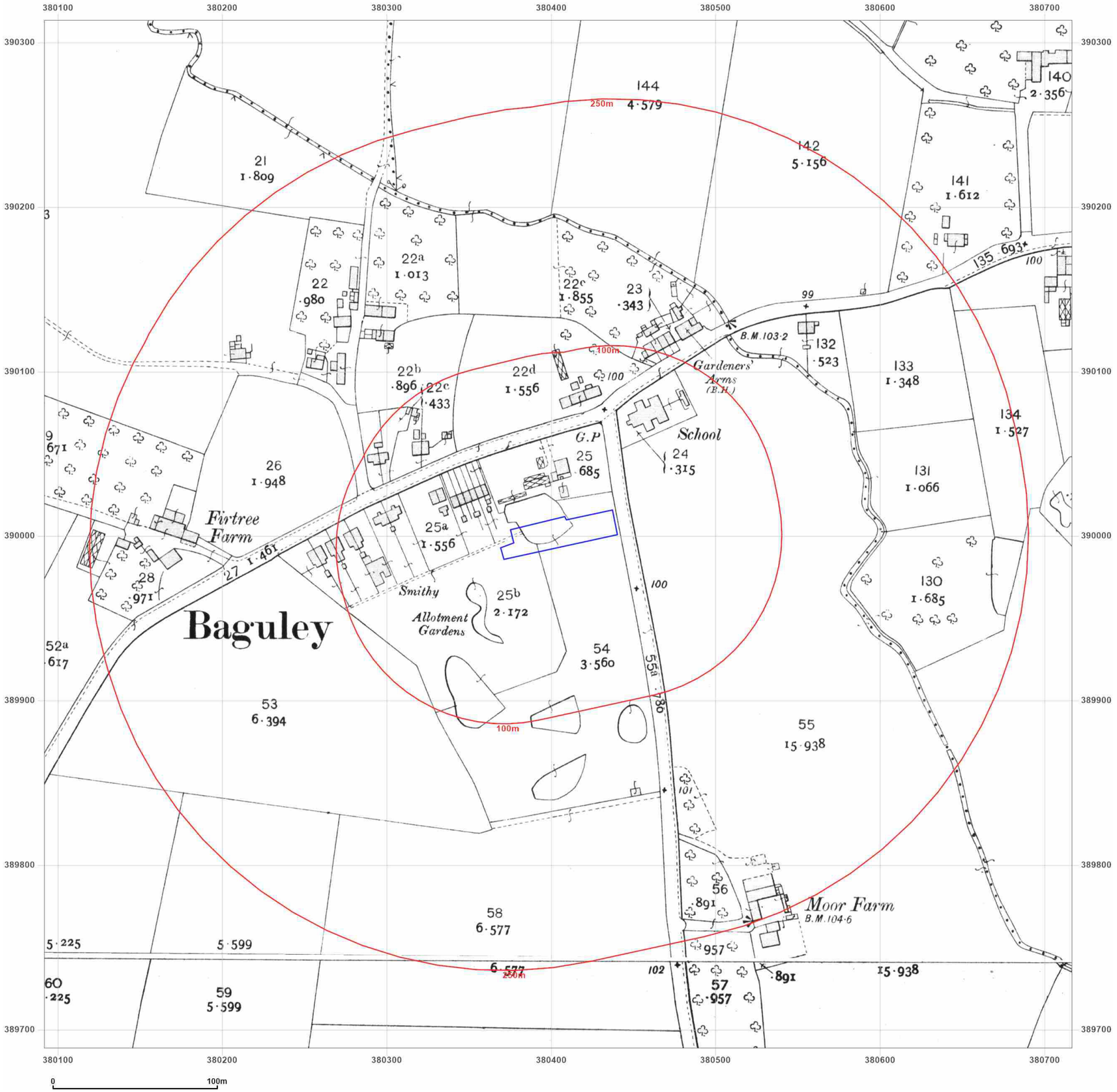
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Production date: 19 January 2021

Map legend available at:
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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

Map date: **1907-1910**

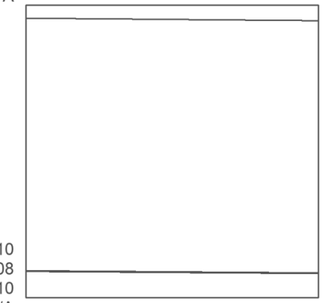
Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1910
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1905
Edition 1907
Copyright N/A
Levelled N/A



Surveyed 1910
Revised 1908
Edition 1910
Copyright N/A
Levelled N/A

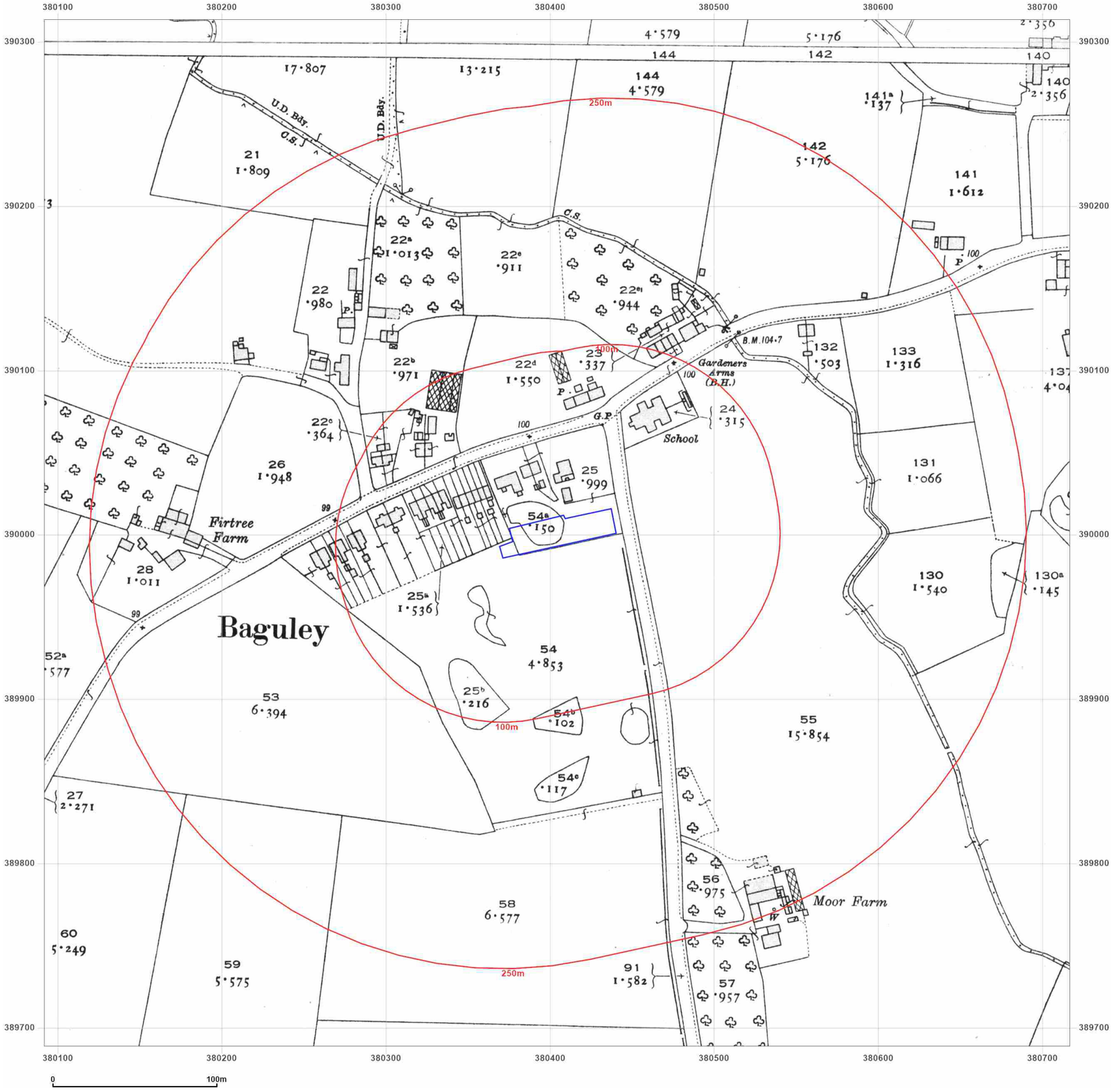
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

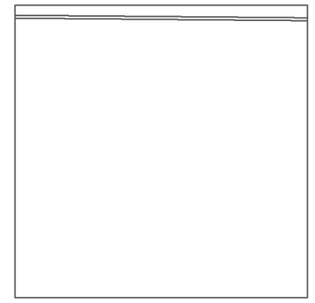
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915



Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

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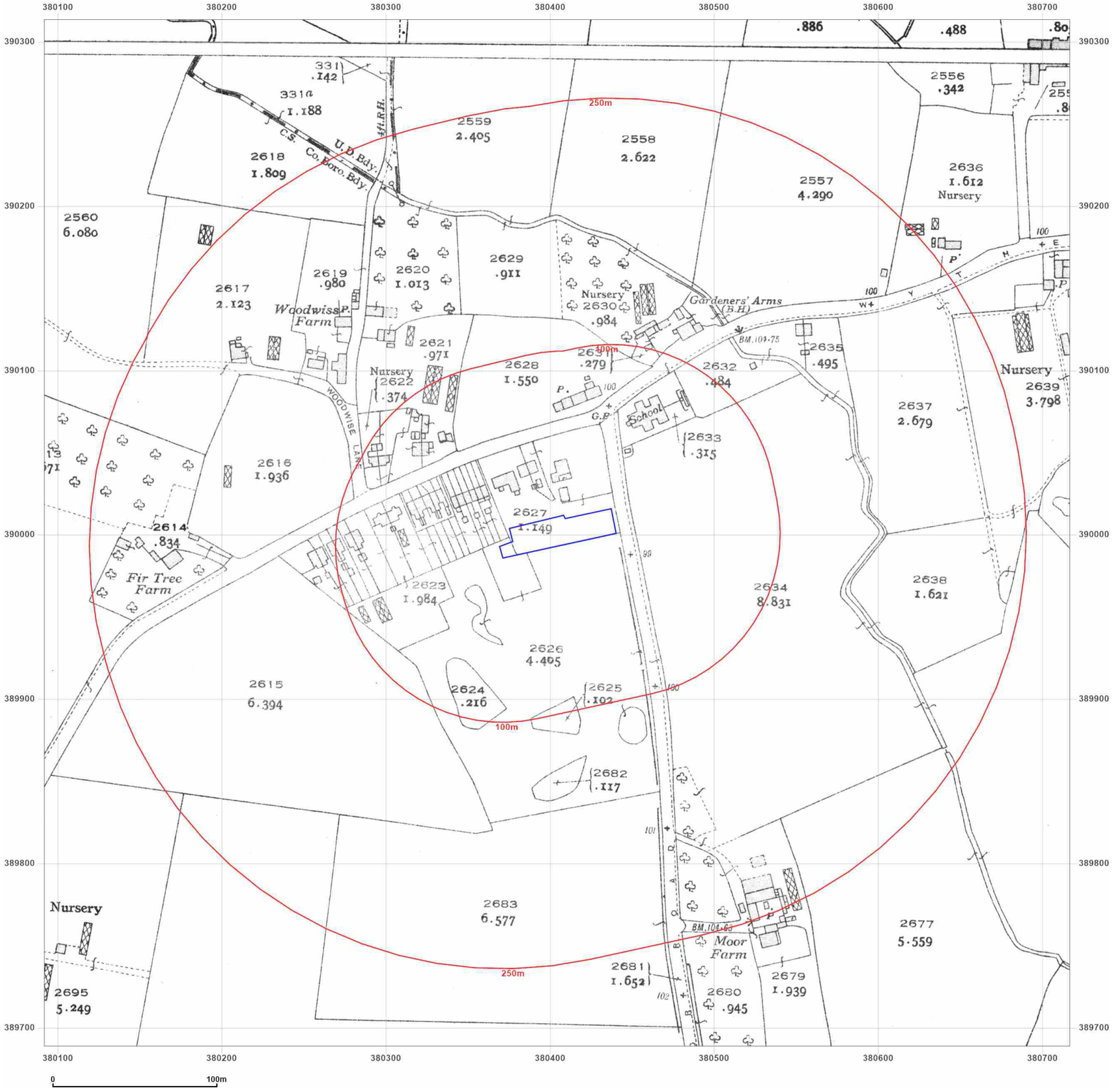
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Production date: 19 January 2021

Map legend available at:
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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: County Series

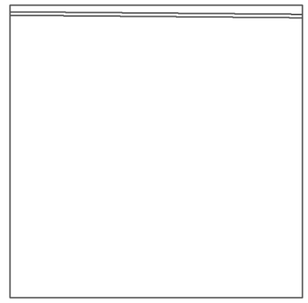
Map date: **1935**

Scale: 1:2,500

Printed at: 1:2,500

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W E
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Surveyed 1873
Revised 1935
Edition N/A
Copyright N/A
Levelled 1927



Surveyed 1873
Revised 1935
Edition N/A
Copyright N/A
Levelled 1927

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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1956**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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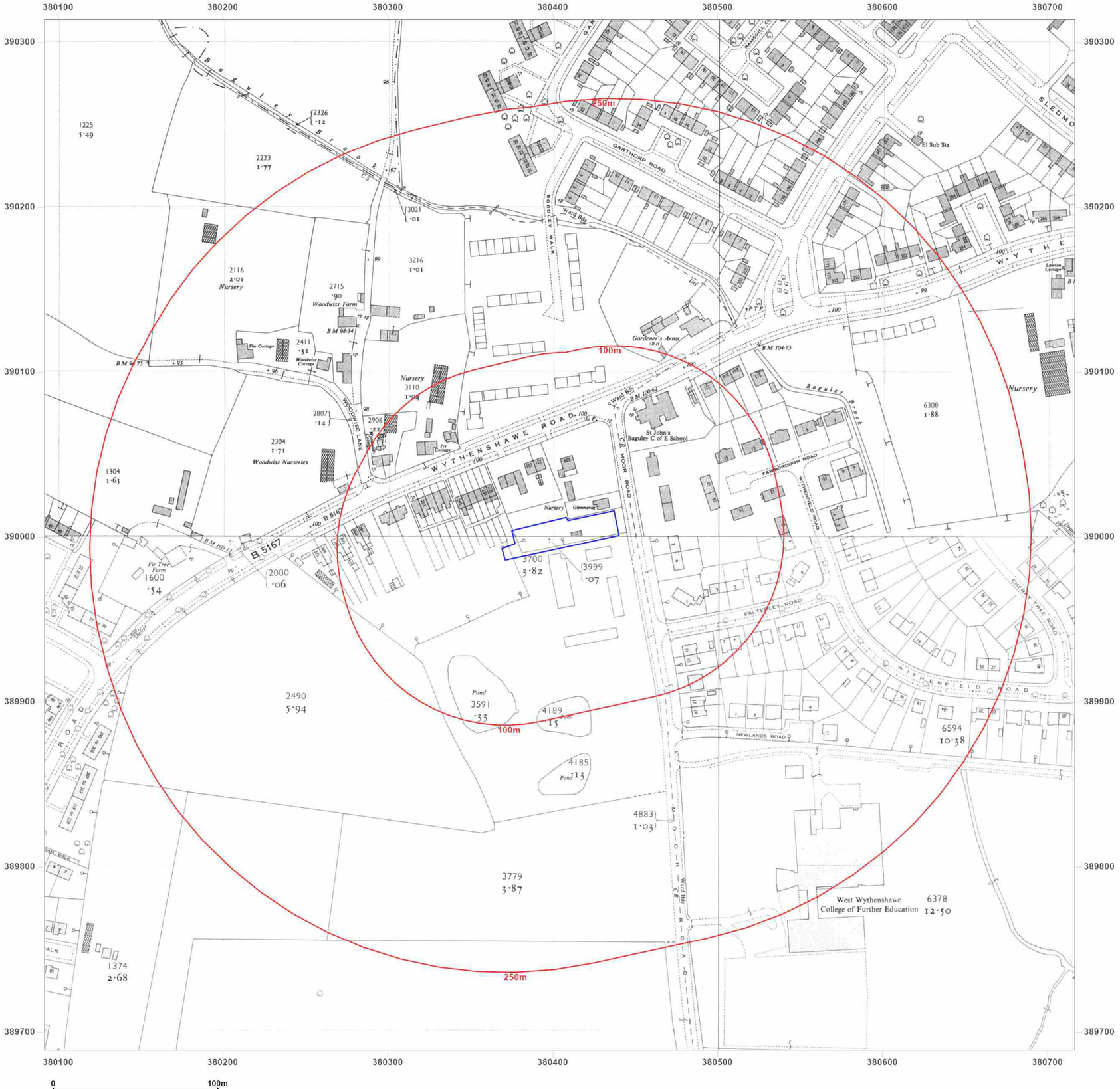
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Production date: 19 January 2021

Map legend available at:
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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1955-1958**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1955
Revised 1955
Edition N/A
Copyright N/A
Levelled 1949

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1960
Levelled 1949

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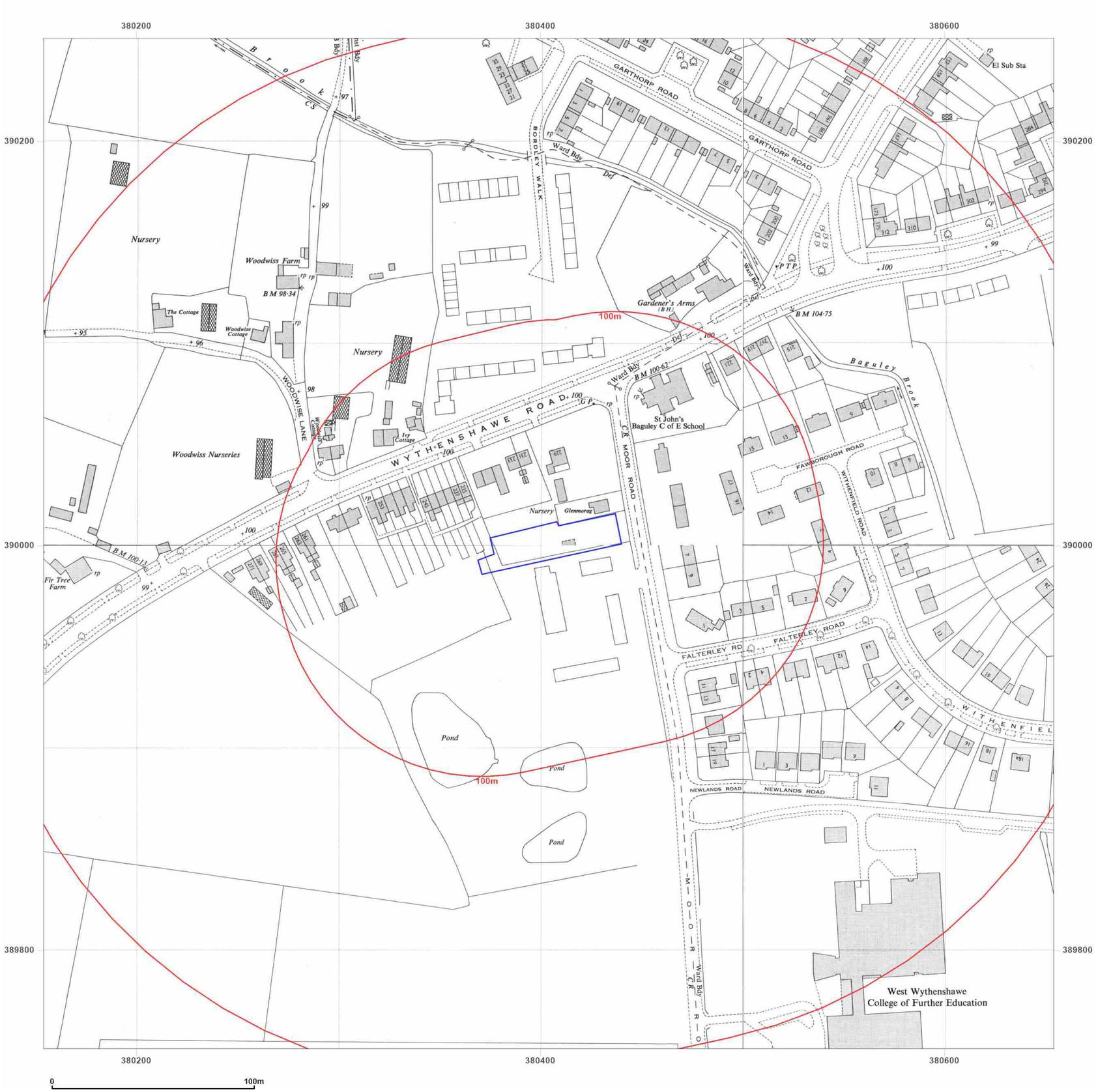
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1955-1959**

Scale: 1:1,250

Printed at: 1:2,000

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W E
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Surveyed 1955 Revised 1955 Edition N/A Copyright N/A Levelled 1949	Surveyed 1955 Revised 1955 Edition N/A Copyright N/A Levelled 1949
Surveyed 1958 Revised 1958 Edition N/A Copyright 1959 Levelled 1949	Surveyed 1958 Revised 1958 Edition N/A Copyright 1959 Levelled 1949

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

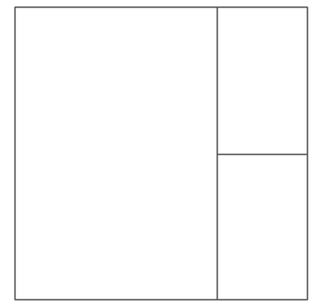
Map Name: National Grid

Map date: **1967-1972**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1955
Revised 1966
Edition N/A
Copyright 1967
Levelled 1958

Surveyed 1958
Revised 1971
Edition N/A
Copyright 1972
Levelled 1958

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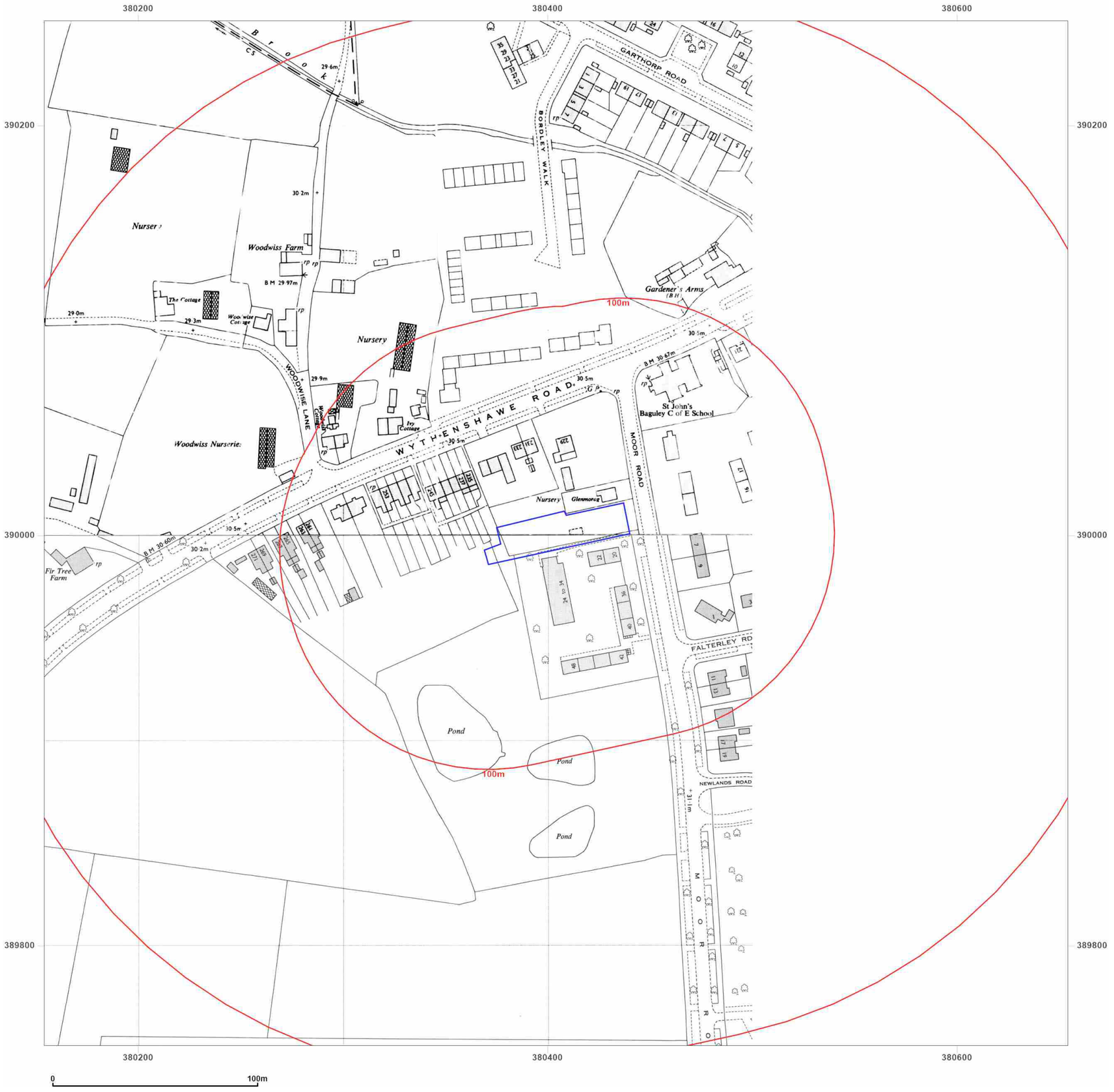
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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1976-1977**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1958
Revised 1975
Edition N/A
Copyright 1976
Levelled 1958

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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

N W E S

Surveyed 1965 Revised 1988 Edition N/A Copyright 1989 Levelled N/A		Surveyed N/A Revised N/A Edition N/A Copyright 1992 Levelled N/A
Surveyed 1958 Revised 1987 Edition N/A Copyright 1987 Levelled 1958		Surveyed 1963 Revised 1988 Edition N/A Copyright 1988 Levelled 1963

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1955 Revised 1988 Edition N/A Copyright 1992 Levelled N/A	Surveyed 1992 Revised 1992 Edition N/A Copyright N/A Levelled N/A
Surveyed 1958 Revised 1991 Edition N/A Copyright 1991 Levelled 1958	Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
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Site Details:

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Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1993-1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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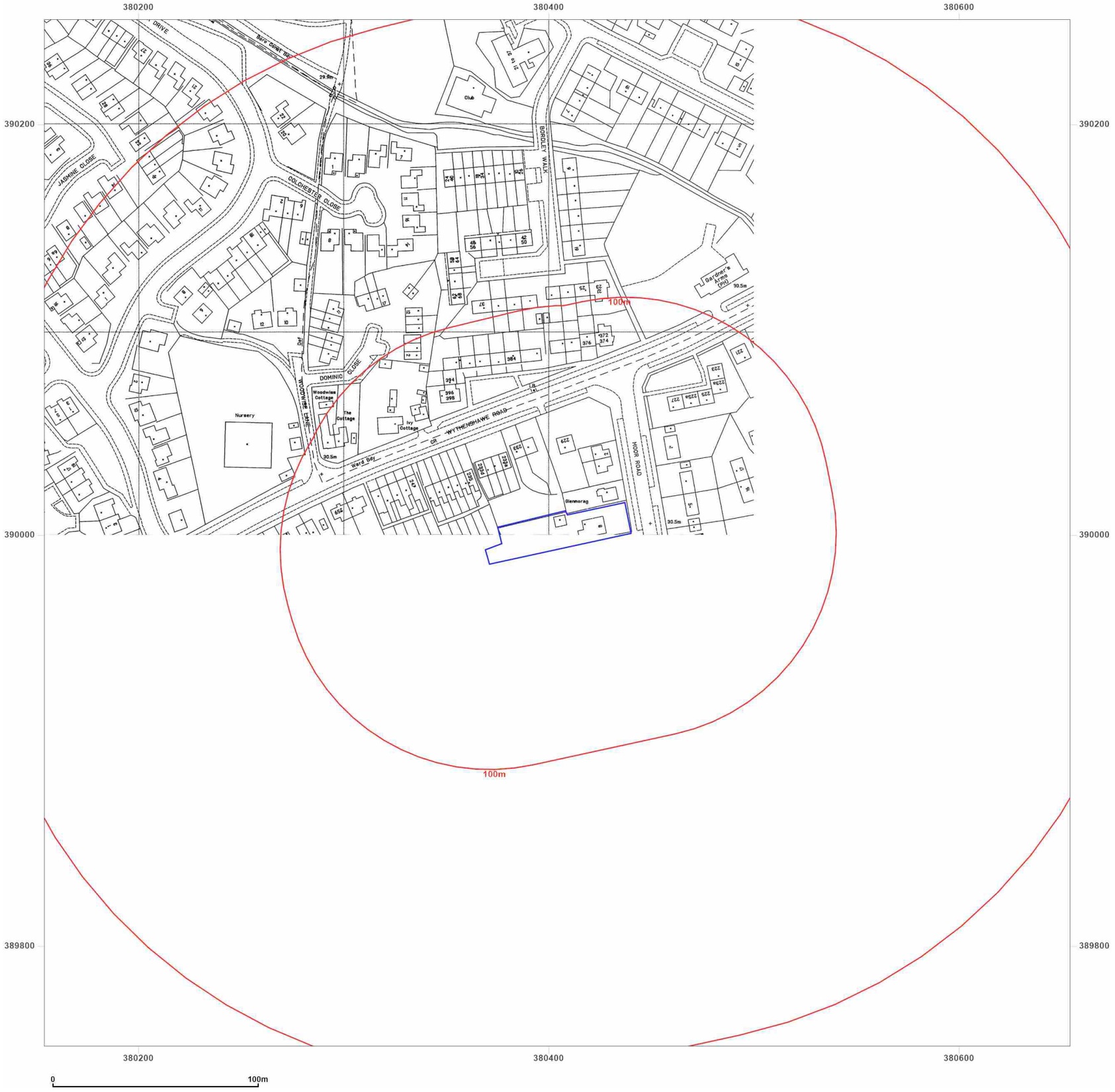
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Production date: 19 January 2021

Map legend available at:
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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed 1995
Revised 1995
Edition N/A
Copyright 1995
Levelled N/A

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Site Details:

Moor Road, Baguley,8 Moor Road,Baguley,M23 9BG

Client Ref: EMS_662502_873879
Report Ref: EMS-662502_873879
Grid Ref: 380404, 390001

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
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2003

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APPENDIX 4 - BGS Records

GEO-RESEARCH LTD.
BRIGHTON ROAD,
HEATON NORRIS,
STOCKPORT, CHESHIRE.

Borehole No. 9
Sheet No. 1 SJ88NW/866 80458992
Date Commenced 10/5/79
Date Completed 10/5/79
Scale 1:50

CONTRACT: WYTHENSHAWE ROAD/MOOR ROAD
LOCATION: MANCHESTER

Stratum	Legend	Thickness	Depth	Sample No.	N Value	Level	Remarks
			G.L.				
TOPSOIL		0.300	0.300				
Dark brown/black sand with concrete - FILL			0.500	B1			
			1.000	U1			
		1.200	1.500				
Dark brown SAND with gravel			2.000	B2			Water added
		0.900	2.400				
Soft/stiff brown sandy silty CLAY with sand inclusions and sandstone fragments			2.500	B3 U2			
			3.000	B4			
			3.500	U3			Water added
			5.300	U4			
		3.600	6.000				On completion of Borehole at 6.000. Casing at 3.000, Water Nil. Borehole backfilled as casing withdrawn.
Borehole Complete							

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GEO-RESEARCH LTD.
BRIGHTON ROAD,
HEATON NORRIS,
STOCKPORT, CHESHIRE.

CONTRACT: WYTHENSHAWE ROAD/MOOR ROAD

LOCATION: MANCHESTER

Borehole No. 4
Sheet No. 1 SJ88NW/861 8023 8998
Date Commenced 18/5/79
Date Completed 18/5/79
Scale 1:50

Stratum	Legend	Thick-ness	Depth	Sample No.	N Value	Level	Remarks
			G.L.				
TOPSOIL		0.300	0.300				
Brown silty SAND with peat inclusions			0.500	D1			
			1.000	U1			
			1.600	D2			Water struck at 1.700, Standing water level 1.000.
		1.600	1.900				
Compact brown SAND with gravel			2.000	P1	12		
			2.500	B1			
							Wet
			3.500	P2	12		
			3.800	B2			
		2.100	4.000				
Firm brown silty CLAY							
							Wet
			6.500	U2			
		3.100	7.100	D3			
Borehole Complete							On completion of Borehole at 7.100, Casing at 6.000. Standing water level 1.000. Borehole backfilled as casing withdrawn.

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NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Number
MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION	WS30_AIR

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		30.62	JACOBS ENGINEERING UK LTD	PN102241
	Location	**Dates**	**Engineer**	**Sheet**
	380466.51 E 390106.328 N	26/05/2010	MPACT	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				30.60	0.02			
					(0.18)	TARMACADAM		
				30.42	0.20			
0.30-0.40	E					MADE GROUND: Dark greyish brown slightly silty fine to coarse sand and gravel with medium cobble content. Gravel is fine to coarse angular to subangular of limestone, sandstone and brick fragments.		
0.40	D				(0.40)			
0.40-0.60	B			30.02	0.60			
0.80-1.00	E					MADE GROUND: Dark brown slightly silty gravelly fine to coarse sand. Gravel is fine to coarse angular to subangular of sandstone, brick, clay pipe, clinker and pottery fragments.		
1.00	D							
1.00-1.20	B				(1.20)			
1.20-1.65	SPT N=0		1,0/0,0,0,0			Very loose dark grey silty fine to medium SAND.		
1.20-1.65	D							
1.20-1.80	B							
1.80-3.20	B			28.82	1.80	Medium dense greyish brown slightly silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse subrounded of various lithologies.		
2.20-2.65	SPT N=17		2,4/4,4,4,5					▽1
2.20-4.20	B		Slow(1) at 2.50m.					
					(2.60)			
3.20-3.65	SPT N=13		2,2/2,3,4,4					
3.20-3.65	D							
4.20-4.65	SPT N=11		1,2/1,2,4,4	26.22	4.40	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded of various lithologies.		
4.20-4.65	D							
4.40-4.60	DN2201							
5.20-5.65	SPT N=10		1,2/2,2,3,3					
5.20-5.65	D				(2.25)			
5.40-5.50	D							
6.20-6.65	SPT N=7		1,2/1,2,2,2					
6.20-6.65	D							
			26/05/2010:2.50m	23.97	6.65	Complete at 6.65m		
			26/05/2010:					
			26/05/2010:					

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Remarks
Inspection pit hand excavated to 1.20m depth.; ES Sample = 4 x 60ml VOC vials, 2 x 1kg plastic tub and 1 x 258ml amber jars; PID = Photo-ionisation detector reading measuring Total volatile Organic Compounds concentration in ppm. ;

Scale (approx)	Logged By
1:50	MH

Figure No.

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SITE MANCHESTER.WYTHENSHAWE.
N.W.Region Computer Centre

RECORD OF BOREHOLE/TRIAL HOLE NO. A

JOB REF. NO. FGE/1174

GROUND LEVEL 30.14m

METHOD/SIZE Rotary. Air.

DATE 3.4.80

0 to 10.1m Open hole drilling.
10.1 to 30.0m Cored drilling..76mm dia.
Hole cased to 9.0m

SJ 88 NW/27A
802.898

Scale 1 : 50 metric

DESCRIPTION OF STRATA	m Depth	RUN TCR	RUN SCR	RUN RQD	SYMBOL	INTER-FACE LEVEL m	N
0 to 10.1m Open hole drilling.	1 2 3 4 5 6 7 8 9 10						

WATER STRUCK AT DEPTHS	DEPTH OF CASING WHEN SEALED N.S.—NOT SEALED	ESTIMATED FLOW	WATER ADDED AT DEPTHS TO ASSIST BORING	WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION		
				DATE	WATER LEVEL	DEPTH OF CASING
1. Losses of [illegible] to fracture		5 gpm thro	[illegible] text.			
2.						

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RECORD OF BOREHOLE/TRIAL HOLE NO....A.....
continued.

SJ 88 NW/27 A

802. 898

Scale 1 : 50 metric

SITE MANCHESTER.WYTHENSHAWE.
N.W.Region Computer Centre.
JOB REF. NO. FGE/1174
GROUND LEVEL 30.14m
METHOD/SIZE
DATE

DESCRIPTION OF STRATA	Depth m	RUN TCR	RUN SCR	RUN RQD	SYMBOL	INTER-FACE LEVEL m	N
10.10 to 10.55m Very stiff to hard reddish brown with tea green specks, friable SILTY CLAY with frequent lithorelics of siltstone.						19.59	
10.55 to 10.65m Angular fragments of SILTSTONE in a clay binder.						19.49	
10.65 to 19.20m Dark reddish brown muddy fine grained variably very thin bedded to medium bedded slightly weathered mod weak to strong SANDSTONE. Bedding planes usually smeared with clay. Clay bands from 15.04 to 15.06m, 15.27 to 15.34m, 19.10 to 19.11m. Locally jointed with solution holes and calcite crystals from 15.40 to 15.70m. Solution holes take the form of rounded depressions of the order of 5mm dia.	11	98	75	65			
	12						
	13						
	14	100	83	66			
	15						
	16						
	17						
	18	100	95	65			
	19					10.94	
19.20 to 19.55m Very weak finely laminated reddish brown and tea green friable weathered CLAYEY SHALE.	20	100	80	60		10.59	

WATER STRUCK AT DEPTHS	DEPTH OF CASING WHEN SEALED N.S.—NOT SEALED	ESTIMATED FLOW	WATER ADDED AT DEPTHS TO ASSIST BORING	WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION		
				DATE	WATER LEVEL	DEPTH OF CASING
1.						
2.						

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RECORD OF BOREHOLE/TRIAL HOLE NO....A..... continued.

SJ 88 NW/27 A
802.898

SITE MANCHESTER, WYTHENSHAWE, N.W.Region Computer Centre.
JOB REF. NO. FGE/1174
GROUND LEVEL 30.14
METHOD/SIZE
DATE

Scale 1 : 50 metric

DESCRIPTION OF STRATA	Depth	RUN TCR	RUN SCR	RUN RQD	SYMBOL	INTER-FACE LEVEL m	N
19.55 to 20.30m Tea green/light grey striped very thin bedded to thin bedded slightly weathered to fresh SILTSTONE and muddy fine grained SANDSTONE.						9.84	
20.30 to 26.80m Dark reddish brown with occasional thin tea green striped bands very thin bedded to medium bedded slightly weathered muddy fine grained SANDSTONE. Mod weak to strong with occasional small solution holes. Clay smear on bedding planes. Locally jointed.	21	100	80	60			
	22						
	23	100	90	62			
	24						
	25						
	26	100	84	66			
26.80 to 26.95m Very weak friable reddish brown CLAY with mudstone fragments.						3.34	
	27					3.19	
26.95 to 30.00m Tea green and white striped very thin bedded to thin bedded slightly weathered to fresh SILTSTONE and muddy fine grained SANDSTONE. Clay smear on bedding planes.	28						
	29	100	100	74			
Hole terminated at 30.00m	30					0.14	

WATER STRUCK AT DEPTHS	DEPTH OF CASING WHEN SEALED N.S.–NOT SEALED	ESTIMATED FLOW	WATER ADDED AT DEPTHS TO ASSIST BORING	WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION		
				DATE	WATER LEVEL	DEPTH OF CASING
1.						
2.						
3						

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NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Trial Pit Number
MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION	TP61_AIR

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		29.97	JACOBS ENGINEERING UK LTD	PN102241
	Location	**Dates**	**Engineer**	**Sheet**
	380451.401 E 390131.438 N	09/06/2010	MPACT	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Rough vegetation over dark brown very sandy TOPSOIL		
0.20-0.30	B				(0.40)			
0.20-0.30	D							
0.20-0.30	E			29.57	0.40	Brown slightly silty slightly gravelly fine to coarse SAND		
0.50-0.70	BN2255					At 0.50m, becoming orangish brown with depth		
0.50-0.70	D							
0.50-0.70	E							
0.85-0.95	BN2248				(1.00)			
0.85-0.95	D							
1.40-1.60	B			28.57	1.40			
1.40-1.60	DN2253				(0.20)	Dark brown weakly cemented slightly silty gravelly fine to coarse SAND with high organic content		
				28.37	1.60			
1.70-1.90	BN2253					Brownish grey slightly gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular of sandstone and quartz		
1.70-1.90	DN2253							
			Slow to moderate.(1) at 2.30m.		(1.40)	At 2.40m, becoming very gravelly.		▽1
			09/06/2010:2.30m	26.97	3.00	Complete at 3.00m		
			09/06/2010:					

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	LP	

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SJ 88 NW/27A-Q

1:1250 SCALE

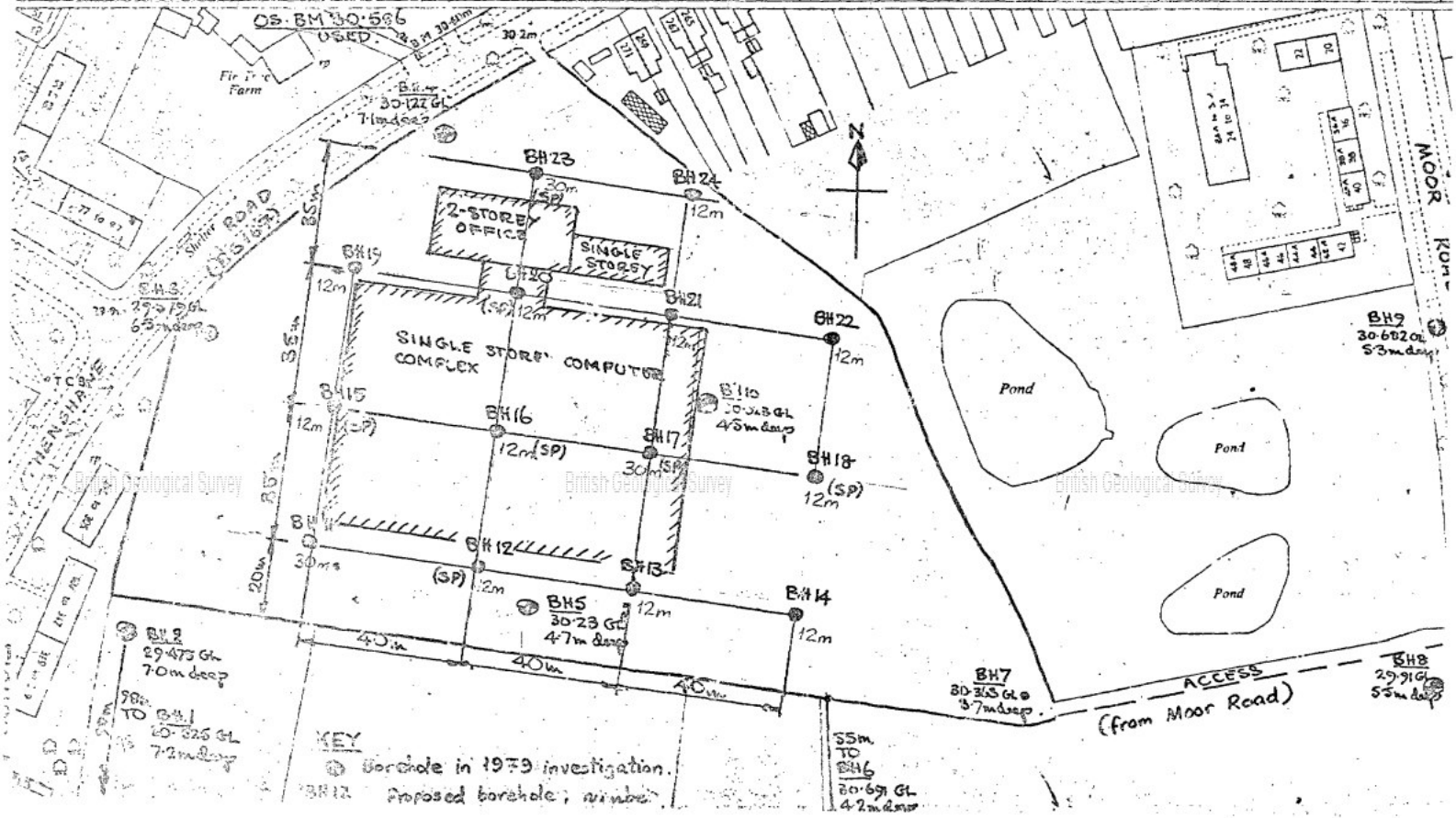
ORDNANCE SURVEY

HEIGHTS IN METRES

SJ 8090 SW

ESTER COUNTY | MANCHESTER DISTRICT | BROOKLANDS WARD | MANCHESTER No 20 E D

802 MANCHESTER 803 804



APPENDIX 5 - Groundsure Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Moor Road, Baguley, 8 Moor Road, Baguley, M23 9BG,

Order Details

Date: 19/01/2021

Your ref: EMS_662502_873880

Our Ref: EMS-662502_873880

Client: emapsite

Site Details

Location: 380405 390001

Area: 0.11 ha

Authority: Manchester City Council



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Summary of findings p. 2

OS MasterMap site plan p.13

Aerial image p. 8

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	**1.1**	**Historical industrial land uses**	0	1	10	3	-
15	1.2	Historical tanks	0	0	0	0	-
15	**1.3**	**Historical energy features**	0	0	1	10	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
18	**2.1**	**Historical industrial land uses**	0	1	17	3	-
19	2.2	Historical tanks	0	0	0	0	-
20	**2.3**	**Historical energy features**	0	0	3	20	-
21	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23	**3.7**	**Waste exemptions**	0	0	0	2	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
25	**4.1**	**Recent industrial land uses**	0	0	7	-	-
26	4.2	Current or recent petrol stations	0	0	0	0	-
26	4.3	Electricity cables	0	0	0	0	-
26	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-

27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
27	4.7	Regulated explosive sites	0	0	0	0	-
27	4.8	Hazardous substance storage/usage	0	0	0	0	-
27	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
28	**4.12**	**Radioactive Substance Authorisations**	0	0	1	0	-
28	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
29	4.15	Pollutant release to public sewer	0	0	0	0	-
29	4.16	List 1 Dangerous Substances	0	0	0	0	-
29	4.17	List 2 Dangerous Substances	0	0	0	0	-
29	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
31	**5.1**	**Superficial aquifer**	Identified (within 500m)				
33	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
35	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
36	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	**5.6**	**Groundwater abstractions**	0	0	0	0	3
38	5.7	Surface water abstractions	0	0	0	0	0
39	5.8	Potable abstractions	0	0	0	0	0
39	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	**6.1**	**Water Network (OS MasterMap)**	0	0	6	-	-

41	**6.2**	**Surface water features**	0	0	4	-	-
41	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
42	**6.4**	**WFD Surface water bodies**	0	0	1	-	-
42	**6.5**	**WFD Groundwater bodies**	2	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
44	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
45	7.2	Historical Flood Events	0	0	0	-	-
45	7.3	Flood Defences	0	0	0	-	-
45	**7.4**	**Areas Benefiting from Flood Defences**	0	0	1	-	-
45	7.5	Flood Storage Areas	0	0	0	-	-
46	7.6	Flood Zone 2	None (within 50m)				
46	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
47	**8.1**	**Surface water flooding**	1 in 30 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding	
49	**9.1**	**Groundwater flooding**	Moderate (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
50	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
51	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
51	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
51	10.4	Special Protection Areas (SPA)	0	0	0	0	0
51	10.5	National Nature Reserves (NNR)	0	0	0	0	0
52	**10.6**	**Local Nature Reserves (LNR)**	0	0	0	1	0
52	10.7	Designated Ancient Woodland	0	0	0	0	0
52	10.8	Biosphere Reserves	0	0	0	0	0
52	10.9	Forest Parks	0	0	0	0	0
53	10.10	Marine Conservation Zones	0	0	0	0	0
53	**10.11**	**Green Belt**	0	0	0	0	2
53	10.12	Proposed Ramsar sites	0	0	0	0	0

53	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
54	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
54	10.15	Nitrate Sensitive Areas	0	0	0	0	0
54	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
55	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
56	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
57	11.1	World Heritage Sites	0	0	0	-	-
57	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
57	11.3	National Parks	0	0	0	-	-
57	11.4	Listed Buildings	0	0	0	-	-
58	11.5	Conservation Areas	0	0	0	-	-
58	11.6	Scheduled Ancient Monuments	0	0	0	-	-
58	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
59	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
60	12.2	Open Access Land	0	0	0	-	-
60	12.3	Tree Felling Licences	0	0	0	-	-
60	12.4	Environmental Stewardship Schemes	0	0	0	-	-
60	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
61	**13.1**	**Priority Habitat Inventory**	1	0	0	-	-
62	13.2	Habitat Networks	0	0	0	-	-
62	**13.3**	**Open Mosaic Habitat**	0	0	1	-	-
62	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
63	**14.1**	**10k Availability**	Identified (within 500m)				
65	14.2	Artificial and made ground (10k)	0	0	0	0	-
66	**14.3**	**Superficial geology (10k)**	2	0	3	3	-

67	14.4	Landslip (10k)	0	0	0	0	-
68	**14.5**	**Bedrock geology (10k)**	2	1	1	3	-
69	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
70	**15.1**	**50k Availability**	Identified (within 500m)				
71	15.2	Artificial and made ground (50k)	0	0	0	0	-
71	15.3	Artificial ground permeability (50k)	0	0	-	-	-
72	**15.4**	**Superficial geology (50k)**	1	0	1	0	-
73	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
73	15.6	Landslip (50k)	0	0	0	0	-
73	15.7	Landslip permeability (50k)	None (within 50m)				
74	**15.8**	**Bedrock geology (50k)**	1	1	0	0	-
75	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
75	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
76	**16.1**	**BGS Boreholes**	0	0	38	-	-
Page	Section	Natural ground subsidence					
79	**17.1**	**Shrink swell clays**	Negligible (within 50m)				
80	**17.2**	**Running sands**	Very low (within 50m)				
81	**17.3**	**Compressible deposits**	Negligible (within 50m)				
82	**17.4**	**Collapsible deposits**	Very low (within 50m)				
83	**17.5**	**Landslides**	Very low (within 50m)				
84	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
85	18.1	Natural cavities	0	0	0	0	-
86	18.2	BritPits	0	0	0	0	-
86	**18.3**	**Surface ground workings**	8	9	26	-	-
88	18.4	Underground workings	0	0	0	0	0
88	18.5	Historical Mineral Planning Areas	0	0	0	0	-

88	18.6	Non-coal mining	0	0	0	0	0
88	18.7	Mining cavities	0	0	0	0	0
88	**18.8**	**JPB mining areas**	Identified (within 0m)				
89	18.9	Coal mining	None (within 0m)				
89	18.10	Brine areas	None (within 0m)				
89	18.11	Gypsum areas	None (within 0m)				
89	18.12	Tin mining	None (within 0m)				
90	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
91	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
92	**20.1**	**BGS Estimated Background Soil Chemistry**	2	1	-	-	-
92	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
92	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
93	21.1	Underground railways (London)	0	0	0	-	-
93	21.2	Underground railways (Non-London)	0	0	0	-	-
94	21.3	Railway tunnels	0	0	0	-	-
94	21.4	Historical railway and tunnel features	0	0	0	-	-
94	21.5	Royal Mail tunnels	0	0	0	-	-
94	21.6	Historical railways	0	0	0	-	-
94	**21.7**	**Railways**	0	3	3	-	-
95	21.8	Crossrail 1	0	0	0	0	-
95	21.9	Crossrail 2	0	0	0	0	-
95	21.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 22/04/2019

Site Area: 0.11ha

Recent site history - 2016 aerial photograph



Capture Date: 21/04/2016

Site Area: 0.11ha

Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.11ha

Recent site history - 2009 aerial photograph



Capture Date: 24/06/2009

Site Area: 0.11ha

Recent site history - 2000 aerial photograph



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Capture Date: 27/06/2000

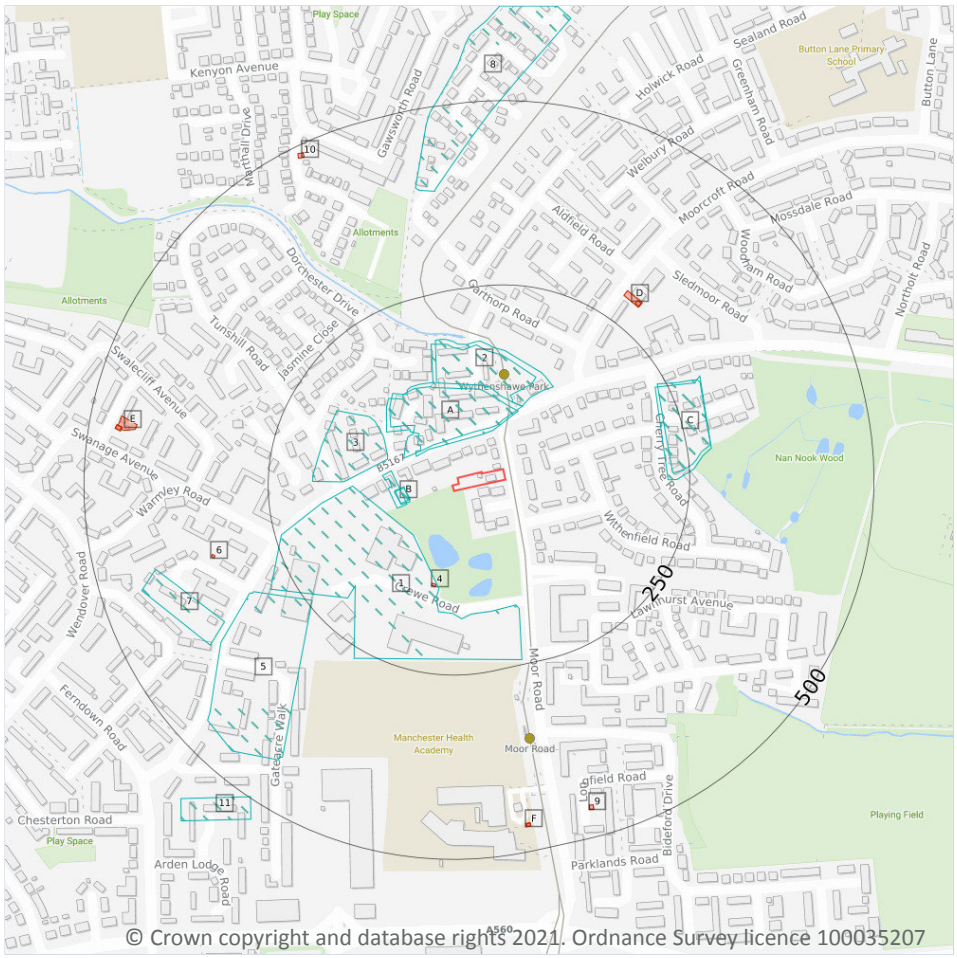
Site Area: 0.11ha

OS MasterMap site plan



Site Area: 0.11ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	14

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	48m N	Nursery	1938	867523

ID	Location	Land use	Dates present	Group ID
A	53m N	Nursery	1938 - 1955	955164
B	60m W	Smithy	1908 - 1911	922323
B	61m W	Smithy	1938	910589
B	66m W	Smithy	1905	973468
1	82m SW	Unspecified Works	1989 - 1995	882446
2	89m N	Nursery	1955	881102
3	95m W	Nurseries	1966	843946
C	219m E	Nursery	1938	980734
C	225m E	Nursery	1955 - 1966	968660
5	243m SW	Nursery	1938 - 1954	918141
7	358m SW	Nursery	1938	831849
8	386m N	Nursery	1988	831892
11	498m SW	Nursery	1967	831848

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	11

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
4	129m S	Electricity Substation	1987 - 1993	71145
D	286m NE	Electricity Substation	1992	71927
D	287m NE	Electricity Substation	1955 - 1967	74716
6	336m W	Electricity Substation	1993	61863
E	436m W	Electricity Substation	1956	78720
E	455m W	Electricity Substation	1972 - 1994	82603
E	456m W	Electricity Substation	1990	76573
9	456m S	Electricity Substation	1972 - 1992	79015
F	461m S	Electricity Substation	1987 - 1993	76453
F	462m S	Electricity Transformer	1976	63790
10	482m NW	Electricity Substation	1994 - 1995	82936

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

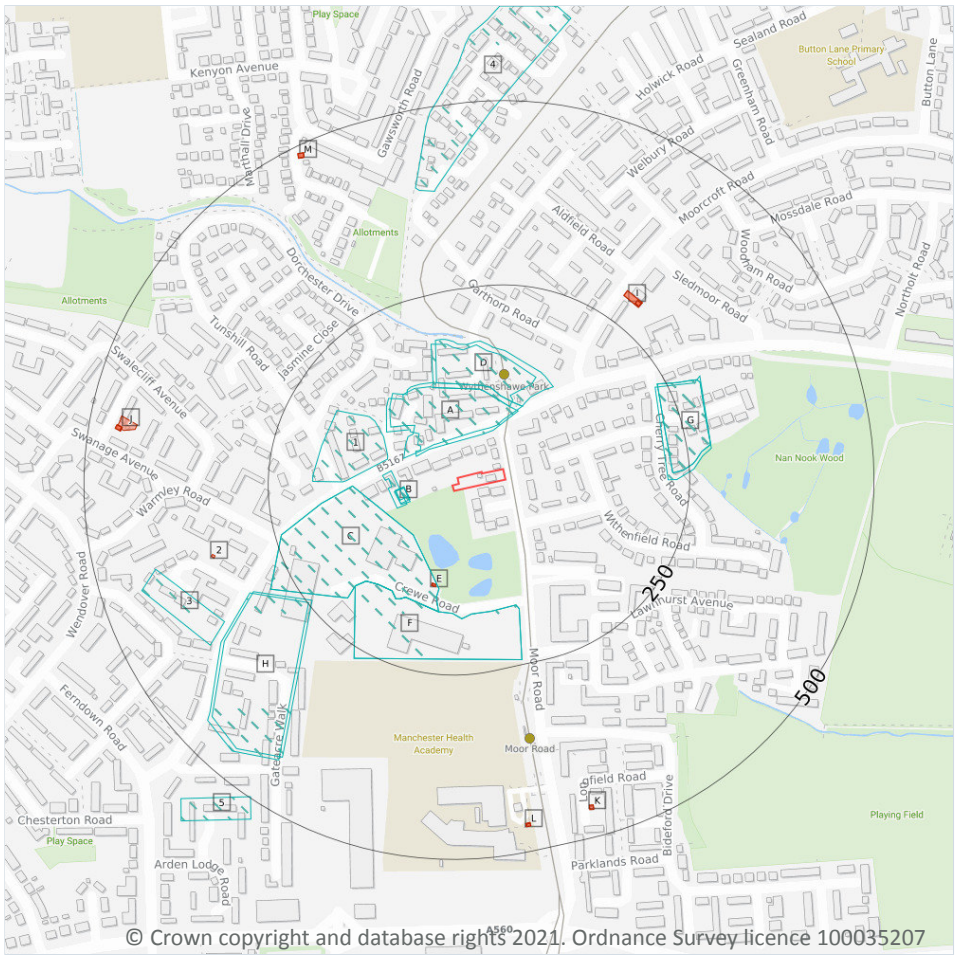
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical energy features

2.1 Historical industrial land uses

Records within 500m	21

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

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

ID	Location	Land Use	Date	Group ID
A	48m N	Nursery	1938	867523
A	53m N	Nursery	1955	955164
B	60m W	Smithy	1911	922323

ID	Location	Land Use	Date	Group ID
B	61m W	Smithy	1938	910589
B	62m W	Smithy	1908	922323
B	66m W	Smithy	1905	973468
C	82m SW	Unspecified Works	1995	882446
C	82m SW	Unspecified Works	1989	882446
D	85m N	Nursery	1938	955164
D	89m N	Nursery	1955	881102
1	95m W	Nurseries	1966	843946
F	159m SW	Unspecified Works	1995	882446
F	159m SW	Unspecified Works	1989	882446
G	219m E	Nursery	1938	980734
G	225m E	Nursery	1955	968660
G	225m E	Nursery	1966	968660
H	243m SW	Nursery	1954	918141
H	249m SW	Nursery	1938	918141
3	358m SW	Nursery	1938	831849
4	386m N	Nursery	1988	831892
5	498m SW	Nursery	1967	831848

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**0**

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

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**23**

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

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

ID	Location	Land Use	Date	Group ID
E	129m S	Electricity Substation	1987	71145
E	129m S	Electricity Substation	1991	71145
E	129m S	Electricity Substation	1993	71145
I	286m NE	Electricity Substation	1992	71927
I	286m NE	Electricity Substation	1992	71927
I	287m NE	Electricity Substation	1967	74716
I	287m NE	Electricity Substation	1955	74716
I	288m NE	Electricity Substation	1955	74716
2	336m W	Electricity Substation	1993	61863
J	436m W	Electricity Substation	1956	78720
J	455m W	Electricity Substation	1972	82603
J	455m W	Electricity Substation	1972	82603
J	456m W	Electricity Substation	1994	82603
J	456m W	Electricity Substation	1990	76573
K	456m S	Electricity Substation	1972	79015
K	457m S	Electricity Substation	1992	79015
L	461m S	Electricity Substation	1987	76453
L	461m S	Electricity Substation	1991	76453
L	462m S	Electricity Transformer	1976	63790
L	463m S	Electricity Substation	1993	76453
M	482m NW	Electricity Substation	1994	82936
M	482m NW	Electricity Substation	1994	82936
M	483m NW	Electricity Substation	1995	82936

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

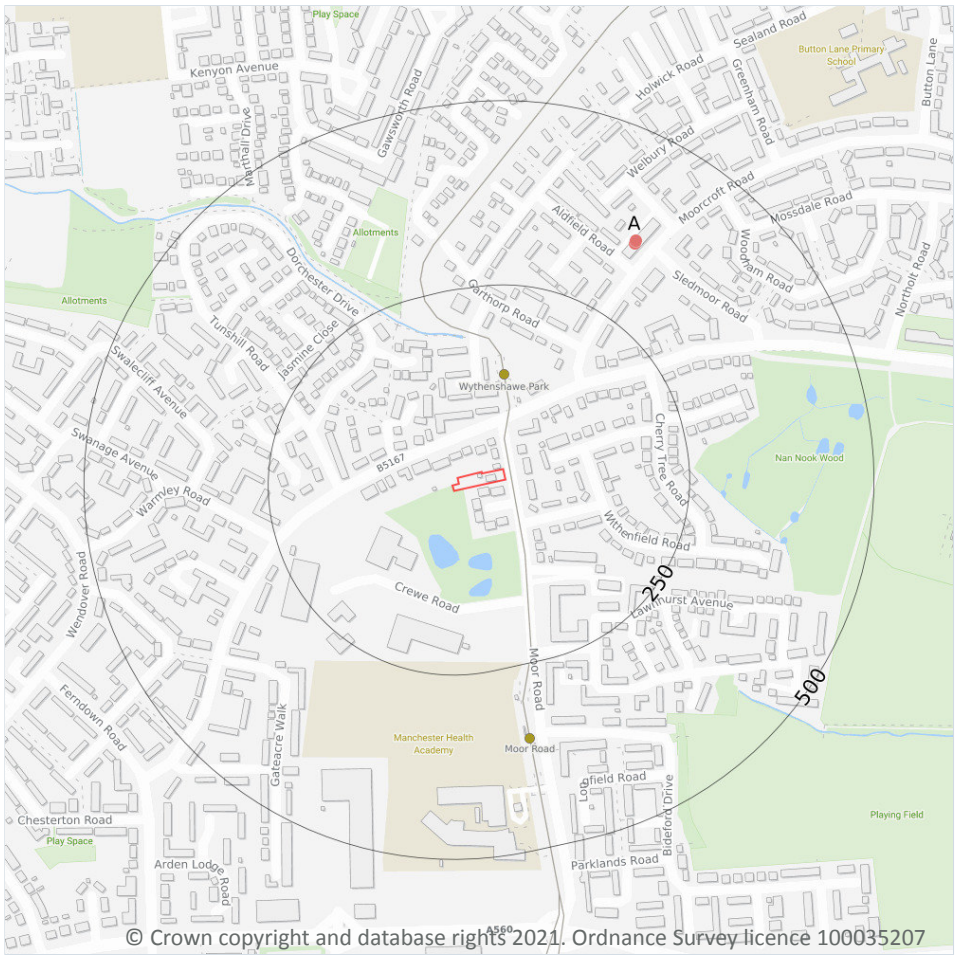
2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	2

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

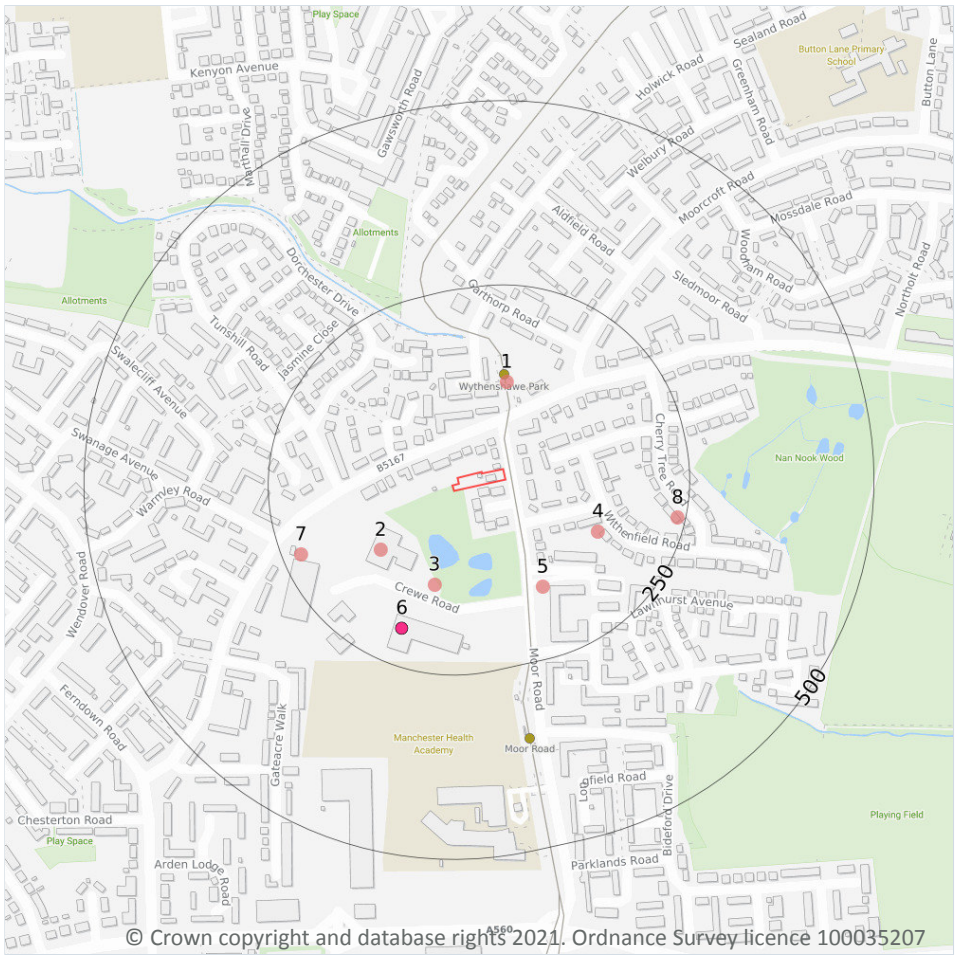
Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	353m NE	164, MOORCROFT ROAD, MANCHESTER, M23 0AH	WEX106655	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
A	358m NE	Moorcroft Pharmacy 164 Moorcroft Road Manchester M23 0AH	EPR/NE5547X B/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal

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

4 Current industrial land use



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4.1 Recent industrial land uses

Records within 250m	7

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Company	Address	Activity	Category
1	118m N	Wythenshawe Park (Manchester Metrolink)	Greater Manchester, M23	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
2	128m SW	Works	Greater Manchester, M23	Unspecified Works Or Factories	Industrial Features

ID	Location	Company	Address	Activity	Category
3	130m S	Electricity Sub Station	Greater Manchester, M23	Electrical Features	Infrastructure and Facilities
4	144m SE	Electricity Sub Station	Greater Manchester, M23	Electrical Features	Infrastructure and Facilities
5	154m S	Electricity Sub Station	Greater Manchester, M23	Electrical Features	Infrastructure and Facilities
7	225m SW	Electricity Sub Station	Greater Manchester, M23	Electrical Features	Infrastructure and Facilities
8	239m E	The Car Centre	34, Cherry Tree Road, Manchester, Greater Manchester, M23 9BX	Vehicle Repair, Testing and Servicing	Repair and Servicing

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	0

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	1

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

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Address	Details	
6	199m S	Gv Instruments Ltd, Crewe Road,wythenshawe, Manchester, Greater Manchester, M23 9BE	Operator: Gv Instruments Ltd Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BY0747 Date of approval: 08/09/2004	Effective from: 08/09/2004 Last date of update: 01/01/2015 Status: Revoked/cancelled

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

4.13 Licensed Discharges to controlled waters

Records within 500m	0

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

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

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

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

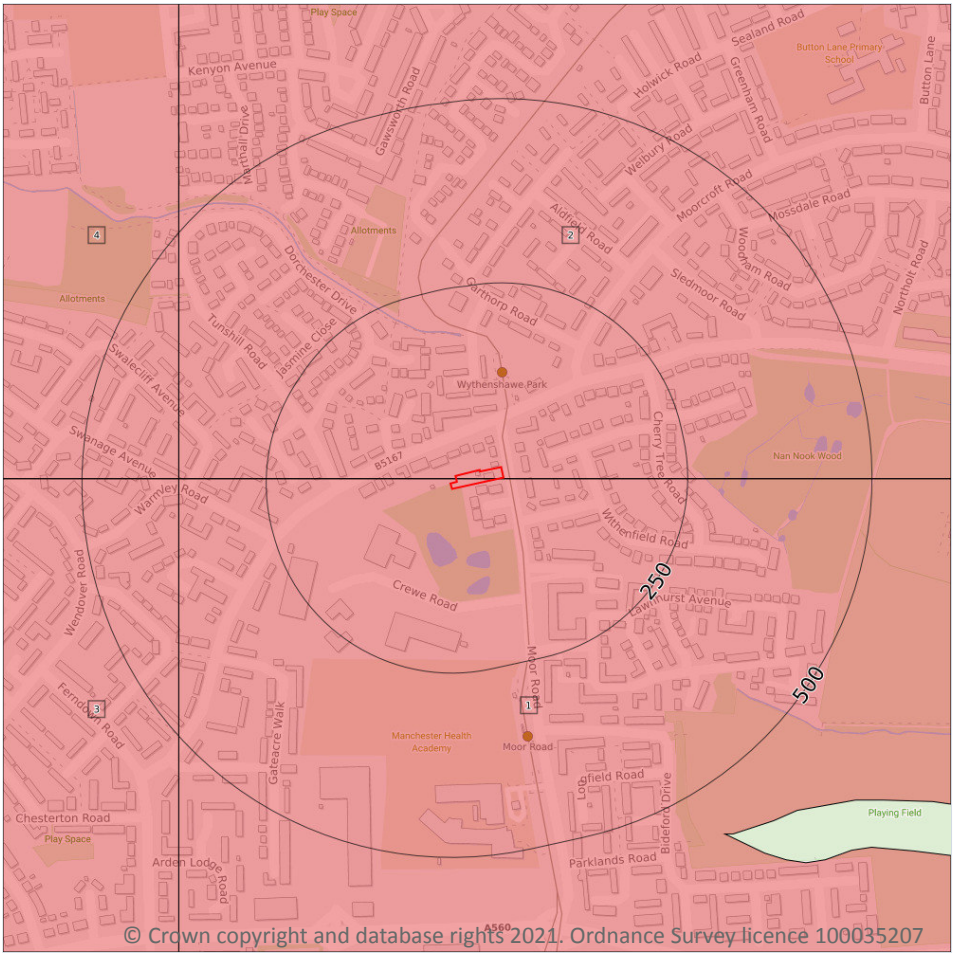
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



5.1 Superficial aquifer

Records within 500m	4

Aquifer status of groundwater held within superficial geology.

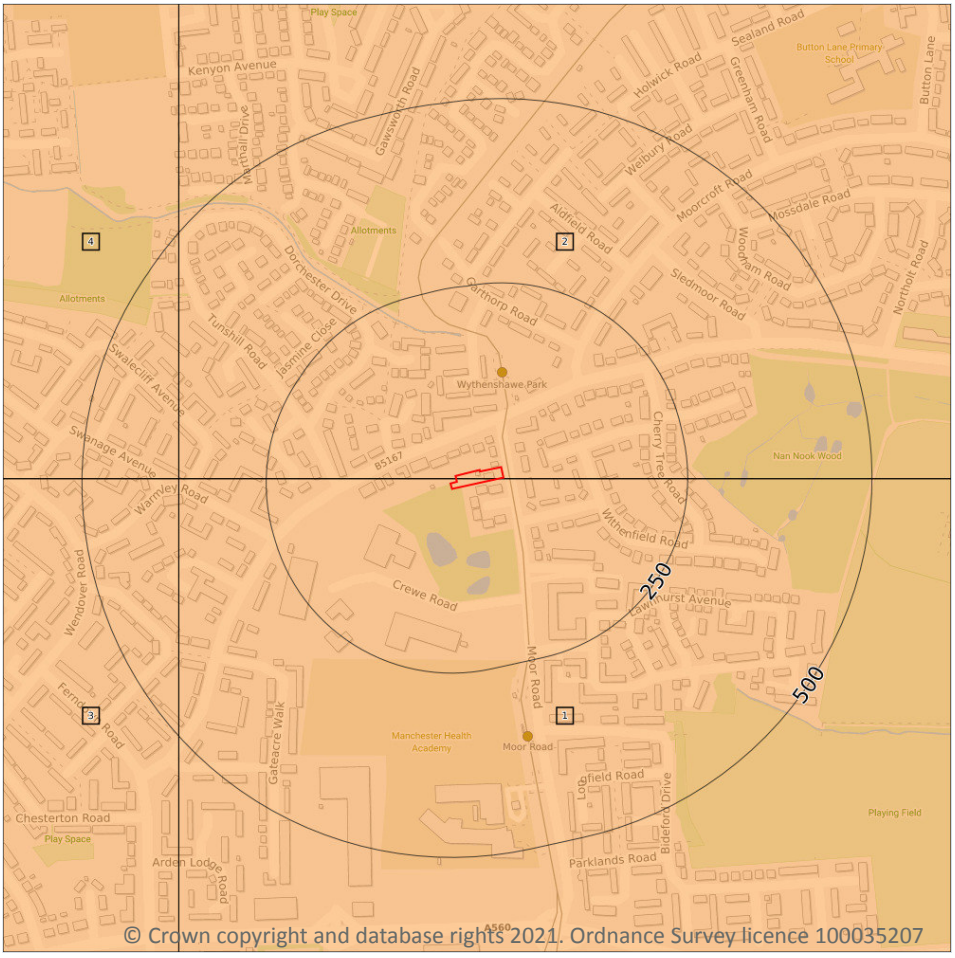
Features are displayed on the Hydrogeology map on **page 31**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	369m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	369m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	4

Aquifer status of groundwater held within bedrock geology.

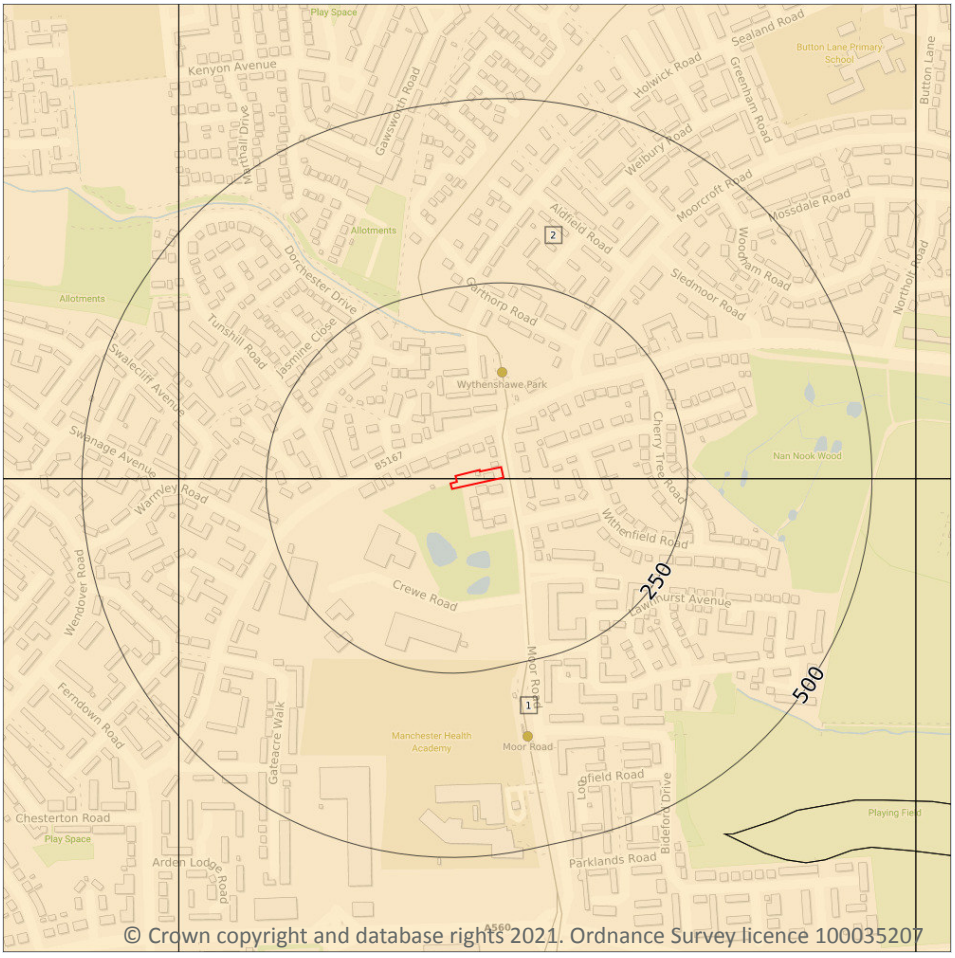
Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

ID	Location	Designation	Description
3	369m W	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
4	369m W	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on **page 35**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

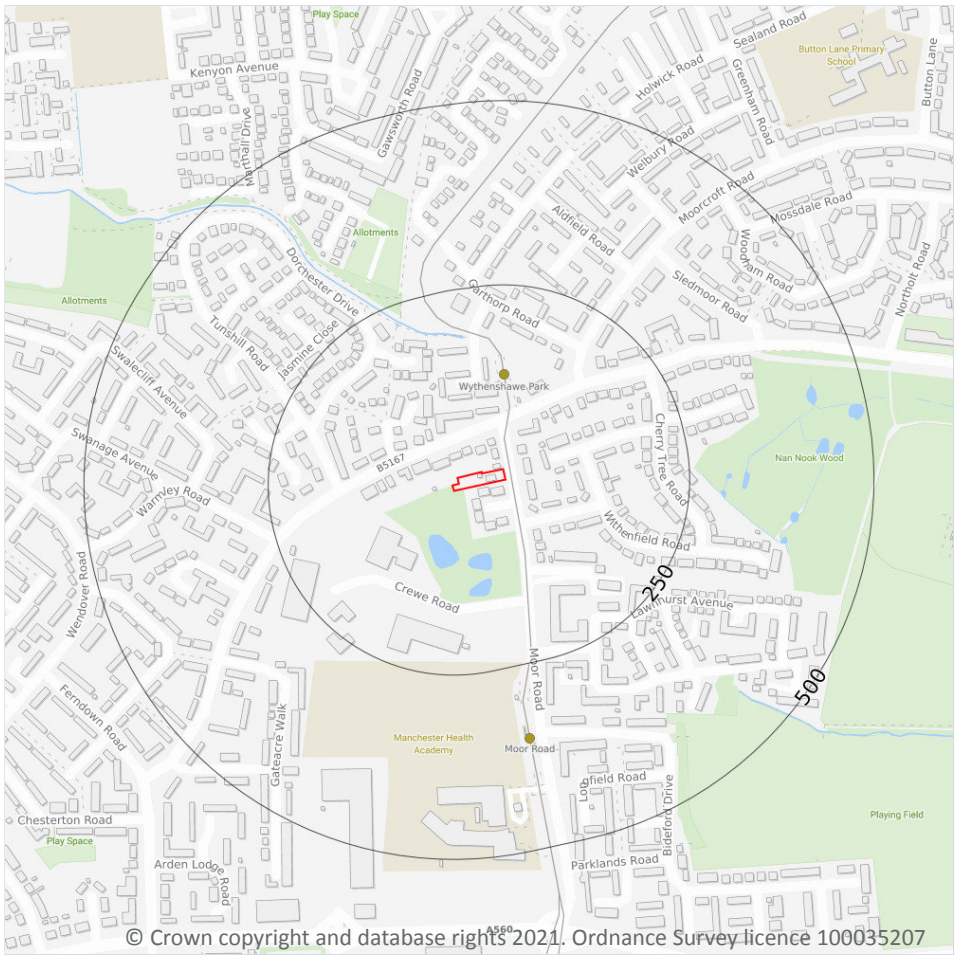
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

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

5.6 Groundwater abstractions

Records within 2000m	3

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 37**

ID	Location	Details	
-	1692m N	Status: Historical Licence No: 2569015003 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT NURSERY, RUTLAND LANE, SALE,CHESHIRE Data Type: Point Name: RILEY Easting: 380600 Northing: 391700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 25/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/01/1966 Version End Date: -
-	1891m N	Status: Historical Licence No: 2569015002 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT PREMISES, 5 RUTLAND LANE, SALE, CHESH" Data Type: Point Name: ASTBURY Easting: 380600 Northing: 391900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/01/1966 Version End Date: -
-	1891m N	Status: Historical Licence No: 2569015002 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT PREMISES, 5 RUTLAND LANE, SALE, CHESH Data Type: Point Name: ASTBURY Easting: 380600 Northing: 391900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/01/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**0**

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

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



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6.1 Water Network (OS MasterMap)

Records within 250m	6

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

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type of water feature	Ground level	Permanence	Name
3	98m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Baguley Brook

ID	Location	Type of water feature	Ground level	Permanence	Name
4	134m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Baguley Brook
5	167m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Baguley Brook
D	184m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Baguley Brook
D	224m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Baguley Brook
C	227m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Baguley Brook

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	4

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

Features are displayed on the Hydrology map on **page 40**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

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

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River WB catchment**	**Sinderland Brook (Fairywell Bk and Baguley Bk)**	**GB112069061270**	**Bollin, Dean, Upper Mersey**	**Upper Mersey**

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

6.4 WFD Surface water bodies

Records identified	**1**

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

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
2	98m E	River	Sinderland Brook (Fairywell Bk and Baguley Bk)	GB112069061270	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	**2**

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

Features are displayed on the Hydrology map on **page 40**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**GB41202G991700**	**Poor**	**Poor**	**Good**	**2015**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**GB41202G991700**	**Poor**	**Poor**	**Good**	**2016**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

Environment Agency river and coastal flooding:

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

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	1

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

Features are displayed on the River and coastal flooding map on **page 44**

ID	Location	
5	236m N	Area benefiting from flood defences

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

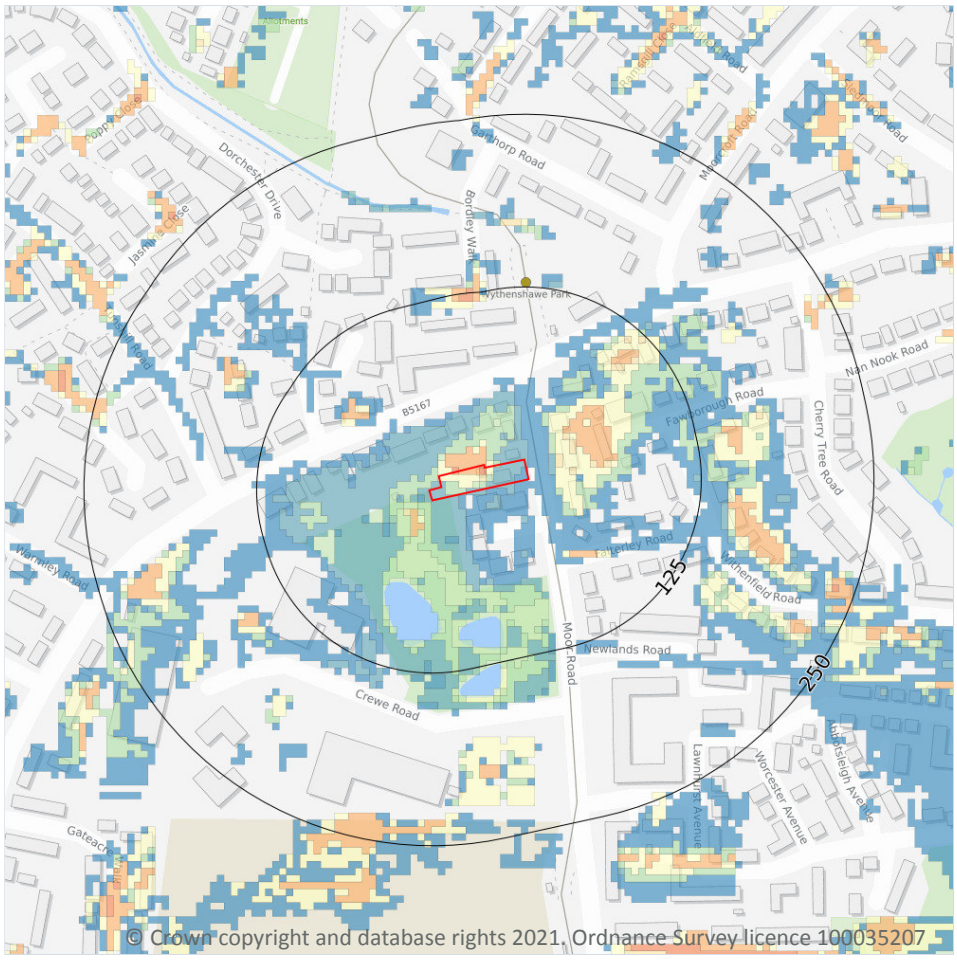
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

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

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

Features are displayed on the Surface water flooding map on **page 47**

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

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

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

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

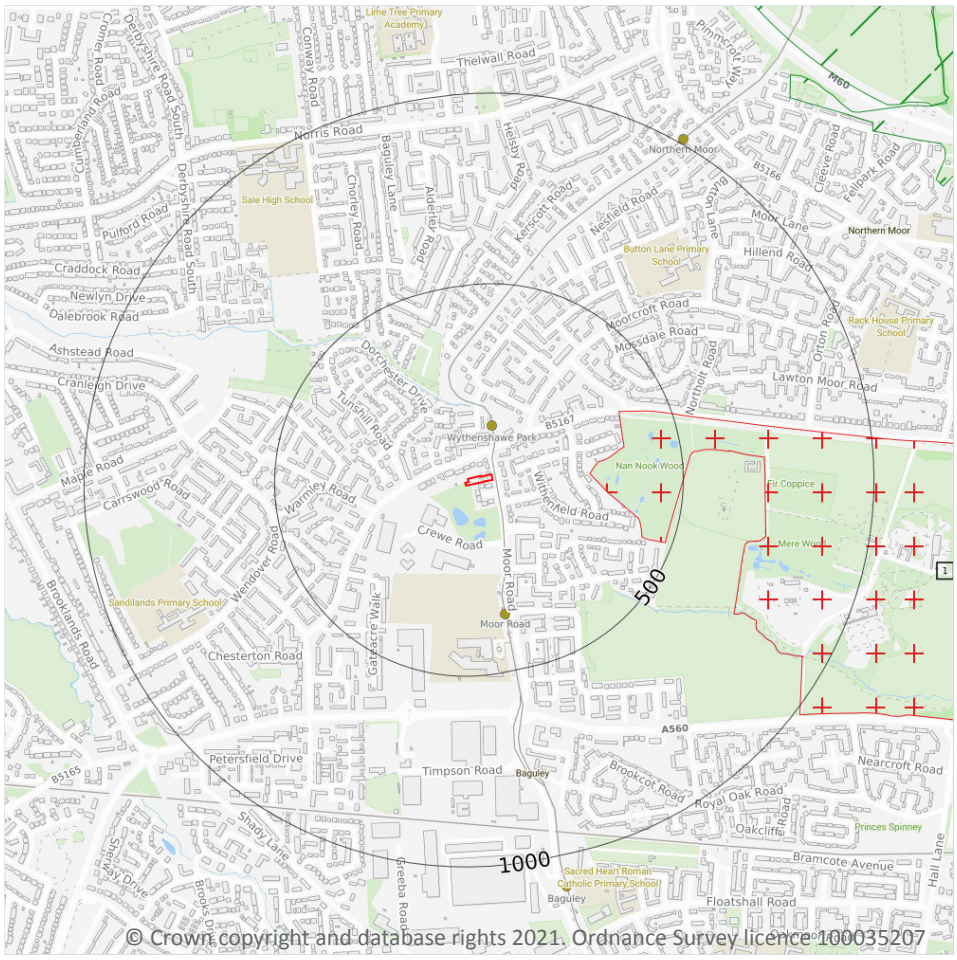
Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

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

Features are displayed on the Groundwater flooding map on **page 49**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 50**

ID	Location	Name	Data source
1	256m E	Wythenshawe Park	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	0

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

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	2

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

Features are displayed on the Environmental designations map on **page 50**

ID	Location	Name	Local Authority name
2	1260m NE	Liverpool and Manchester	Manchester
3	1377m NE	Liverpool and Manchester	Trafford

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

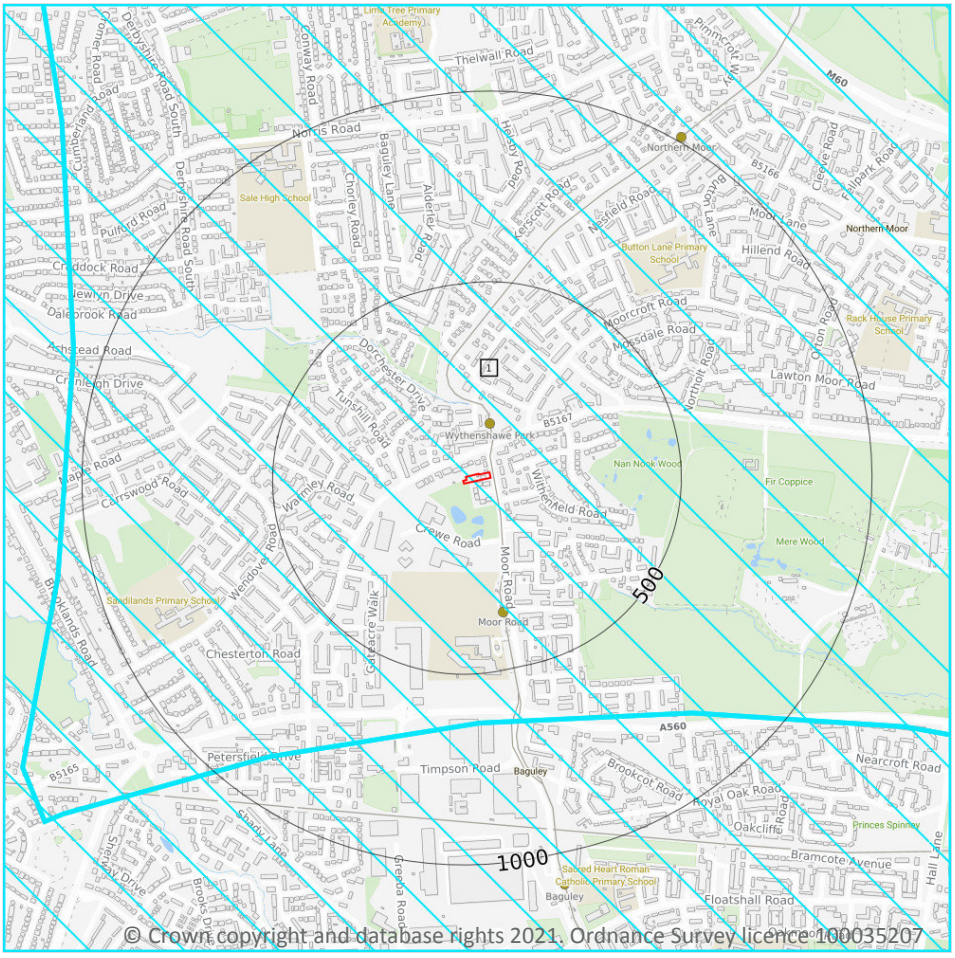
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

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

10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 55**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 4000m². Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**0**

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

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

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

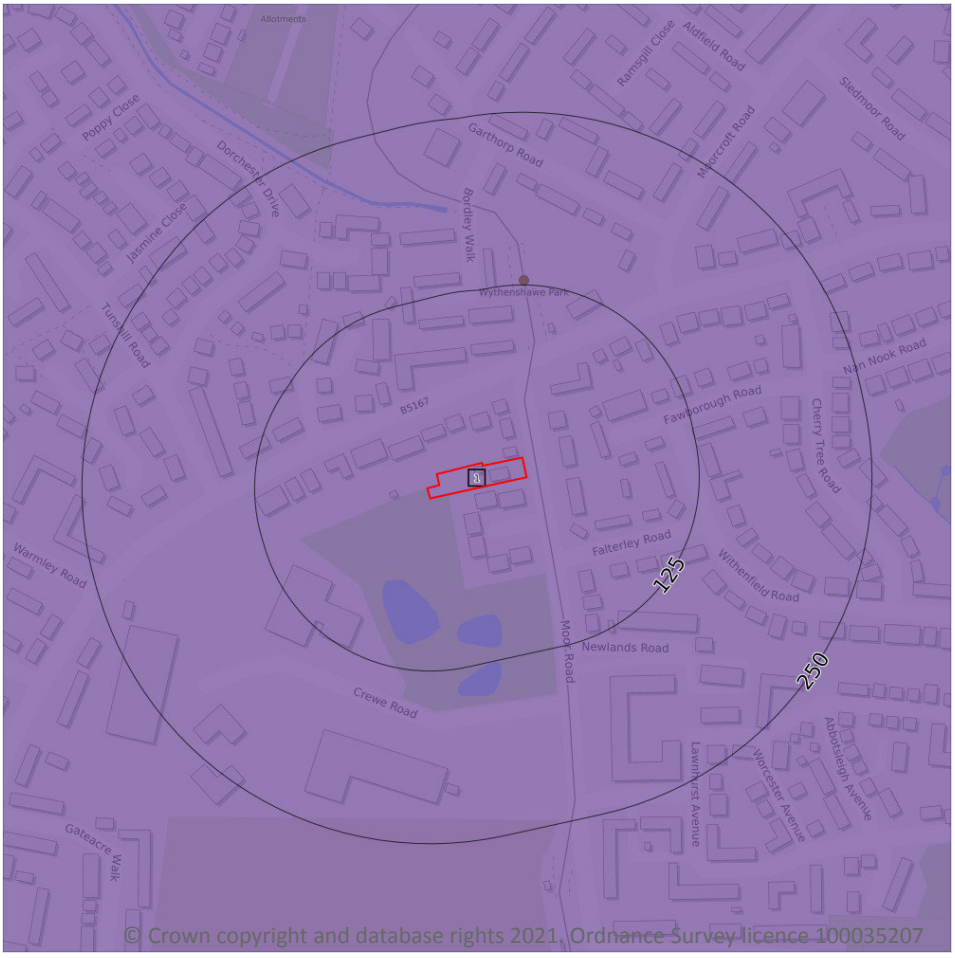
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on **page 59**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders

Habitat Networks

- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	1

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

Features are displayed on the Habitat designations map on **page 61**

ID	Location	Main Habitat	Other habitats
1	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	1

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

Features are displayed on the Habitat designations map on **page 61**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
2	98m NW	NLUD Ref: 421501738	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-

This data is sourced from Natural England.

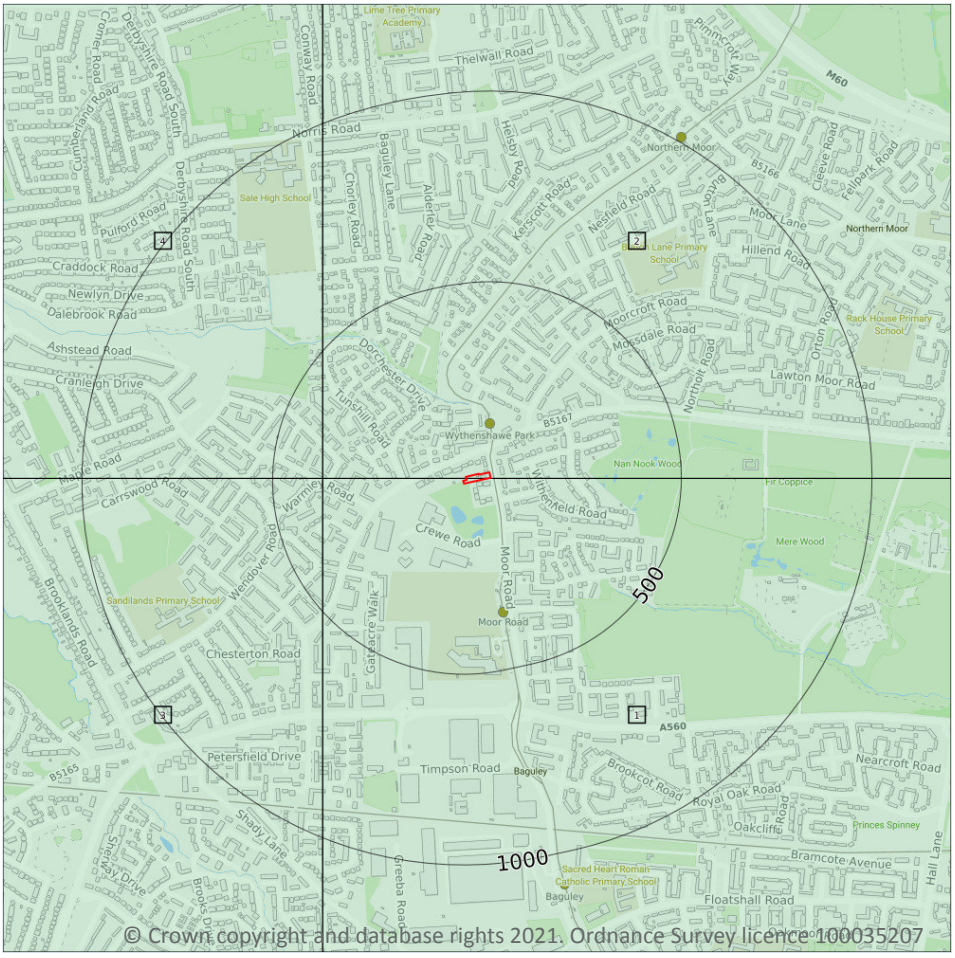
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m	4

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 63**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**SJ88NW**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89SW**
3	369m W	No coverage	Full	Full	No coverage	SJ78NE
4	369m W	Full	Full	Full	Full	SJ79SE

This data is sourced from the British Geological Survey.

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

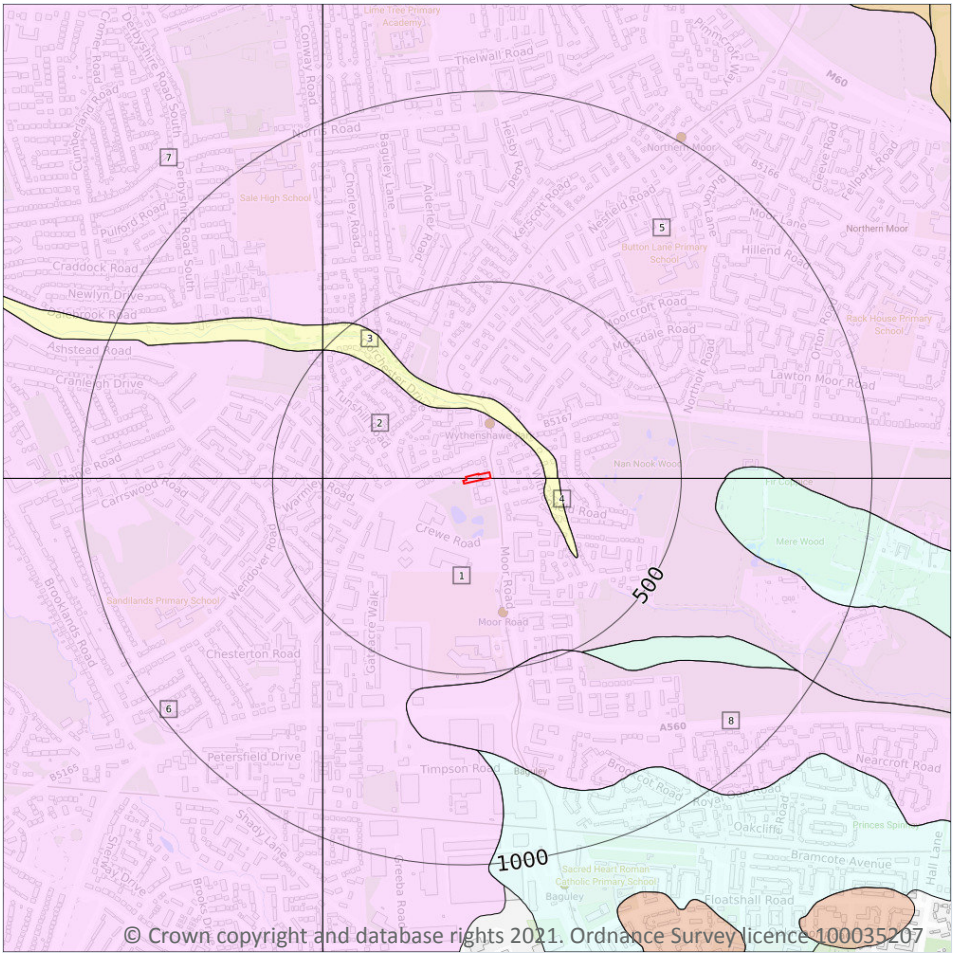
14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **8**

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 66**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel**	**Sand And Gravel**
2	**On site**	**GFSDD-XSV**	**Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel**	**Sand And Gravel**
3	122m NE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	143m E	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

ID	Location	LEX Code	Description	Rock description
5	146m NE	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
6	369m W	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
7	369m W	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
8	482m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

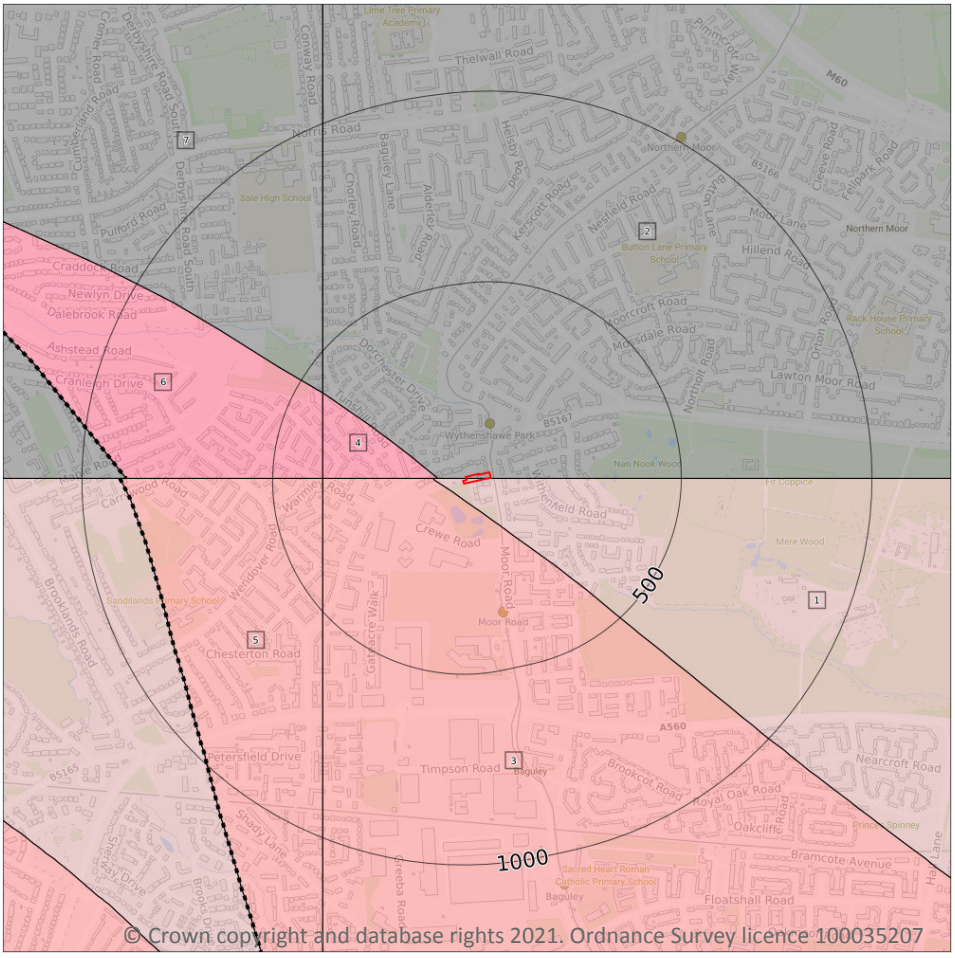
14.4 Landslip (10k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **7**

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 68**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TPSF-SISD**	**Tarporley Siltstone Formation - Siltstone And Sandstone**	**Anisian Age - Olenekian Age**
2	**On site**	**TPSF-SLST**	**Tarporley Siltstone Formation - Siltstone**	**Anisian Age - Olenekian Age**
3	35m SW	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age
4	67m W	SIM-MDST	Sidmouth Mudstone Formation - Mudstone	Carnian Age - Olenekian Age

ID	Location	LEX Code	Description	Rock age
5	369m W	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age
6	369m W	SIM-MDST	Sidmouth Mudstone Formation - Mudstone	Carnian Age - Olenekian Age
7	435m NW	TPSF-SLST	Tarporley Siltstone Formation - Siltstone	Anisian Age - Olenekian Age

This data is sourced from the British Geological Survey.

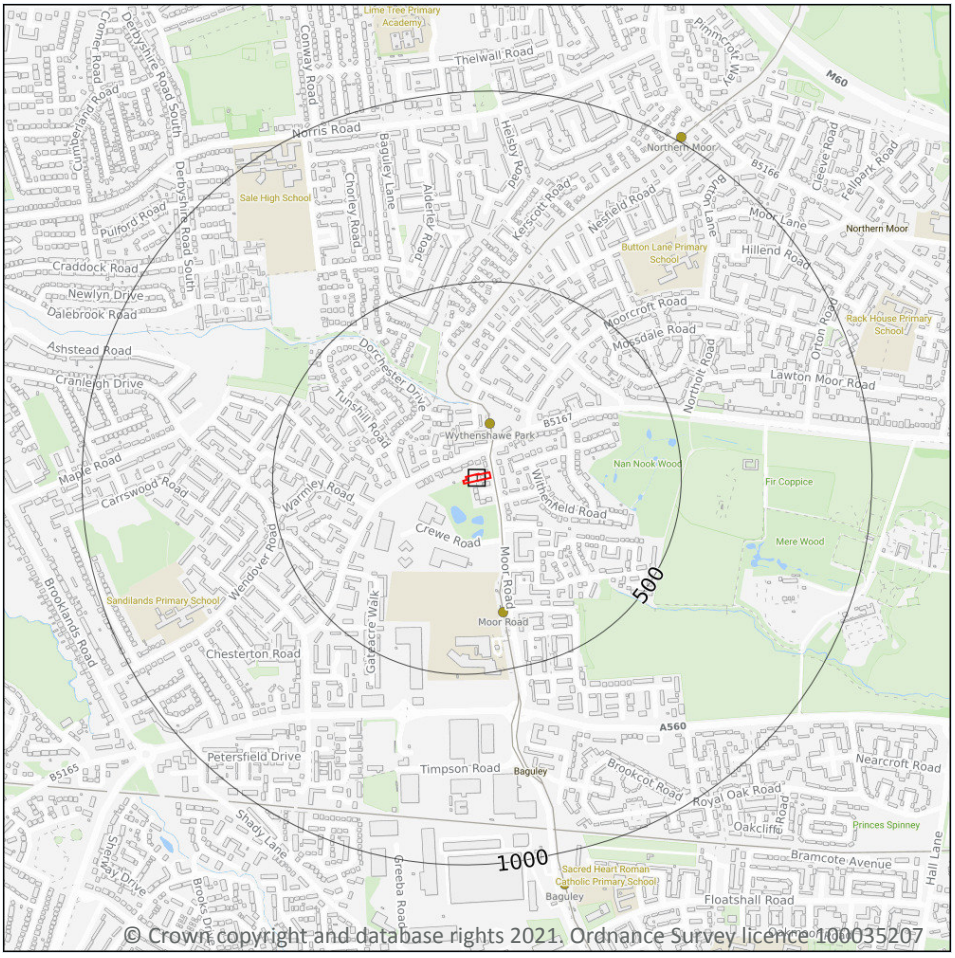
14.6 Bedrock faults and other linear features (10k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



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15.1 50k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 70**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW098_stockport_v4**

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

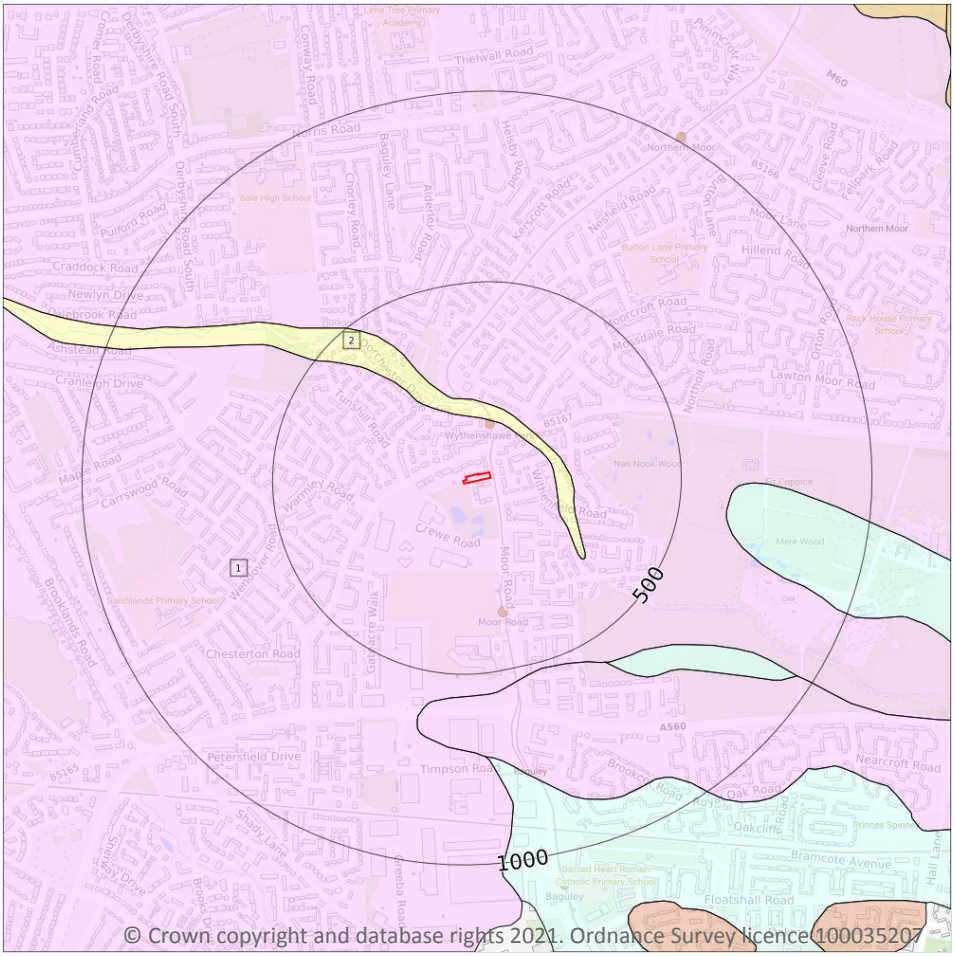
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



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Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 72**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN**	**SAND AND GRAVEL**
2	124m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

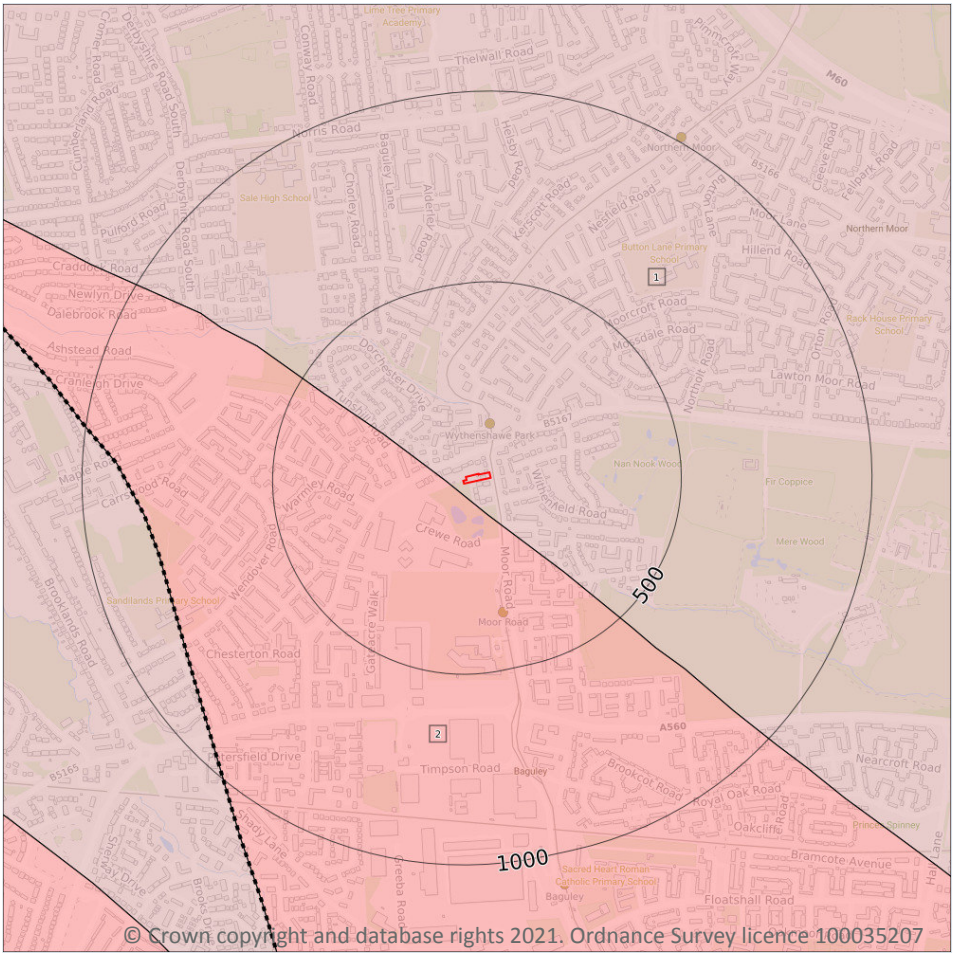
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 74**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TPSF-SIMS**	**TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE**	**OLENEKIAN**
2	25m SW	BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	3

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Moderate**	**Low**
On site	**Fracture**	**Moderate**	**Low**
25m S	Fracture	Low	Low

This data is sourced from the British Geological Survey.

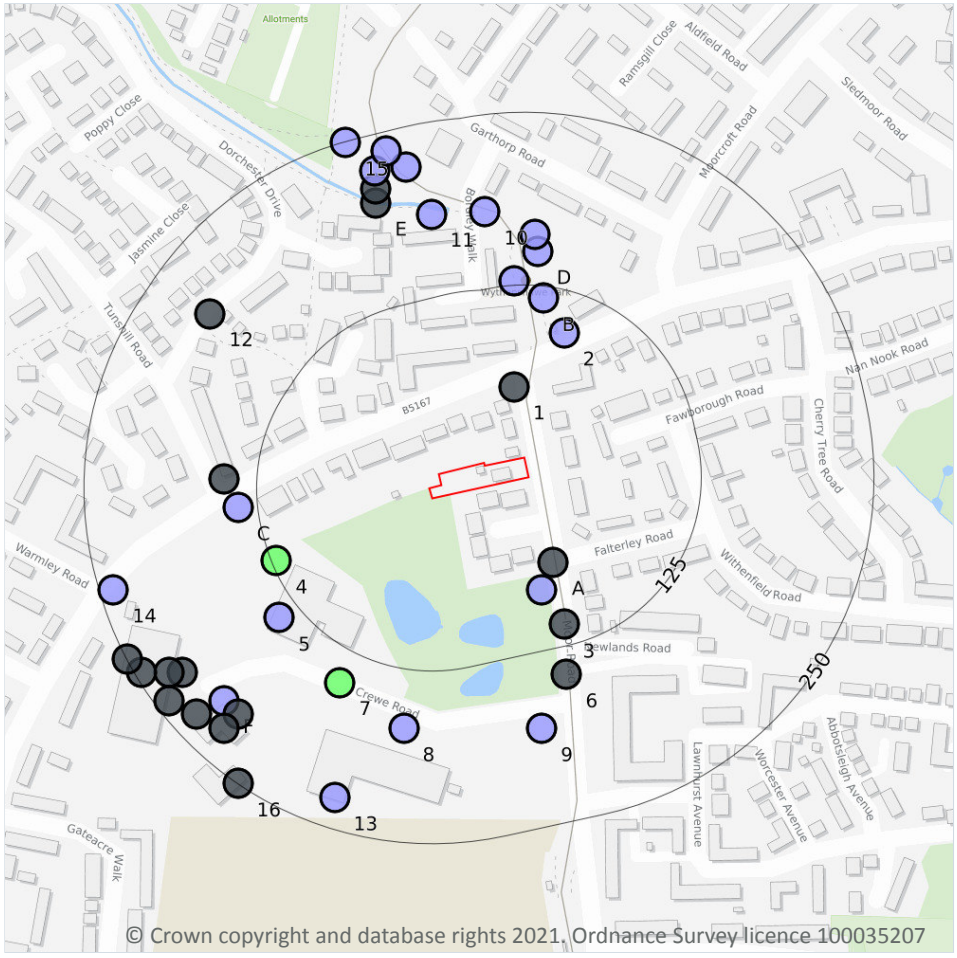
15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m	38

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

Features are displayed on the Boreholes map on **page 76**

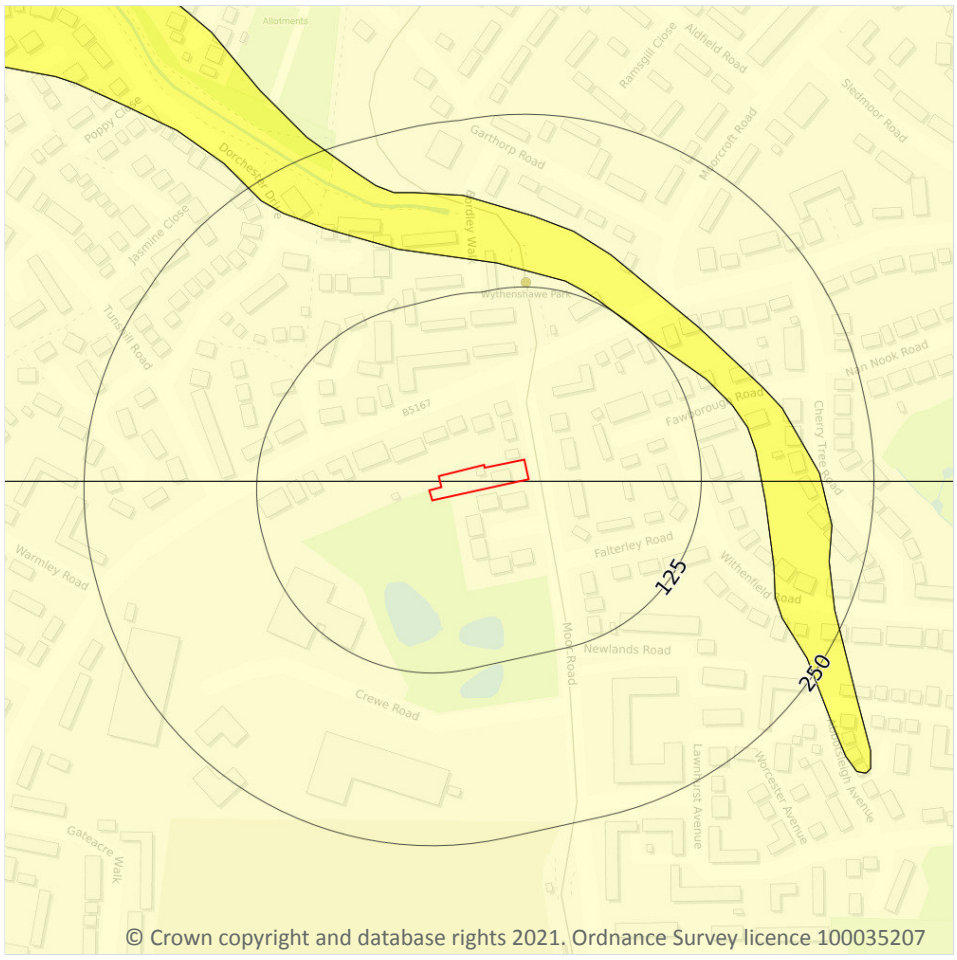
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	52m N	380430 390067	Metrolink 3B - Nonaccelerated Airport BH4002	-	Y	N/A
A	64m S	380458 389940	Metrolink 3B - Nonaccelerated Airport BH4902	-	Y	N/A
A	82m S	380450 389920	WYTHENSHAWE ROAD MOOR ROAD 9	6.0	N	915547

ID	Location	Grid reference	Name	Length	Confidential	Web link
2	95m N	380466 390106	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WS30_AIR	6.65	N	19335046
3	110m S	380466 389895	Metrolink 3B - Nonaccelerated Airport BH4801	-	Y	N/A
B	116m N	380451 390131	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION TP61_AIR	3.0	N	19335102
4	121m W	380258 389941	WYTHENSHAWE NW REGION COMPUTER CENTRE A	30.0	N	914684
B	129m N	380430 390144	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WS29_AIR	6.65	N	19335044
C	139m W	380230 389980	WYTHENSHAWE ROAD MOOR ROAD 4	7.1	N	915542
5	140m SW	380260 389900	WYTHENSHAWE ROAD MOOR ROAD 10	5.3	N	915548
6	145m S	380468 389859	Metrolink 3B - Nonaccelerated Airport BH4804	-	Y	N/A
C	149m W	380220 390000	WESTERN PARKWAY SW. SWR 22	-	Y	N/A
7	149m SW	380304 389853	WYTHENSHAWE NW REGION COMPUTER CENTRE C	30.0	N	914686
D	150m N	380447 390165	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION 39_AIR	10.0	N	19329432
D	162m N	380445 390177	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WS29A_AIR	6.0	N	19335045
8	168m S	380350 389820	WYTHENSHAWE ROAD MOOR ROAD 7	3.7	N	915545
9	179m S	380450 389820	WYTHENSHAWE ROAD MOOR ROAD 8	5.5	N	915546
10	181m N	380409 390194	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WSTP60_AIR	6.65	N	19335056
11	184m N	380370 390192	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WS28_AIR	6.0	N	19335043
E	201m N	380330 390200	GARTHORP ROAD TP9	-	Y	N/A
12	202m NW	380210 390120	WESTERN PARKWAY SW. SWR 21	-	Y	N/A
F	210m SW	380220 389840	WYTHENSHAWE ROAD MOOR ROAD 5	5.7	N	915543
F	210m SW	380230 389830	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPN	-	Y	N/A
E	211m N	380330 390210	WESTERN PARKWAY SW. SWR 20	-	Y	N/A
F	220m SW	380190 389860	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE 2	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
E	221m N	380352 390226	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WSTP59_AIR	2.0	N	19335055
E	224m N	380329 390223	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION TP58_AIR	2.6	N	19335101
F	224m SW	380220 389820	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE 4	-	Y	N/A
13	228m S	380300 389770	WYTHENSHAWE ROAD MOOR ROAD 6	4.0	N	915544
F	229m SW	380180 389860	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPB	-	Y	N/A
F	231m SW	380200 389830	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPK	-	Y	N/A
E	237m N	380337 390238	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION WS27_AIR	6.65	N	19335042
14	240m W	380140 389920	WYTHENSHAWE ROAD MOOR ROAD 3	7.0	N	915541
F	240m SW	380180 389840	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPI	-	Y	N/A
F	246m SW	380160 389860	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE 1	-	Y	N/A
F	249m SW	380150 389870	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPA	-	Y	N/A
15	250m N	380308 390244	MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION TP57_AIR	2.6	N	19335100
16	250m SW	380230 389780	SITE 5 CREWE ROAD / MOOR ROAD WYTHENSHAWE TPM	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



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17.1 Shrink swell clays

Records within 50m	1

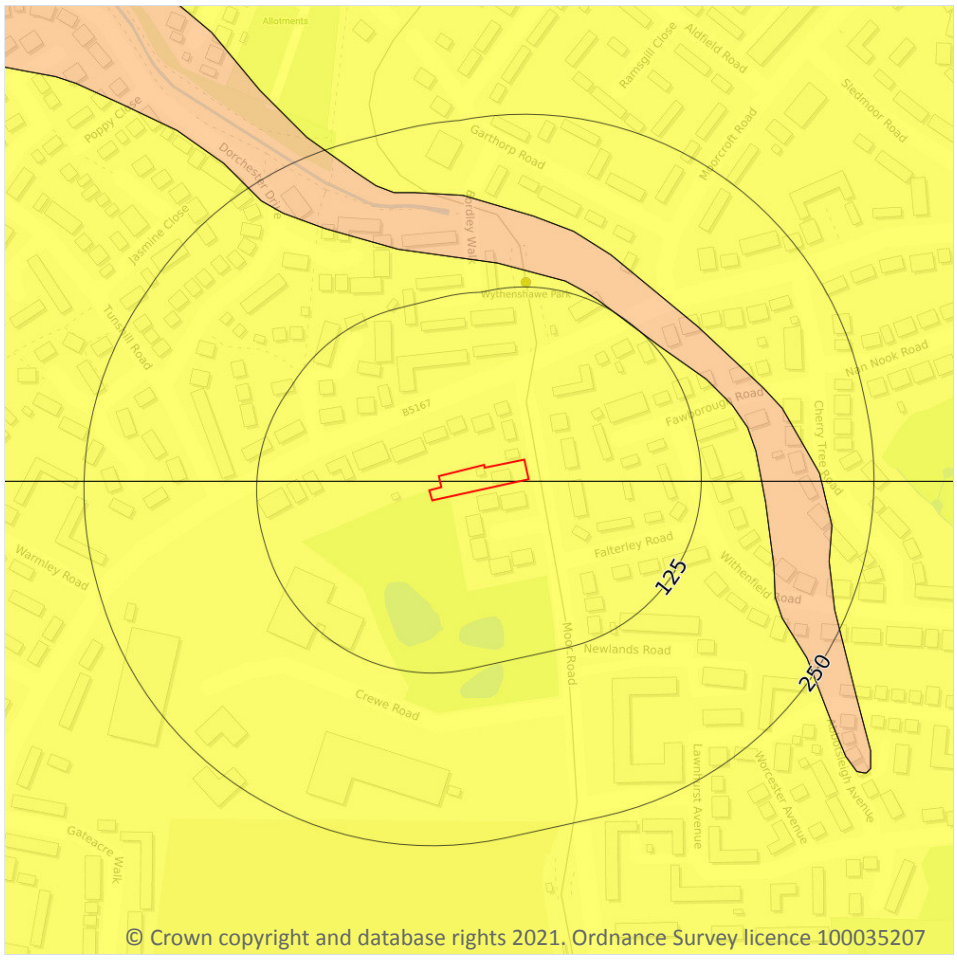
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 79**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m	1

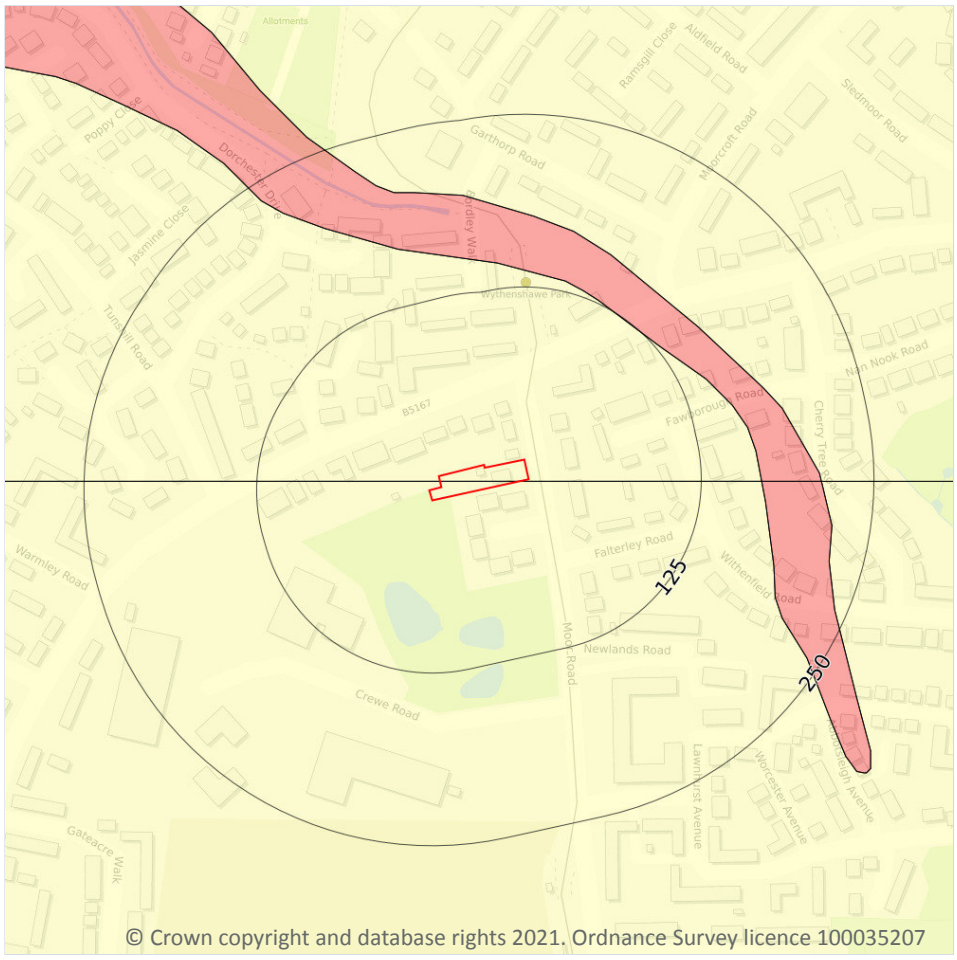
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 80**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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17.3 Compressible deposits

Records within 50m	1

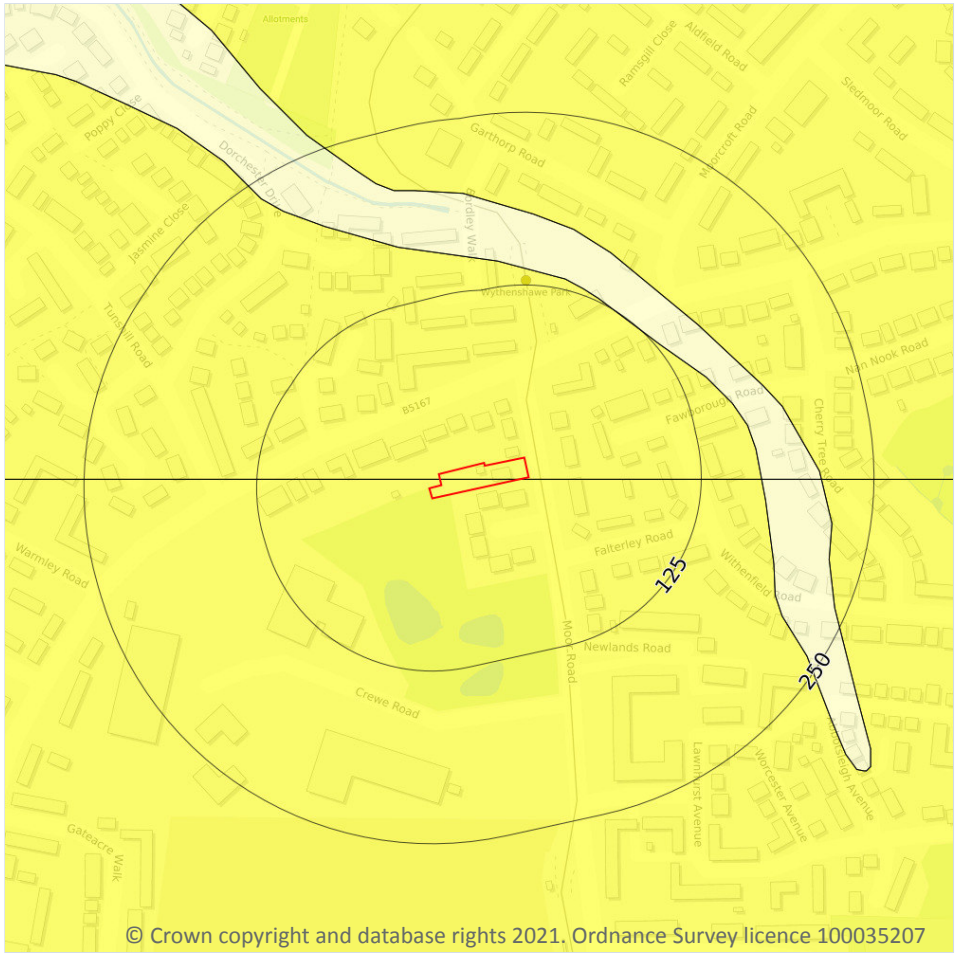
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 81**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

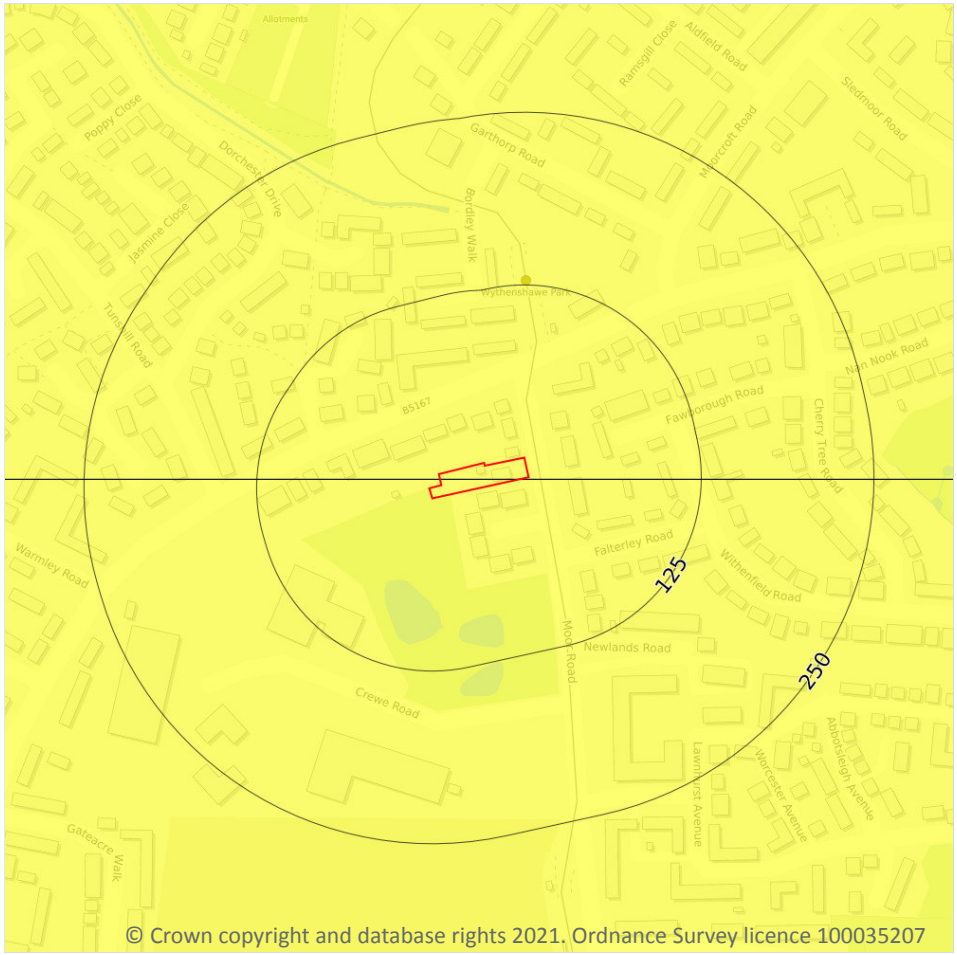
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 82**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

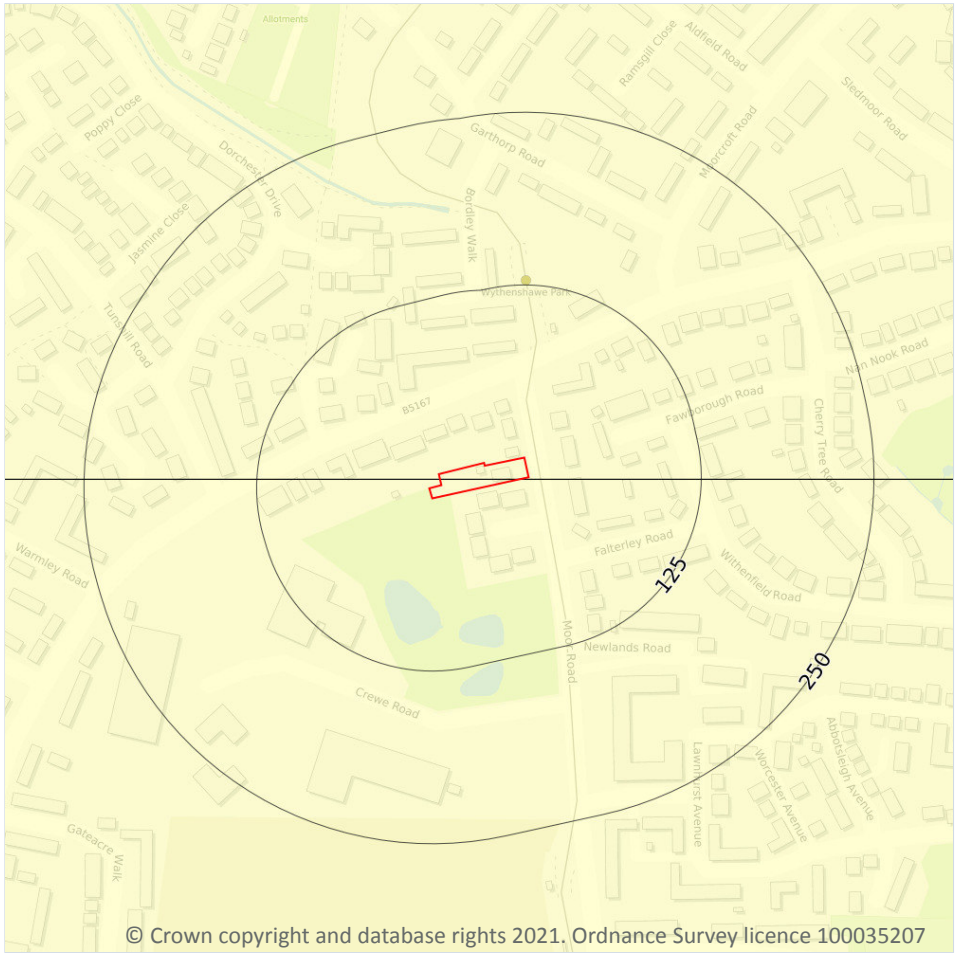
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 83**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

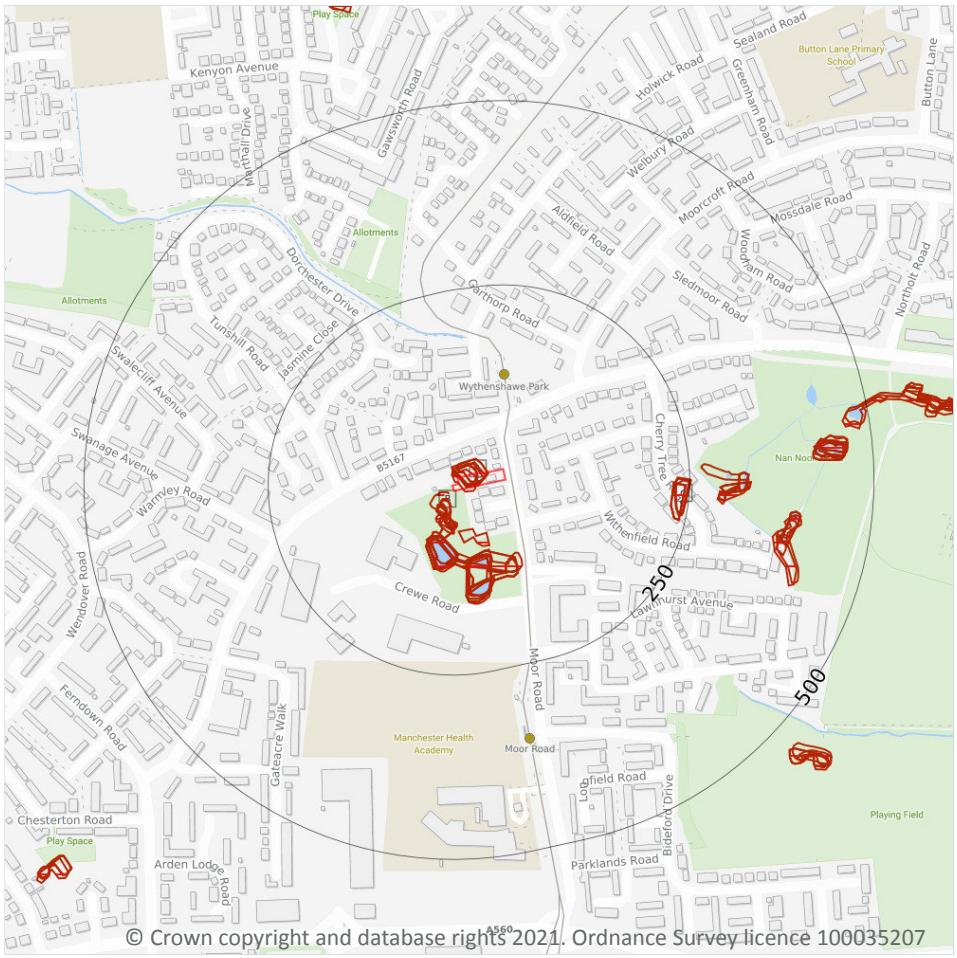
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 84**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



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18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	43

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 85**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Pond**	**1938**	**1:10560**
A	**On site**	**Pond**	**1897**	**1:10560**
A	**On site**	**Pond**	**1938**	**1:10560**
A	**On site**	**Pond**	**1916**	**1:10560**
A	**On site**	**Pond**	**1905**	**1:10560**
A	**On site**	**Pond**	**1923**	**1:10560**
A	**On site**	**Pond**	**1911**	**1:10560**
A	**On site**	**Pond**	**1908**	**1:10560**
B	9m SW	Pond	1897	1:10560
B	15m SW	Pond	1908	1:10560
B	16m SW	Pond	1911	1:10560
B	17m SW	Pond	1938	1:10560
B	24m SW	Ponds	1938	1:10560
B	24m SW	Ponds	1916	1:10560
B	24m SW	Ponds	1905	1:10560
B	24m SW	Ponds	1923	1:10560
B	27m SW	Pond	1954	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	55m S	Ponds	1897	1:10560
B	60m SW	Pond	1908	1:10560
B	61m SW	Ponds	1911	1:10560
B	65m S	Pond	1995	1:10000
B	65m S	Pond	1967	1:10560
B	65m S	Pond	1975	1:10000
B	65m S	Pond	1989	1:10000
B	67m S	Pond	1938	1:10560
B	67m S	Pond	1897	1:10560
B	71m S	Pond	1954	1:10560
B	88m S	Ponds	1938	1:10560
B	88m S	Ponds	1897	1:10560
B	93m S	Ponds	1995	1:10000
B	93m S	Ponds	1967	1:10560
B	93m S	Ponds	1975	1:10000
B	93m S	Ponds	1989	1:10000
B	99m S	Ponds	1954	1:10560
B	124m S	Pond	1908	1:10560
B	129m S	Pond	1938	1:10560
B	129m S	Pond	1897	1:10560
C	227m E	Pond	1916	1:10560
C	227m E	Pond	1905	1:10560
C	227m E	Pond	1923	1:10560
C	230m E	Pond	1908	1:10560
C	231m E	Pond	1938	1:10560
C	231m E	Pond	1911	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

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

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	1

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

Location	Details
On site	**Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.**

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	**0**

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	**0**

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

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

18.11 Gypsum areas

Records on site	**0**

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	**0**

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

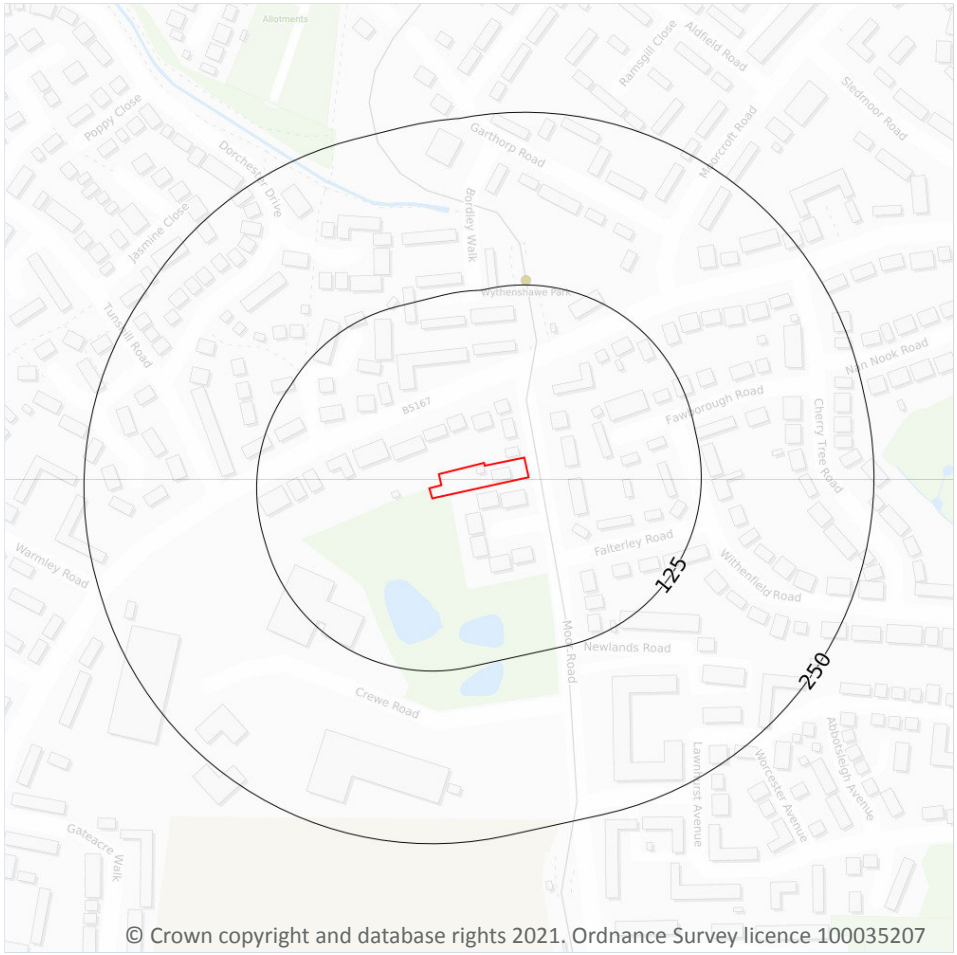
18.13 Clay mining

Records on site	0

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

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

19 Radon



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19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 91**

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

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	3

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
25m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

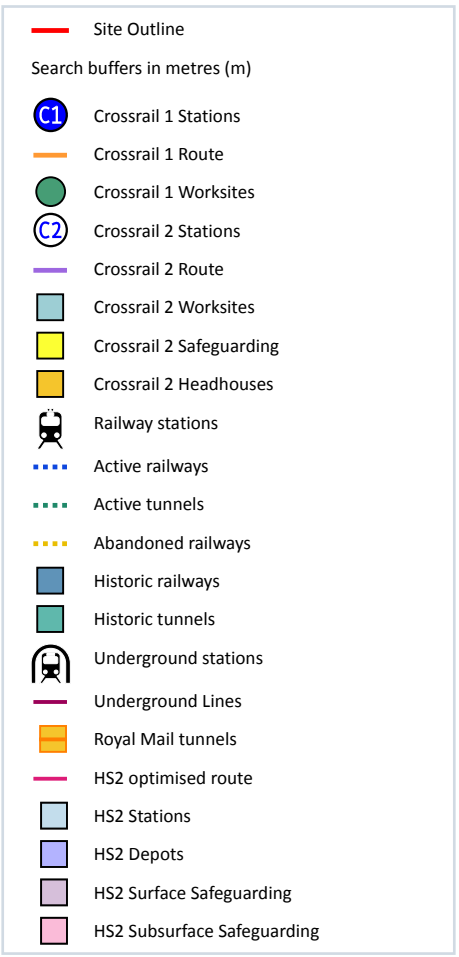
Records within 50m	0

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

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects





21.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	0

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	6

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

Features are displayed on the Railway infrastructure and projects map on **page 93**

Location	Name	Type
7m E	Metrolink	tram
8m E	Not given	Multi Track
11m E	Metrolink	tram
87m N	Metrolink	light_rail
87m N	Metrolink	light_rail
160m N	Metrolink	light_rail

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

APPENDIX 6 - CIRIA Risk Assessment Methodology

Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification ⇨ Hazard Assessment ⇨ Risk Estimation ⇨ Risk Evaluation

LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- High likelihood: There is a pollution linkage and an 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: There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;

- Low likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;

- Unlikely: There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- 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. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
  Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- Medium: Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
  Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;

- Mild: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
  Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.

- Minor: harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
  Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		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
	Unlikely	Moderate/low	Low	Very Low	Very low

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

- Very high: There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to be required;

- High: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term;

- Moderate: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;

- Low: It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild;

- Very Low: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

APPENDIX 7 - Exploratory Hole Logs

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **BH01** Sheet 1 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type CP
Location: BAGULEY		Level:	Scale 1:50
Client: SUMO DEVELOPMENTS		Dates: 22/08/2022 - 22/08/2022	Logged By HP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.30			MADE GROUND: Brown very sandy slightly gravelly topsoil. Gravel is subangular to subrounded fine to medium of mixed lithologies including mudstone and siltstone. Sand is fine to medium.
		0.60	ES					MADE GROUND: Brown slightly gravelly fine sand. Gravel is subangular to subrounded fine to medium of mixed lithologies including glass, mudstone, sandstone and siltstone.
		1.00	D					
	▼	1.20		N=3 (1,0/0,1,1,1)				
		2.00	D					
		2.00		N=4 (1,1/1,1,1,1)				
		3.00	D					*Becoming slightly clayey from 3.0m bgl*
		3.00		N=3 (1,0/1,1,0,1)				*Organic material encountered from 3.5m bgl.*
		4.00	D					
		4.00		N=3 (1,0/0,1,1,1)				
		5.00	D					
		5.00		N=0 (0,0/0,0,0,0)				
					5.60			Medium dense rown clayey medium to coarse SAND and angular to subrounded fine to coarse GRAVEL of mudstone and siltstone.
		6.00		N=15 (2,3/3,4,4,4)				
		7.50	D		7.50			Firm to stiff brown sandy slightly gravelly CLAY with low cobble content of siltstone. Gravel is subangular to subrounded fine to medium of mixed lithologies including mudstone and siltstone.
		7.50		N=23 (3,3/5,5,6,7)				
		9.00	D					
		9.00		N=29 (4,5/7,7,7,8)				
					10.00			

Continued on next sheet

Remarks

1. Location cleared with a handheld CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Borehole terminated at 10.0m bgl due to refusal. 5. Hole backfilled with arisings.

GROUNDTECH CONSULTING

Borehole Log

Borehole No.
BH01
Sheet 2 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type CP
Location: BAGULEY		Level:	Scale 1:50
Client: SUMO DEVELOPMENTS		Dates: 22/08/2022 - 22/08/2022	Logged By HP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.00		N=50 (25 for 50mm/50 for 2mm)				End of borehole at 10.00 m

11
12
13
14
15
16
17
18
19
20

Remarks
1. Location cleared with a handheld CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Borehole terminated at 10.0m bgl due to refusal. 5. Hole backfilled with arisings.

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **BH01A** Sheet 1 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type CP
Location: BAGULEY		Level:	Scale 1:50
Client: SUMO DEVELOPMENTS		Dates: 23/08/2022 - 23/08/2022	Logged By HP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.20	ES		0.30			MADE GROUND: Brown slightly gravelly sandy topsoil. Gravel is subangular to subrounded fine to medium of mixed lithologies including mudstone and siltstone. Sand is fine to medium.
								MADE GROUND: Brown slightly gravelly very fine sand. Gravel is subangular to subrounded fine to medium of mixed lithologies including glass, mudstone, sandstone and siltstone.
								Becoming slightly clayey from 3.6m bgl
								Organic materi encountered from 3.8m bgl.
					5.50			Brown clayey medium to coarse SAND and angular to subrounded fine to coarse GRAVEL of mudstone and siltstone.
					6.70			Firm to stiff brown sandy slightly gravelly CLAY with low cobble content of siltstone. Gravel is subangular to subrounded fine to medium of mixed lithologies including mudstone and siltstone.

Continued on next sheet

Remarks

1. Location cleared with a handheld CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.25m bgl. 4. Chiselling between 10.3m and 10.5m bgl for 1 hour. 5. Borehole terminated at 10.50m bgl due to refusal. 6. Monitoring standpipe installed to 5.00m bgl (1.00m plain, 4.00m slotted).

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **BH01A** Sheet 2 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type CP
Location: BAGULEY		Level:	Scale 1:50
Client: SUMO DEVELOPMENTS		Dates: 23/08/2022 - 23/08/2022	Logged By HP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.30		N=50 (7,9/50 for 235mm)	10.20			Weak grey brown MUDSTONE distinctly weathered.
					10.50			End of borehole at 10.50 m

11 12 13 14 15 16 17 18 19 20

Remarks

1. Location cleared with a handheld CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.25m bgl. 4. Chiselling between 10.3m and 10.5m bgl for 1 hour. 5. Borehole terminated at 10.50m bgl due to refusal. 6. Monitoring standpipe installed to 5.00m bgl (1.00m plain, 4.00m slotted).

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **WS01**

Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	ES					Dark brown slightly silty slightly gravelly sandy TOPSOIL. Gravel is angular to subangular fine to coarse of mixed lithology.
					0.35			
		0.50	ES					Medium dense brown slightly silty gravelly fine to coarse SAND. Gravel is angular fine to medium of mixed lithology.
		0.80	D					
		1.20		N=15 (1,3/3,3,4,5)				
		1.60	D					*Becoming very gravelly from 1.5m bgl.*
		2.00		N=10 (3,3/3,3,2,2)				
					2.50			End of borehole at 2.50 m

Remarks

1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 0.5m bgl. 3. Drilled to 2.5m bgl and probed to 6.5m bgl. 4. No monitoring installation.

GROUNDTECH CONSULTING

Borehole Log

Borehole No.
WS02
Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼	0.10	ES					Dark brown slightly silty slightly gravelly sandy TOPSOIL. Gravel is angular to subangular fine to coarse of mixed lithology.
		1.00 1.00	D	N=8 (1,2/2,2,2,2)	1.00			Loose brown slightly silty gravelly fine to coarse SAND. Gravel is angular fine to medium of mixed lithology.
		1.80	D					
		2.00		N=10 (1,2/2,3,2,3)				*Becoming medium dense from 2.0m bgl.*
		2.60	D					*Becoming very gravelly from 2.5m bgl.*
		3.00 3.00	D	N=21 (3,5/5,5,5,6)	2.80			Stiff dark brown silty CLAY.
					3.50			End of borehole at 3.50 m

1 2 3 4 5

Remarks
1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 0.6m bgl. 3. Drilled to 3.m bgl and probed to 6.5m bgl. 4. Gas monitoring standpipe installed to 3.0m bgl (1.0m plain, 2.0m slotted).

GROUNDTECH CONSULTING

Borehole Log

Borehole No. **WS03** Sheet 1 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼	0.10	ES					MADE GROUND: Dark brown slightly silty slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithology including brick and pottery.	
		1.00		N=6 (1,1/1,2,2,1)	1.00				1
		1.20	ES					MADE GROUND: Dark brown black slightly gravelly slightly sandy silty clay. Gravel is angular to subangular fine to medium of mixed lithology including brick and plant material.	
					1.55			MADE GROUND: Dark brown black slightly gravelly slightly clayey silty sand. Gravel is angular to subangular fine to medium of mixed lithology including brick.	
		2.00	ES						2
		2.00		N=0 (0,0/0,0,0,0)					
		3.00		N=0 (0,0/0,0,0,0)					3
		3.90	D					*Wood and glass recovered from 3.9m bgl to 4.1m bgl.*	
		4.00	ES						4
		4.00		N=0 (0,0/0,0,0,0)					
		5.00		N=0 (0,0/0,0,0,0)					5
								Continued on next sheet	

Remarks

1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 0.6m bgl rising to ground level after 30 minutes.
3. Gas monitoring standpipe installed to 4.0m bgl (1.0m plain, 3.0m slotted).

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **WS03**

Sheet 2 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00 6.00	ES	N=0 (0,0/0,0,0,0)	6.50			End of borehole at 6.50 m

Remarks

1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 0.6m bgl rising to ground level after 30 minutes.
3. Gas monitoring standpipe installed to 4.0m bgl (1.0m plain, 3.0m slotted).

Borehole Log

GROUNDTECH CONSULTING

Borehole No. **WS04** Sheet 1 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					MADE GROUND: Dark brown slightly silty slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithology including brick and pottery.
	▼				0.90			
		1.20		N=4 (1,1/1,1,1,1)				MADE GROUND: Dark brown black slightly gravelly slightly clayey silty sand. Gravel is angular to subangular fine to medium of mixed lithology including brick, pottery, wood and plant material.
		1.70	ES					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	ES					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	ES					*Strong organic odour from timber between 4.0m and 4.5m*
		4.00		N=2 (1,0/1,0,1,0)				
		5.00		N=1 (1,1/0,0,0,1)				

Continued on next sheet

Remarks

1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 1.0m bgl. 3. Gas monitoring standpipe installed to 5.0m bgl (1.0m plain, 4.0m slotted).

GROUNDTECH CONSULTING

Borehole Log

Borehole No. **WS04** Sheet 2 of 2

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00 6.00	ES	N=4 (1,1/1,1,1,1)				
					6.50			End of borehole at 6.50 m

6
7
8
9
10

Remarks
1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 1.0m bgl. 3. Gas monitoring standpipe installed to 5.0m bgl (1.0m plain, 4.0m slotted).

GROUNDTECH CONSULTING

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: -	Hole Type WS
Location: BAGULEY		Level:	Scale 1:25
Client: SUMO DEVELOPMENTS		Dates: 05/02/2021 -	Logged By LH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					MADE GROUND: Dark brown slightly silty slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithology including pottery.
		1.00 1.00	ES	N=2 (1,0/0,1,0,1)	0.90			MADE GROUND: Firm grey mottled brown slightly sandy silty clay (reworked).
		1.30	ES		1.10			MADE GROUND: Dark brown black slightly silty slightly gravelly sand. Gravel is angular to subangular fine to coarse of brick, pottery and wood.
	▼	2.00 2.00	D	N=5 (2,2/2,1,1,1)	1.60			Loose brown slightly silty gravelly fine to coarse SAND. Gravel is angular fine to medium of mixed lithology.
		3.00 3.00	D	N=25 (3,4/6,6,7,6)	2.90			Stiff dark brown silty CLAY with rare fine gravel.
					3.50			End of borehole at 3.50 m

1 2 3 4 5

Remarks

1. Hand dug inspection pit to 1.2m bgl. 2. Groundwater encountered at 2.0m bgl rising to 0.5m bgl. 3. Drilled to 3.0m bgl and probed to 6.5m bgl. 4. No monitoring installation.

GROUNDTECH CONSULTING

Trial Pit Log

Trialpit No
SuDS1
Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: - Level:	Date 05/02/2021
Location: BAGULEY		Dimensions (m): 1.9 × 0.65, Depth 1.15	Scale 1:25
Client: SUMO DEVELOPMENTS			Logged LH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES					MADE GROUND: Dark brown slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and glass.
				0.70			
▼	0.80	ES					Brown slightly gravelly silty SAND. Gravel is angular to subrounded fine to medium of mixed lithologies including chert.
▼	0.90	D					
				1.15			End of pit at 1.15 m

1
2
3
4
5

Remarks: 1. Pit sides stable. 2. Groundwater encountered at 1.0m bgl. 3. Soil percolation test carried out at 1.15m bgl. 4. Backfilled with arisings.

Stability:

GROUNDTECH CONSULTING

Trial Pit Log

Trialpit No **SuDS2**

Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: - Level:	Date 05/02/2021
Location: BAGULEY		Dimensions (m): Depth 1.10	Scale 1:25
Client: SUMO DEVELOPMENTS			Logged LH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.60	ES					MADE GROUND: Dark brown slightly silty slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and glass.
	0.60	ES		0.50			MADE GROUND: Black gravelly sand with low cobble content of brick. Gravel is angular to subangular fine to coarse of mixed lithologies including brick.
▼				1.10			End of pit at 1.10 m

1 2 3 4 5

Remarks: 1. Pit sides stable. 2. Groundwater encountered at 1.0m bgl. 3. Backfilled with arisings.

Stability:

GROUNDTECH CONSULTING

Trial Pit Log

Trialpit No
SuDS2A
Sheet 1 of 1

Project Name: 8 MOOR ROAD	Project No. GRO-21003	Co-ords: - Level:	Date 05/02/2021
Location: BAGULEY		Dimensions (m): 1.9 × 0.65, Depth 1.10	Scale 1:25
Client: SUMO DEVELOPMENTS			Logged LH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES					MADE GROUND: Dark brown slightly gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including brick.
				0.38			Brown slightly silty gravelly SAND. Gravel is angular to subrounded fine to medium of mixed lithology.
▼	0.75	D					
				1.10			End of pit at 1.10 m

1
2
3
4
5

Remarks: 1. Pit sides unstable. 2. Groundwater encountered at 0.9m bgl. 3. Soil percolation test carried out at 1.1m bgl. 4. Backfilled with arisings.

Stability:

APPENDIX 8 - Geo-Environmental Testing Results

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PO Box 499
Manchester
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4225

Attention :	Luke Harrison
Date :	17th February, 2021
Your reference :	
Our reference :	Test Report 21/2023 Batch 1
Location :	8 Moor Road
Date samples received :	13th February, 2021
Status :	Final report
Issue :	1

Three samples were received for analysis on 13th February, 2021 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Hayley Prowse
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road
Contact: Luke Harrison
EMT Job No: 21/2023

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	3									
Sample ID	WS05	WS02	WS01									
Depth	2.00	3.00	1.60									
COC No / misc												
Containers	T	B	B									
Sample Date	05/02/2021	05/02/2021	05/02/2021									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	13/02/2021	13/02/2021	13/02/2021									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Sulphate as SO4 (2:1 Ext) #	0.0071	0.0208	0.0474								<0.0015	g/l	TM38/PM20
pH #	7.30	7.70	4.88								<0.01	pH units	TM73/PM11

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road
Contact: Luke Harrison

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/2023						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/2023

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics extracted.
#2	EU_Total but with fatty acids extracted.
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/2023

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

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Attention :	Cameron Wallace
Date :	16th February, 2021
Your reference :	
Our reference :	Test Report 21/1767 Batch 1
Location :	8 Moor Road.
Date samples received :	9th February, 2021
Status :	Final report
Issue :	1

Twenty three samples were received for analysis on 9th February, 2021 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road.
Contact: Cameron Wallace
EMT Job No: 21/1767

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	7-9	13-15	24-25	36-37	55-56					LOD/LOR	Units	Method No.
Sample ID	WS01	WS02	WS03	WS04	WS05	SP01							
Depth	0.15	0.10	1.20	0.10	1.00								
COC No / misc													
Containers	V J T	V J T	V J T	V T	V T	V T							
Sample Date	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021							
Arsenic #	12.6	19.5	24.7	25.7	24.3	20.0					<0.5	mg/kg	TM30/PM15
Cadmium #	0.7	3.7	1.2	2.5	0.2	0.5					<0.1	mg/kg	TM30/PM15
Chromium #	12.8	32.8	27.3	42.5	23.6	29.6					<0.5	mg/kg	TM30/PM15
Copper #	51	100	154	117	48	87					<1	mg/kg	TM30/PM15
Lead #	162	468	165	904	237	153					<5	mg/kg	TM30/PM15
Mercury #	0.3	0.9	0.1	1.2	0.3	<0.1					<0.1	mg/kg	TM30/PM15
Nickel #	10.4	21.3	34.2	35.6	23.8	60.1					<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	2	1	1	2					<1	mg/kg	TM30/PM15
Zinc #	116	314	306	430	115	218					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.07	0.10	0.57	0.16	<0.04	0.30					<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.06	0.10	0.17	0.17	0.13	0.09					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	0.18	0.13	<0.05	0.09					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	0.21	0.13	0.17	0.07					<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.66	0.91	2.87	2.62	1.22	1.03					<0.03	mg/kg	TM4/PM8
Anthracene #	0.08	0.20	0.95	0.54	0.45	0.31					<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.06	2.47	9.02	5.34	1.38	3.59					<0.03	mg/kg	TM4/PM8
Pyrene #	0.97	2.22	7.75	4.73	1.14	3.21					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.58	1.27	5.85	2.53	0.66	2.70					<0.06	mg/kg	TM4/PM8
Chrysene #	0.54	1.43	5.04	3.08	0.62	2.06					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	1.01	2.95	9.49	5.43	1.19	4.13					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.49	1.64	5.16	3.02	0.70	2.32					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.34	1.14	3.26	2.08	0.45	1.40					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.06	0.19	0.46	0.40	0.09	0.25					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.36	1.30	3.12	2.18	0.52	1.66					<0.04	mg/kg	TM4/PM8
PAH 16 Total	6.3	15.9	54.1	32.5	8.7	23.2					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.73	2.12	6.83	3.91	0.86	2.97					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.28	0.83	2.66	1.52	0.33	1.16					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	93	90	91	91	98					<0	%	TM4/PM8

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road.
Contact: Cameron Wallace
EMT Job No: 21/1767

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	7-9	13-15	24-25	36-37	55-56					LOD/LOR	Units	Method No.
Sample ID	WS01	WS02	WS03	WS04	WS05	SP01							
Depth	0.15	0.10	1.20	0.10	1.00								
COC No / misc													
Containers	V J T	V J T	V J T	V T	V T	V T							
Sample Date	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021							
Pesticides													
Organochlorine Pesticides													
Aldrin	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Alpha-HCH (BHC)	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Beta-HCH (BHC)	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Delta-HCH (BHC)	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Dieldrin	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Endosulphan I	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Endosulphan II	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Endosulphan sulphate	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Endrin	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Gamma-HCH (BHC)	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Heptachlor	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Heptachlor Epoxide	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
p,p'-DDE	41	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
p,p'-DDT	82	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
p,p'-TDE	41	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Total Methoxychlor	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Organophosphorus Pesticides													
Azinphos methyl	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Diazinon	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Dichlorvos	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Disulfoton	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Ethion	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Ethyl Parathion (Parathion)	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Fenitrothion	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Malathion	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Methyl Parathion	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Mevinphos	<10	<10	-	<10	-	-					<10	ug/kg	TM42/PM8
Natural Moisture Content	17.7	46.2	39.9	43.2	33.8	30.4					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	<0.0015	<0.0015	0.0229	0.0254	0.0190	0.0204					<0.0015	g/l	TM38/PM20
Organic Matter	6.3	18.9	21.6	12.2	13.7	22.9					<0.2	%	TM21/PM24
pH #	7.36	7.49	7.16	7.37	7.22	7.76					<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road.
Contact: Cameron Wallace

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/1767	1	WS01	0.15	3	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stone
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD
21/1767	1	WS02	0.10	9	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stone
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD
21/1767	1	WS03	1.20	15	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stone
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD
21/1767	1	WS04	0.10	25	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stones
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD
21/1767	1	WS05	1.00	37	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stones
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD
21/1767	1	SP01		56	11/02/2021	**General Description (Bulk Analysis)**	Soil/Stones
					11/02/2021	**Asbestos Fibres**	NAD
					11/02/2021	**Asbestos ACM**	NAD
					11/02/2021	**Asbestos Type**	NAD
					11/02/2021	**Asbestos Level Screen**	NAD

Client Name: Groundtech Consulting Limited
Reference:
Location: 8 Moor Road.
Contact: Cameron Wallace

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/1767						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1767

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics extracted.
#2	EU_Total but with fatty acids extracted.
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/1767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM42	Modified US EPA method 8270D v5:2014. Pesticides and herbicides by GC-MS	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

APPENDIX 9 - Geotechnical Testing Results

LABORATORY REPORT

4043

Contract Number: PSL22/6071

Report Date: 14 October 2022

Client's Reference:

Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Luke Harrison

Contract Title: 8 Moor Road, Baguley

Date Received: 20/9/2022
Date Commenced: 20/9/2022
Date Completed: 05/10/2022

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

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

M Fennell (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH01			9.00	9.50	Brown slightly gravelly very sandy CLAY.
Sample 1			1.00		Grey sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH01			9.00	9.50	19			29	14	15	98	Low Plasticity CL
Sample 1			1.00		13			36	17	19	100	Intermediate Plasticity CI

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

UKAS TESTING 4043

PSL Professional Soils Laboratory

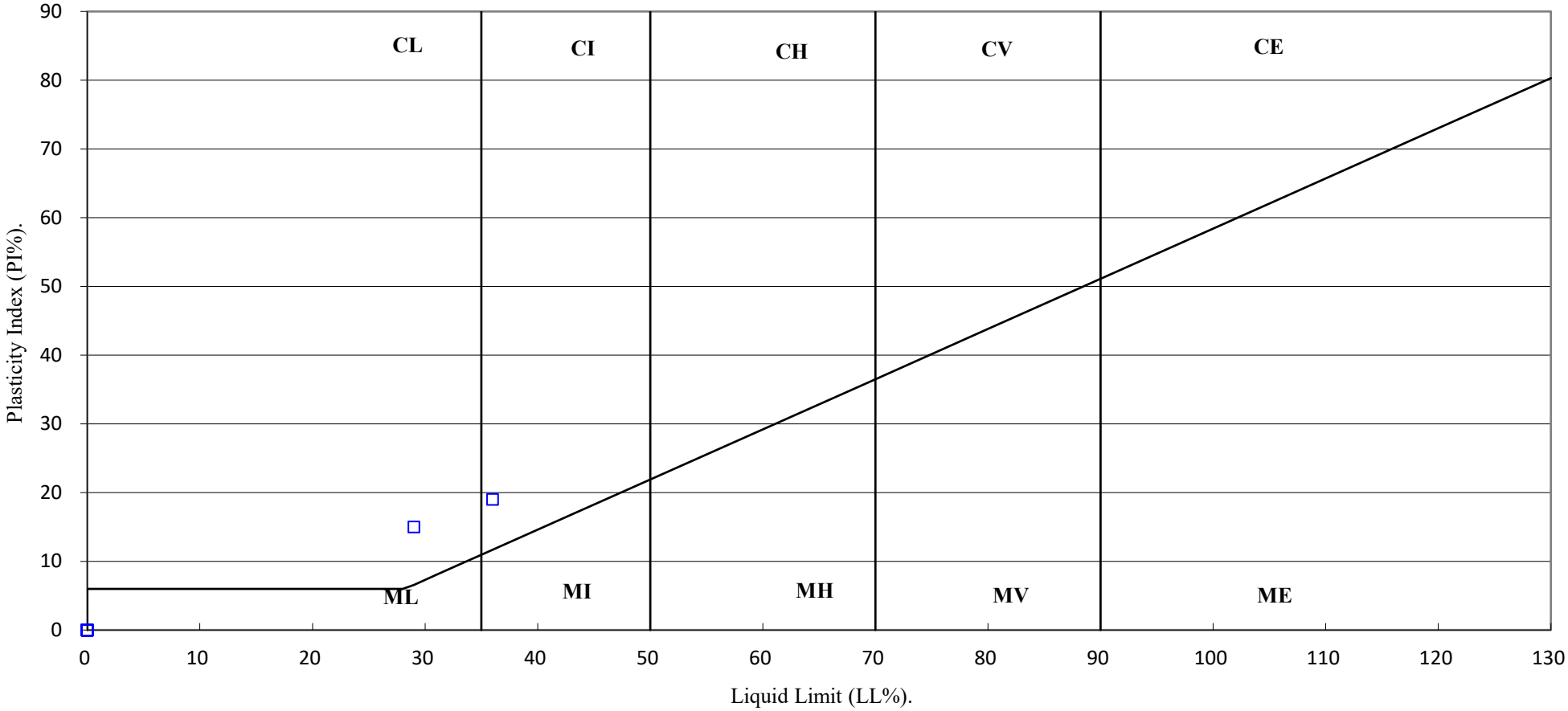
8 Moor Road, Baguley

Contract No:

PSL22/6071

Client Ref:

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	8 Moor Road, Baguley	Contract No: PSL22/6071 Client Ref:

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 114370

Contract name: 8 Moor Road, Baguley

Client reference: PSL22/6071

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 06 October 2022

Analysis started: 06 October 2022

Analysis completed: 13 October 2022

Report issued: 13 October 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by:

ANeasham-Bourn

Abbie Neasham-Bourn

Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			114370-1	114370-2
Sample id			BH01	Sample 1
Depth (m)			9.00-7.50	1.00
Sample Type			-	-
Date sampled			-	-
Test	**Method**	**Units**		
pH	CE004 U	units	8.2	8.0
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	49	562

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
114370-1	BH01	9.00-7.50	Y	All (NSD)
114370-2	Sample 1	1.00	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

APPENDIX 10 - Permanent Ground Gas Monitoring Results

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*8 MOOR ROAD, BAGUELEY*				***ENGINEER:***	*William Sandiford Mitchell*						
CLIENT:	*SUMO DEVELOPMENTS*				***DATE:***	*08/09/2022*						
JOB NO:	*GRO-21003*											
Pressure Trend:	*Falling*	***Weather:***	*Overcast*			***Equipment:***	*GFM 436*					
Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)						
Start	20.9	0.0	0.0	0.0	0.0	0.0						
Finish	20.9	0.0	0.0	0.0	0.0	0.0						

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.0	1.2	1.2	24.0	6.7	6.7	10.2	10.3	0.0	0.0	0.0	0.0	0.0067	0.0012	998	-	N	N/A	N/A	1.41
Notes:																						

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*8 MOOR ROAD, BAGUELEY*				***ENGINEER:***	*William Sandiford Mitchell*					
CLIENT:	*SUMO DEVELOPMENTS*				***DATE:***	*30/09/2022*					
JOB NO:	*GRO-21003*										
Pressure Trend:	*Falling*	***Weather:***	*Raining*			***Equipment:***	*GFM 436*				

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.8	0.0	0.0	0.0	0.0	0.0
Finish	20.8	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.00	0.7	0.3	14.0	5.3	4.6	11.9	11.9	0.0	0.0	0.0	0.0	0.0053	0.0007	994	-	N	N/A	N/A	1.41
WS01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A
WS02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A
WS03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A
WS04	0.0	0.0	0.00	1.0	0.6	20.0	2.3	1.3	18.4	19.2	0.0	0.0	0.0	0.0	0.0023	0.0010	995	-	N	N/A	N/A	1.38
WS05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A

Notes: WS01, WS02 and WS05 inaccessible.

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*8 MOOR ROAD, BAGUELEY*				***ENGINEER:***	*William Sandiford Mitchell*						
CLIENT:	*SUMO DEVELOPMENTS*				***DATE:***	*03/01/2023*						
JOB NO:	*GRO-21003*											
Pressure Trend:	*Steady*	***Weather:***	*Overcast*			***Equipment:***	*GFM 436*					

Ambient:	**O_2 (%v/v)**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**LEL**	**H_2S (ppm)**	**CO (ppm)**
Start	20.8	0.0	0.0	0.0	0.0	0.0
Finish	20.8	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.00	1.2	1.1	24.0	4.7	4.1	12.7	13.4	0.0	0.0	0.0	0.0	0.0047	0.0012	1006	-	N	N/A	N/A	1.49
WS01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS04	0.0	0.0	0.00	2.5	1.8	50.0	3.5	2.8	17.6	18.4	0.0	0.0	0.0	0.0	0.0035	0.0025	1005	-	N	N/A	N/A	1.38
WS05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: WS01,2,3 and 5 inaccaessible.

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*8 MOOR ROAD, BAGUELEY*					***ENGINEER:***	*William Sandiford Mitchell*					
CLIENT:	*SUMO DEVELOPMENTS*					***DATE:***	*16/01/2023*					
JOB NO:	*GRO-21003*											
Pressure Trend:	*Falling*	***Weather:***	*Overcast*			***Equipment:***	*GFM 436*					

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.6	0.0	0.0	0.0	0.0	0.0
Finish	20.6	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.00	1.8	1.3	36.0	5.3	3.9	10.7	14.0	0.0	0.0	0.0	0.0	0.0053	0.0018	996	-	N	N/A	N/A	1.41
WS01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS04	0.0	0.0	0.00	1.6	1.5	32.0	4.7	4.7	16.2	16.8	0.0	0.0	0.0	0.0	0.0047	0.0016	996	-	N	N/A	N/A	1.27
WS05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes: WS01,2,3 and 5 inaccaessible.																						

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*8 MOOR ROAD, BAGUELEY*				***ENGINEER:***	*Jack Perkins*						
CLIENT:	*SUMO DEVELOPMENTS*				***DATE:***	*07/03/2023*						
JOB NO:	*GRO-21003*											
Pressure Trend:	*Falling*	***Weather:***	*Sunny*			***Equipment:***	*GFM 436*					

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.6	0.0	0.0	0.0	0.0	0.0
Finish	20.6	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.00	1.4	1.0	28.0	4.9	4.3	11.6	13.2	0.0	0.0	0.0	0.0	0.0049	0.0014	996	-	N	N/A	N/A	1.28
WS01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS04	0.0	0.0	0.00	1.3	0.8	26.0	5.2	4.9	13.2	16.1	0.0	0.0	0.0	0.0	0.0052	0.0013	996	-	N	N/A	N/A	1.14
WS05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

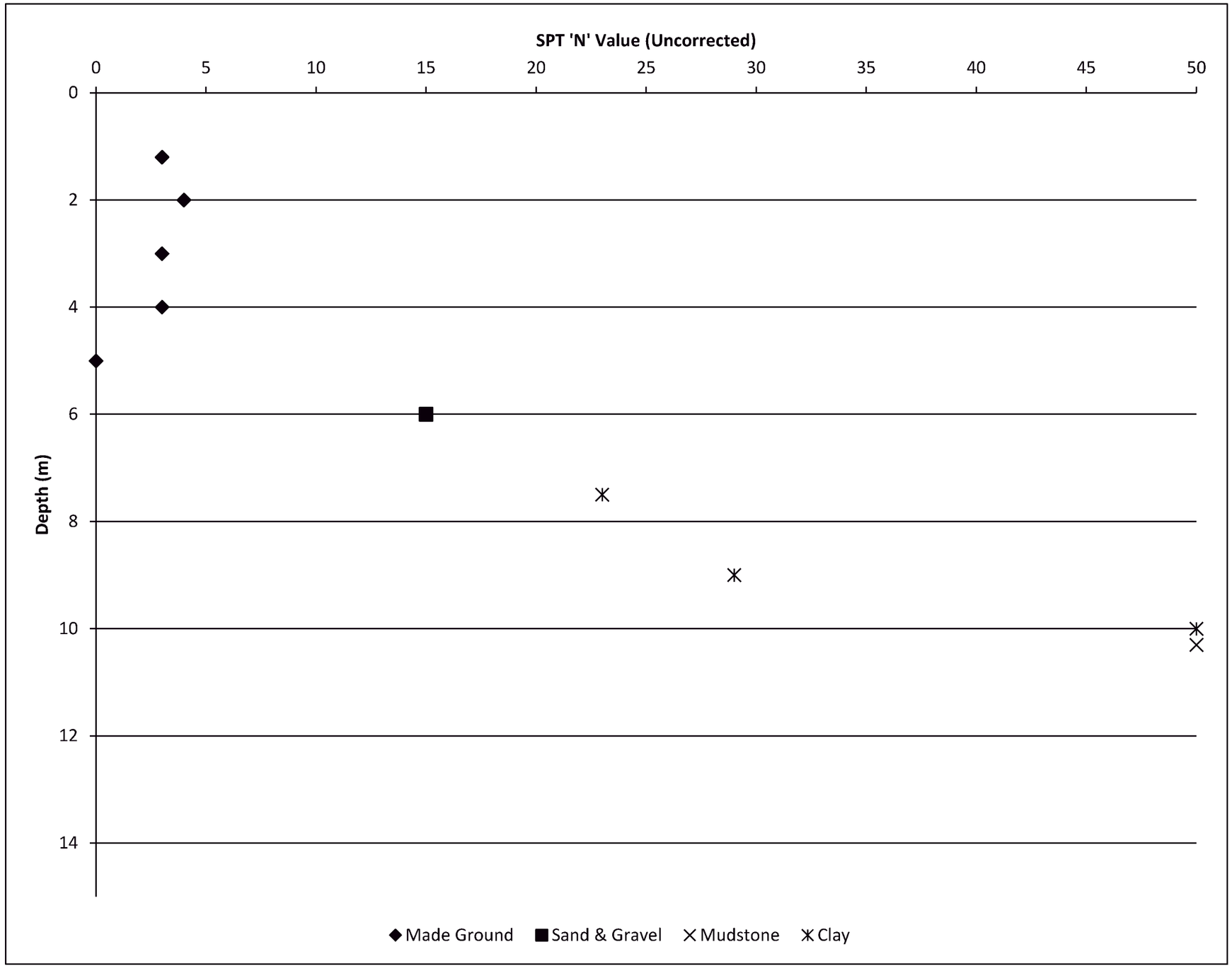
SITE NAME:	*8 MOOR ROAD, BAGUELEY*	***ENGINEER:***	*Jack Perkins*
CLIENT:	*SUMO DEVELOPMENTS*	***DATE:***	*15/11/2022*
JOB NO:	*GRO-21003*		
Pressure Trend:	*Falling*	***Weather:***	*Overcast*
		Equipment:	*GFM 436*

	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Ambient:						
Start	20.6	0.0	0.0	0.0	0.0	0.0
Finish	20.6	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
BH101A	0.0	0.0	0.00	0.4	0.4	8.0	5.1	4.8	14.9	13.6	0.0	0.0	0.0	0.0	0.0051	0.0004	987	-	N	N/A	N/A	1.45
WS01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS04	0.0	0.0	0.00	0.8	0.6	16.0	2.2	1.7	18.6	19.1	0.0	0.0	0.0	0.0	0.0022	0.0008	987	-	N	N/A	N/A	1.32
WS05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: WS01, WS02 and WS05 inaccessible.

APPENDIX 11 - Generalised Ground Model



GROUNDTECH CONSULTING

CLIENT	SUMO DEVELOPMENTS
PROJECT TITLE	8 MOOR ROAD, BAGULEY
PLAN TITLE	GENERALISED GROUND MODEL
DATE	OCTOBER 2022
SCALE	NTS
PLAN NUMBER	GRO-21003-P05

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

APPENDIX 12 - Soil Infiltration Test Results

8 MOOR ROAD, BAGULEY
GRO-21003
SUMO DEVELOPMENTS

SOIL PERCOLATION TEST

GROUNDTECH CONSULTING

Sheet 1 of 2

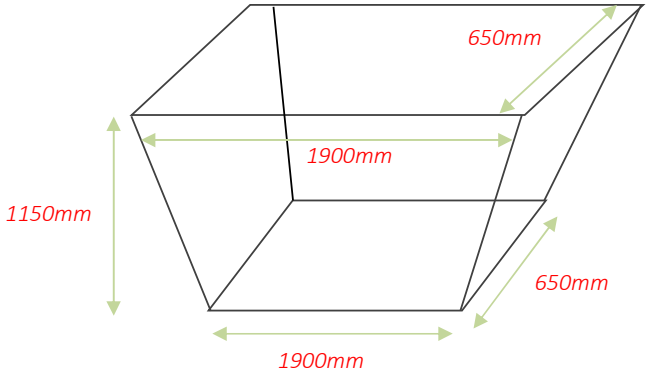
Date of Test: 05/02/2021

POSITION: SuDS1
TEST 1

Weather: Raining, cloudy

Engineer: *L Harrison*
Checked: *R Wyatt*

Trial Pit Measurements



Pit Depth (mm):	1150
Pit Details:	Open with no stone filling
Groundwater Level:	NGW

Test Data

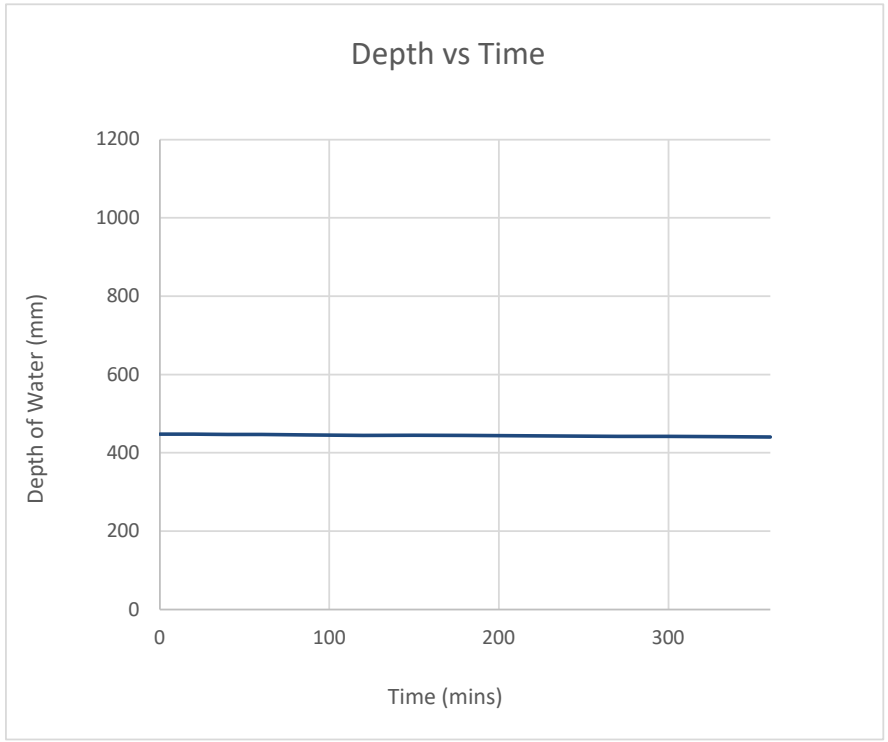
Time Elapsed (mins)	Depth to Water Level (mm)
0	702
1	702
2	702
3	702
5	702
10	702
20	702
40	703
60	703
120	705
180	705
240	707
300	708
360	709

8 MOOR ROAD, BAGULEY
GRO-21003
SUMO DEVELOPMENTS

SOIL PERCOLATION TEST

Sheet 2 of 2

POSITION: SuDS1
TEST 1



Volume of Pit (m^3)	1.42025
Void Ratio of Infill	1
Volume of Infill (m^3)	N/A
Volume of Water in Pit (m^3)	0.55328

Compliancy Check:

Water Level at 75% effective depth (mm)	336
Water Level at 25% effective depth (mm)	112

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	448
Water Level 2	441
Time to Drain from Level 1 to Level 2 (mins)	360
Volume of water discharged (m^3)	0.008645
Discharge Area (m^2)	3.5198
Soil Infiltration Rate (m/min)	6.823E-06
Soil Infiltration Rate (m/sec)	***1.14E-07***

8 MOOR ROAD, BAGULEY
GRO-21003
SUMO DEVELOPMENTS

SOIL PERCOLATION TEST

GROUNDTECH CONSULTING

Sheet 1 of 2

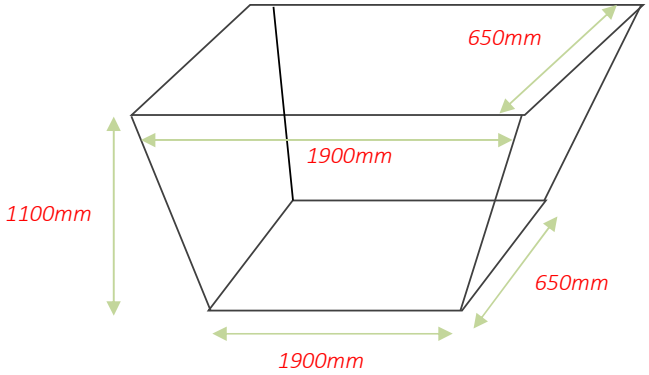
Date of Test: 05/02/2021

POSITION: SuDS2
TEST 1

Weather: Raining, cloudy

Engineer: *L Harrison*
Checked: *R Wyatt*

Trial Pit Measurements



Pit Depth (mm):	1100
Pit Details:	Open with no stone filling
Groundwater Level:	NGW

Test Data

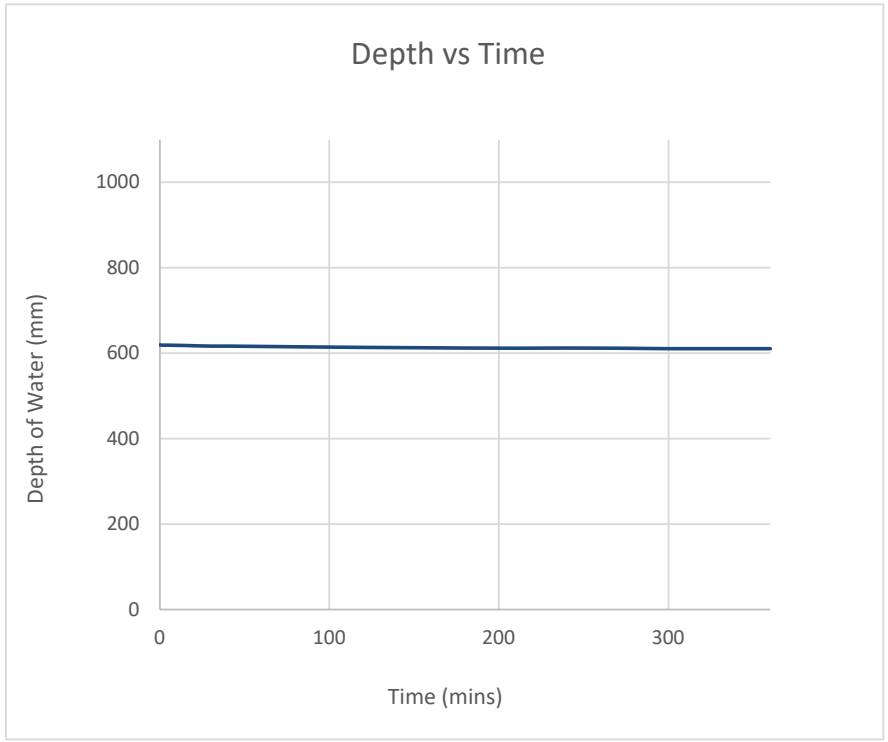
Time Elapsed (mins)	Depth to Water Level (mm)
0	480
1	481
2	481
3	481
4	481
5	481
15	482
30	483
60	484
120	486
180	488
240	488
300	489
360	489

8 MOOR ROAD, BAGULEY
GRO-21003
SUMO DEVELOPMENTS

SOIL PERCOLATION TEST

Sheet 2 of 2

POSITION: SuDS2
TEST 1



Volume of Pit (m^3)	1.3585
Void Ratio of Infill	1
Volume of Infill (m^3)	N/A
Volume of Water in Pit (m^3)	0.7657

Compliancy Check:

Water Level at 75% effective depth (mm)	465
Water Level at 25% effective depth (mm)	155

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	620
Water Level 2	611
Time to Drain from Level 1 to Level 2 (mins)	360
Volume of water discharged (m^3)	0.011115

Discharge Area (m^2)	4.397
Soil Infiltration Rate (m/min)	7.022E-06
Soil Infiltration Rate (m/sec)	***1.17E-07***

APPENDIX 13 - Generic Screening Values (Residential Without Plant Uptake)

Generic Assessment Criteria (GAC)								
Proposed End Use	Unit	Residential with Plant Uptake			Residential without plant uptake			Source
SOM	%	1	2.5	6	1	2.5	6	
Arsenic	*mg/kg*	*37*	*37*	*37*	*40*	*46*	*40*	*LQM S4ULs*
Beryllium	*mg/kg*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*LQM S4ULs*
Boron (water soluble)	*mg/kg*	*290*	*290*	*290*	*11000*	*11000*	*11000*	*LQM S4ULs*
Cadmium	*mg/kg*	*11*	*11*	*11*	*85*	*85*	*85*	*LQM S4ULs*
Chromium (Total)	*mg/kg*	*910*	*910*	*910*	*910*	*910*	*910*	*LQM S4ULs*
Chromium (VI)	*mg/kg*	*6*	*6*	*6*	*6*	*6*	*6*	*LQM S4ULs*
Copper	*mg/kg*	*2400*	*2400*	*2400*	*7100*	*7100*	*7100*	*LQM S4ULs*
Lead	*mg/kg*	*200*	*200*	*200*	*310*	*310*	*310*	*DEFRA C4SLs*
Mercury	*mg/kg*	*1.2*	*1.2*	*1.2*	*1.2*	*1.2*	*1.2*	*LQM S4ULs*
Nickel	*mg/kg*	*180*	*180*	*180*	*180*	*180*	*180*	*LQM S4ULs*
Selenium	*mg/kg*	*250*	*250*	*250*	*430*	*430*	*430*	*LQM S4ULs*
Vanadium	*mg/kg*	*410*	*410*	*410*	*1200*	*1200*	*1200*	*LQM S4ULs*
Zinc	*mg/kg*	*3700*	*3700*	*3700*	*40000*	*40000*	*40000*	*LQM S4ULs*
Aliphatic EC 5 - 6	*mg/kg*	*42*	*78*	*160*	*42*	*78*	*160*	*LQM S4ULs*
Aliphatic EC 6 - 8	*mg/kg*	*100*	*230*	*530*	*100*	*230*	*530*	*LQM S4ULs*
Aliphatic EC 8 - 10	*mg/kg*	*27*	*65*	*150*	*27*	*65*	*150*	*LQM S4ULs*
Aliphatic EC 10 - 12	*mg/kg*	*130 (48) vap*	*330 (118) vap*	*760 (283) vap*	*130 (48) vap*	*330 (118) vap*	*770 (283) vap*	*LQM S4ULs*
Aliphatic EC 12 - 16	*mg/kg*	*1100 (24) sol*	*2400 (59) sol*	*4300 (142) sol*	*1100 (24) sol*	*2400 (59) sol*	*4400 (142) sol*	*LQM S4ULs*
Aliphatic EC 16 - 35	*mg/kg*	*65000 (8.48) f,sol*	*92000 (21) f,sol*	*110000 f*	*65000 (8.48) f,sol*	*92000 (21) f,sol*	*110000 f*	*LQM S4ULs*
Aliphatic EC 35 - 44	*mg/kg*	*65000 (8.48) f,sol*	*92000 (21) f,sol*	*110000 f*	*65000*	*92000 (21) f,sol*	*110000 f*	*LQM S4ULs*
Aromatic EC 5 - 7	*mg/kg*	*70*	*140*	*300*	*370*	*690*	*1400*	*LQM S4ULs*
Aromatic EC 7 - 8	*mg/kg*	*130*	*290*	*660*	*860*	*1800*	*3900*	*LQM S4ULs*
Aromatic EC 8 - 10	*mg/kg*	*34*	*83*	*190*	*47*	*110*	*270*	*LQM S4ULs*
Aromatic EC 10 - 12	*mg/kg*	*74*	*180*	*380*	*250*	*590*	*1200*	*LQM S4ULs*
Aromatic EC 12 -16	*mg/kg*	*140*	*330*	*660*	*1800*	*2300*	*2500*	*LQM S4ULs*
Aromatic EC 16 - 21	*mg/kg*	*260 f*	*540 f*	*930 f*	*1900*	*1900*	*1900*	*LQM S4ULs*
Aromatic EC 21 - 35	*mg/kg*	*1100 f*	*1500 f*	*1700 f*	*1900*	*1900*	*1900*	*LQM S4ULs*
Aromatic EC 35 - 44	*mg/kg*	*1100 f*	*1500 f*	*1700 f*	*1900*	*1900*	*1900*	*LQM S4ULs*
Benzene	*mg/kg*	*0.087*	*0.17*	*0.37*	*0.38*	*0.7*	*1.4*	*LQM S4ULs*
Toluene	*mg/kg*	*130*	*290*	*660*	*880*	*1900*	*3900*	*LQM S4ULs*
Ethyl Benzene	*mg/kg*	*47*	*110*	*260*	*83*	*190*	*440*	*LQM S4ULs*
Xylene - o	*mg/kg*	*60*	*140*	*330*	*88*	*210*	*480*	*LQM S4ULs*
Xylene - m	*mg/kg*	*59*	*140*	*320*	*82*	*190*	*450*	*LQM S4ULs*
Xylene - p	*mg/kg*	*56*	*130*	*310*	*79*	*180*	*430*	*LQM S4ULs*
MTBE (methyl tert-butyl ether)	*mg/kg*	*49*	*84*	*160*	*-*	*-*	*-*	*CL:AIRE 2010*
Acenaphthene	*mg/kg*	*210*	*510*	*1100*	*3000*	*4700*	*6000*	*LQM SAULs*
Acenaphthylene	*mg/kg*	*170*	*420*	*920*	*2900*	*4600*	*6000*	*LQM S4ULs*
Anthracene	*mg/kg*	*2400*	*5400*	*11000*	*31000*	*35000*	*37000*	*LQM S4ULs*
Benzo(a)anthracene	*mg/kg*	*7.2*	*11*	*13*	*11*	*14*	*15*	*LQM S4ULs*
Benzo(a)pyrene	*mg/kg*	*2.2*	*2.7*	*3*	*3.2*	*3.2*	*3.2*	*LQM S4ULs*
Benzo(b)fluoranthene	*mg/kg*	*2.6*	*3.3*	*3.7*	*3.9*	*4*	*4*	*LQM S4ULs*
Benzo(ghi)perylene	*mg/kg*	*320*	*340*	*350*	*360*	*360*	*360*	*LQM S4ULs*
Benzo(k)fluoranthene	*mg/kg*	*77*	*93*	*100*	*110*	*110*	*110*	*LQM S4ULs*
Chrysene	*mg/kg*	*15*	*22*	*27*	*30*	*31*	*32*	*LQM S4ULs*
Dibenzo(ah)anthracene	*mg/kg*	*0.24*	*0.28*	*0.3*	*0.31*	*0.32*	*0.32*	*LQM S4ULs*
Fluoranthene	*mg/kg*	*280*	*560*	*890*	*1500*	*1600*	*1600*	*LQM S4ULs*
Fluorene	*mg/kg*	*170*	*400*	*860*	*2800*	*3800*	*4500*	*LQM S4ULs*
Indeno(123-cd)pyrene	*mg/kg*	*27*	*36*	*41*	*45*	*46*	*46*	*LQM S4ULs*
Naphthalene	*mg/kg*	*15*	*36*	*85*	*15*	*36*	*85*	*LQM S4ULs*
Phenanthrene	*mg/kg*	*95*	*220*	*440*	*1300*	*1500*	*1500*	*LQM S4ULs*
Pyrene	*mg/kg*	*620*	*1200*	*2000*	*3700*	*3800*	*3800*	*LQM S4ULs*

Generic Assessment Criteria (GAC)								
Proposed End Use	Unit	Residential with Plant Uptake			Residential without plant uptake			Source
SOM	%	1	2.5	6	1	2.5	6	
Phenols	*mg/kg*	*280*	*550*	*1100*	*750*	*1300*	*2300*	*LQM S4ULs*
Chlorophenols	*mg/kg*	*0.87* [g]	*2*	*4.5*	*-*			*LQM S4ULs*
Pentachlorophenol	*mg/kg*	*0.22*	*0.52*	*1.2*	*-*			*LQM S4ULs*
Carbon disulphide	*mg/kg*	*0.14*	*0.29*	*0.62*	*-*			*LQM S4ULs*
Hexachlorobutadiene	*mg/kg*	*0.29*	*0.7*	*1.6*	*-*			*LQM S4ULs*
1,1,1,2 Tetrachloroethane	*mg/kg*	*1.6*	*3.4*	*7.5*	*-*			*LQM S4ULs*
1,1,1 Trichloroethane	*mg/kg*	*8.8*	*18*	*39*	*-*			*LQM S4ULs*
Trichloroethene	*mg/kg*	*0.016*	*0.034*	*0.075*	*-*			*LQM S4ULs*
Tetrachoromethane (Carbon Tetrachloride)	*mg/kg*	*0.026*	*0.056*	*0.13*	*-*			*LQM S4ULs*
1,2-Dichloroethane	*mg/kg*	*0.0071*	*0.011*	*0.019*	*-*			*LQM S4ULs*
Chloroethene (Vinyl chloride)	*mg/kg*	*0.00064*	*0.00087*	*0.0014*	*-*			*LQM S4ULs*
Trichloromethane (Chloroform)	*mg/kg*	*0.91*	*1.7*	*3.4*	*-*			*LQM S4ULs*
Tetrachloroethene	*mg/kg*	*0.18*	*0.39*	*0.9*	*-*			*LQM S4ULs*
Hexachlorobenzene	*mg/kg*	*1.8 (0.2)* [vap]	*3.3 (0.5)* [vap]	*4.9*	*-*			*LQM S4ULs*
Pentachlorobenzene	*mg/kg*	*5.8*	*12*	*22*	*-*			*LQM S4ULs*
1,2,4,5-Tetrachlorobenzene	*mg/kg*	*0.33*	*0.77*	*1.6*	*-*			*LQM S4ULs*
1,2,3,5-Tetrachlorobenzene	*mg/kg*	*0.66*	*1.69*	*3.7*	*-*			*LQM S4ULs*
1,2,3,4-Tetrachlorobenzene	*mg/kg*	*15*	*36*	*78*	*-*			*LQM S4ULs*
1,3,5-Trichlorobenzene	*mg/kg*	*0.33*	*0.81*	*1.9*	*-*			*LQM S4ULs*
1,2,4-Trichlorobenzene	*mg/kg*	*2.6*	*6.4*	*15*	*-*			*LQM S4ULs*
1,2,3-Trichlorobenzene	*mg/kg*	*1.5*	*3.6*	*8.6*	*-*			*LQM S4ULs*
1,4-dichlorobenzene	*mg/kg*	*61* [f]	*150* [f]	*350* [f]	*-*			*LQM S4ULs*
1,3-dichlorobenzene	*mg/kg*	*0.4*	*1*	*2.3*	*-*			*LQM S4ULs*
1,2-Dichlorobenzene	*mg/kg*	*23*	*55*	*130*	*-*			*LQM S4ULs*
Chlorobenzene	*mg/kg*	*0.46*	*1*	*2.4*	*-*			*LQM S4ULs*
Gamma-Hexachlorocyclohexanes	*mg/kg*	*0.06*	*0.14*	*0.33*	*-*			*LQM S4ULs*
Beta-Hexachlorocyclohexane	*mg/kg*	*0.085*	*0.2*	*0.46*	*-*			*LQM S4ULs*
Alpaha - Hexachlorocyclohexane	*mg/kg*	*0.23*	*0.55*	*1.2*	*-*			*LQM S4ULs*
Beta -Endosulfan	*mg/kg*	*7*	*17*	*39*	*-*			*LQM S4ULs*
Alpha-Endosulfan	*mg/kg*	*7.4*	*18*	*41*	*-*			*LQM S4ULs*
Dichlorvos	*mg/kg*	*0.032*	*0.066*	*0.14*	*-*			*LQM S4ULs*
Atrazine	*mg/kg*	*3.3*	*7.6*	*17.4*	*-*			*LQM S4ULs*
Dieldrin	*mg/kg*	*0.97*	*2*	*3.5*	*-*			*LQM S4ULs*
Aldrin	*mg/kg*	*5.7*	*6.6*	*7.1*	*-*			*LQM S4ULs*
HMX	*mg/kg*	*5.7*	*13*	*26*	*-*			*LQM S4ULs*
2,4,6-Trinitrotoulene	*mg/kg*	*1.6*	*3.7*	*8.1*	*-*			*LQM S4ULs*
RDX	*mg/kg*	*120*	*250*	*540*	*-*			*LQM S4ULs*

[sol] S4UL exceeds the solubility saturation limit (which is presented in brackets)

[vap] S4ULS presented exceeds the vapour saturation limit, which is presented in brackets

[f] For naphthalene, the S4UL is based on a comparison of inhalation exposure with the TDI_{inhal} for localised affects

[f] S4UL based on comparison of inhalation exposure with inhalation TDI for localised effects

[dir] S4ULs based on a threshold protecive direct skin contact with phenol (guideline in brackets based on health effects following long term exposure provided for illustation only

APPENDIX 14 - Waste Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

CJ18R-HTRHN-O264L

Job name

EMT-21-1767-Batch-1-File-1

Description/Comments

Project

GRO-21003

Site

8 MOOR ROAD, BAGULEY

Classified by

Name:
Bradley Massey
Date:
05 Oct 2022 15:13 GMT
Telephone:
01618 201368

Company:
Groundtech Consulting Limited
First Floor, Lloyd House, Orford Court,
Greenfold Way
Leigh
WN7 3XJ

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: -

Course	Date
Hazardous Waste Classification	-

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01-05/02/2021-0.15m		Non Hazardous		2
2	WS02-05/02/2021-0.10m		Non Hazardous		5
3	WS03-05/02/2021-1.20m		Non Hazardous		8
4	WS04-05/02/2021-0.10m		Non Hazardous		10
5	WS05-05/02/2021-1.00m		Non Hazardous		13
6	SP01-05/02/2021		Non Hazardous		15

Related documents

#	Name	Description
1	EMT-21-1767-Batch-1-File-1.hwol	Element .hwol file used to populate the Job

Report

Created by: Bradley Massey

Created date: 05 Oct 2022 15:13 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	17
Appendix B: Rationale for selection of metal species	18
Appendix C: Version	18

Classification of sample: WS01-05/02/2021-0.15m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS01-05/02/2021-0.15m
Moisture content:
17.7%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17.7% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				12.6	mg/kg	1.895	20.281	mg/kg	0.00203 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.7	mg/kg	1.855	1.103	mg/kg	0.00011 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		51	mg/kg	3.929	170.248	mg/kg	0.017 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	162	mg/kg	1.56	214.69	mg/kg	0.0138 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		0.3	mg/kg	1.419	0.362	mg/kg	0.0000362 %	✓	
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		10.4	mg/kg	5.324	47.046	mg/kg	0.0047 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		116	mg/kg	4.398	433.44	mg/kg	0.0433 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<**LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		0.07	mg/kg		0.0595	mg/kg	0.00000595 %	✓	
11		acenaphthylene		205-917-1	208-96-8		0.06	mg/kg		0.051	mg/kg	0.0000051 %	✓	
12		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
13		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
14		phenanthrene		201-581-5	85-01-8		0.66	mg/kg		0.561	mg/kg	0.0000561 %	✓	
15		anthracene		204-371-1	120-12-7		0.08	mg/kg		0.068	mg/kg	0.0000068 %	✓	
16		fluoranthene		205-912-4	206-44-0		1.06	mg/kg		0.901	mg/kg	0.0000901 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		pyrene		204-927-3	129-00-0		0.97	mg/kg		0.824	mg/kg	0.0000824 %	✓	
18		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.58	mg/kg		0.493	mg/kg	0.0000493 %	✓	
19		chrysene	601-048-00-0	205-923-4	218-01-9		0.54	mg/kg		0.459	mg/kg	0.0000459 %	✓	
20		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.49	mg/kg		0.416	mg/kg	0.0000416 %	✓	
21		indeno[123-cd]pyrene		205-893-2	193-39-5		0.34	mg/kg		0.289	mg/kg	0.0000289 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.06	mg/kg		0.051	mg/kg	0.0000051 %	✓	
23		benzo[ghi]perylene		205-883-8	191-24-2		0.36	mg/kg		0.306	mg/kg	0.0000306 %	✓	
24		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.73	mg/kg		0.62	mg/kg	0.000062 %	✓	
25		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.28	mg/kg		0.238	mg/kg	0.0000238 %	✓	
26		heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene	602-046-00-2	200-962-3	76-44-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
27		aldrin (ISO)	602-048-00-3	206-215-8	309-00-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
28		heptachlor epoxide; 2,3-epoxy-1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	602-063-00-5	213-831-0	1024-57-3		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
29		p,p'-DDE		200-784-6	72-55-9		41	µg/kg		0.0348	mg/kg	0.00000348 %	✓	
30		dieldrin (ISO)	602-049-00-9	200-484-5	60-57-1		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
31		p,p'-DDD		200-783-0	72-54-8		41	µg/kg		0.0348	mg/kg	0.00000348 %	✓	
32		endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene	602-051-00-X	200-775-7	72-20-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
33		DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane	602-045-00-7	200-024-3	50-29-3		82	µg/kg		0.0697	mg/kg	0.00000697 %	✓	
34		dichlorvos (ISO); 2,2-dichlorovinyl dimethyl phosphate	015-019-00-X	200-547-7	62-73-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
35		azinphos-methyl (ISO); O,O-dimethyl-4-oxobenzotriazin-3-ylmethyl phosphorodithioate	015-039-00-9	201-676-1	86-50-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
36		diazinon (ISO); O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-yl phosphorothioate	015-040-00-4	206-373-8	333-41-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
37		ethion (ISO); O,O,O',O'-tetraethyl S,S'-methylenedi (phosphorodithioate); diethion	015-047-00-2	209-242-3	563-12-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		parathion (ISO); O,O-diethyl O-4-nitrophenyl phosphorothioate	015-034-00-1	200-271-7	56-38-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
39		fenitrothion (ISO); O,O-dimethyl O-4-nitro-m-tolyl phosphorothioate	015-054-00-0	204-524-2	122-14-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
40		malathion (ISO); 1,2-bis(ethoxycarbonyl)ethyl O,O-dimethyl phosphorodithioate; [containing £ 0.03 % isomalathion]	015-041-00-X	204-497-7	121-75-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
41		parathion - methyl (ISO); O,O-dimethyl O-4-nitrophenyl phosphorothioate	015-035-00-7	206-050-1	298-00-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
42		mevinphos (ISO); 2-methoxycarbonyl-1-methylvinyl dimethyl phosphate	015-020-00-5	232-095-1	7786-34-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
43	●	p,p'-methoxychlor		200-779-9	72-43-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
44		disulfoton (ISO); O,O-diethyl 2-ethylthioethyl phosphorodithioate	015-060-00-3	206-054-3	298-04-4		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
45	●	pH			PH		7.36	pH		7.36	pH	7.36 pH		
46		endosulfan (ISO); 1,2,3,4,7,7-hexachloro-8,9,10-trinorborn-2-en-5,6-ylenedimethylene sulfite; 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenedimethylene sulfite	602-052-00-5	204-079-4	115-29-7		<30	µg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
47		hexachlorocyclohexanes, including lindane	602-043-00-6	210-168-9, 200-401-2, 206-270-8, 206-271-3	58-89-9, 319-84-6, 319-85-7, 608-73-1		<40	µg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
48		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12.8	mg/kg	1.462	15.895	mg/kg	0.00159 %	✓	
											Total:	0.0835 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 1: Explosive "waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included"

Force this Hazardous property to non hazardous because Not explosive at this concentration.

Hazard Statements hit:

Unst. Expl.; H200 "Unstable explosives"

Because of determinand:

mercury difulminate: (compound conc.: 0.00003%)

Classification of sample: WS02-05/02/2021-0.10m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS02-05/02/2021-0.10m
Moisture content:
46.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 46.2% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				19.5	mg/kg	1.895	25.269	mg/kg	0.00253 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		3.7	mg/kg	1.855	4.693	mg/kg	0.000469 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		100	mg/kg	3.929	268.745	mg/kg	0.0269 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	468	mg/kg	1.56	499.312	mg/kg	0.032 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		0.9	mg/kg	1.419	0.873	mg/kg	0.0000873 %	✓	
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		21.3	mg/kg	5.324	77.57	mg/kg	0.00776 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1	mg/kg	2.554	1.747	mg/kg	0.000175 %	✓	
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		314	mg/kg	4.398	944.561	mg/kg	0.0945 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<**LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		0.1	mg/kg		0.0684	mg/kg	0.00000684 %	✓	
11		acenaphthylene		205-917-1	208-96-8		0.1	mg/kg		0.0684	mg/kg	0.00000684 %	✓	
12		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
13		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
14		phenanthrene		201-581-5	85-01-8		0.91	mg/kg		0.622	mg/kg	0.0000622 %	✓	
15		anthracene		204-371-1	120-12-7		0.2	mg/kg		0.137	mg/kg	0.0000137 %	✓	
16		fluoranthene		205-912-4	206-44-0		2.47	mg/kg		1.689	mg/kg	0.000169 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		pyrene		204-927-3	129-00-0		2.22	mg/kg		1.518	mg/kg	0.000152 %	✓	
18		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.27	mg/kg		0.869	mg/kg	0.0000869 %	✓	
19		chrysene	601-048-00-0	205-923-4	218-01-9		1.43	mg/kg		0.978	mg/kg	0.0000978 %	✓	
20		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.64	mg/kg		1.122	mg/kg	0.000112 %	✓	
21		indeno[123-cd]pyrene		205-893-2	193-39-5		1.14	mg/kg		0.78	mg/kg	0.000078 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.19	mg/kg		0.13	mg/kg	0.000013 %	✓	
23		benzo[ghi]perylene		205-883-8	191-24-2		1.3	mg/kg		0.889	mg/kg	0.0000889 %	✓	
24		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.12	mg/kg		1.45	mg/kg	0.000145 %	✓	
25		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.83	mg/kg		0.568	mg/kg	0.0000568 %	✓	
26		heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene	602-046-00-2	200-962-3	76-44-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
27		aldrin (ISO)	602-048-00-3	206-215-8	309-00-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
28		heptachlor epoxide; 2,3-epoxy-1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	602-063-00-5	213-831-0	1024-57-3		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
29		p,p'-DDE		200-784-6	72-55-9		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
30		dieldrin (ISO)	602-049-00-9	200-484-5	60-57-1		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
31		p,p'-DDD		200-783-0	72-54-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
32		endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene	602-051-00-X	200-775-7	72-20-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
33		DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane	602-045-00-7	200-024-3	50-29-3		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
34		dichlorvos (ISO); 2,2-dichlorovinyl dimethyl phosphate	015-019-00-X	200-547-7	62-73-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
35		azinphos-methyl (ISO); O,O-dimethyl-4-oxobenzotriazin-3-ylmethyl phosphorodithioate	015-039-00-9	201-676-1	86-50-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
36		diazinon (ISO); O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-yl phosphorothioate	015-040-00-4	206-373-8	333-41-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
37		ethion (ISO); O,O,O',O'-tetraethyl S,S'-methylenedi (phosphorodithioate); diethion	015-047-00-2	209-242-3	563-12-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		parathion (ISO); O,O-diethyl O-4-nitrophenyl phosphorothioate	015-034-00-1	200-271-7	56-38-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
39		fenitrothion (ISO); O,O-dimethyl O-4-nitro-m-tolyl phosphorothioate	015-054-00-0	204-524-2	122-14-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
40		malathion (ISO); 1,2-bis(ethoxycarbonyl)ethyl O,O-dimethyl phosphorodithioate; [containing £ 0.03 % isomalathion]	015-041-00-X	204-497-7	121-75-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
41		parathion - methyl (ISO); O,O-dimethyl O-4-nitrophenyl phosphorothioate	015-035-00-7	206-050-1	298-00-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
42		mevinphos (ISO); 2-methoxycarbonyl-1-methylvinyl dimethyl phosphate	015-020-00-5	232-095-1	7786-34-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
43		p,p'-methoxychlor		200-779-9	72-43-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
44		disulfoton (ISO); O,O-diethyl 2-ethylthioethyl phosphorodithioate	015-060-00-3	206-054-3	298-04-4		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
45		pH			PH		7.49	pH		7.49	pH	7.49 pH		
46		endosulfan (ISO); 1,2,3,4,7,7-hexachloro-8,9,10-trinorborn-2-en-5,6-ylenedimethylene sulfite; 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenedimethylene sulfite	602-052-00-5	204-079-4	115-29-7		<30	µg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
47		hexachlorocyclohexanes, including lindane	602-043-00-6	210-168-9, 200-401-2, 206-270-8, 206-271-3	58-89-9, 319-84-6, 319-85-7, 608-73-1		<40	µg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
48		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32.8	mg/kg	1.462	32.79	mg/kg	0.00328 %	✓	
											Total:	0.169 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 1: Explosive "waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included"

Force this Hazardous property to non hazardous because Not explosive at this concentration.

Hazard Statements hit:

Unst. Expl.; H200 "Unstable explosives"

Because of determinand:

mercury difulminate: (compound conc.: 0.00008%)

Classification of sample: WS03-05/02/2021-1.20m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS03-05/02/2021-1.20m
Moisture content:
39.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 39.9% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				24.7	mg/kg	1.895	33.449	mg/kg	0.00334 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		1.2	mg/kg	1.855	1.591	mg/kg	0.000159 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		154	mg/kg	3.929	432.505	mg/kg	0.0433 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	165	mg/kg	1.56	183.967	mg/kg	0.0118 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		0.1	mg/kg	1.419	0.101	mg/kg	0.0000101 %	✓	
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		34.2	mg/kg	5.324	130.158	mg/kg	0.013 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		2	mg/kg	2.554	3.651	mg/kg	0.000365 %	✓	
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		306	mg/kg	4.398	961.948	mg/kg	0.0962 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		**<LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		0.57	mg/kg		0.407	mg/kg	0.0000407 %	✓	
11		acenaphthylene		205-917-1	208-96-8		0.17	mg/kg		0.122	mg/kg	0.0000122 %	✓	
12		acenaphthene		201-469-6	83-32-9		0.18	mg/kg		0.129	mg/kg	0.0000129 %	✓	
13		fluorene		201-695-5	86-73-7		0.21	mg/kg		0.15	mg/kg	0.000015 %	✓	
14		phenanthrene		201-581-5	85-01-8		2.87	mg/kg		2.051	mg/kg	0.000205 %	✓	
15		anthracene		204-371-1	120-12-7		0.95	mg/kg		0.679	mg/kg	0.0000679 %	✓	
16		fluoranthene		205-912-4	206-44-0		9.02	mg/kg		6.447	mg/kg	0.000645 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		pyrene				7.75	mg/kg		5.54	mg/kg	0.000554 %	✓	
			204-927-3	129-00-0									
18		benzo[a]anthracene				5.85	mg/kg		4.182	mg/kg	0.000418 %	✓	
		601-033-00-9	200-280-6	56-55-3									
19		chrysene				5.04	mg/kg		3.603	mg/kg	0.00036 %	✓	
		601-048-00-0	205-923-4	218-01-9									
20		benzo[a]pyrene; benzo[def]chrysene				5.16	mg/kg		3.688	mg/kg	0.000369 %	✓	
		601-032-00-3	200-028-5	50-32-8									
21		indeno[123-cd]pyrene				3.26	mg/kg		2.33	mg/kg	0.000233 %	✓	
			205-893-2	193-39-5									
22		dibenz[a,h]anthracene				0.46	mg/kg		0.329	mg/kg	0.0000329 %	✓	
		601-041-00-2	200-181-8	53-70-3									
23		benzo[ghi]perylene				3.12	mg/kg		2.23	mg/kg	0.000223 %	✓	
			205-883-8	191-24-2									
24		benzo[b]fluoranthene				6.83	mg/kg		4.882	mg/kg	0.000488 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				2.66	mg/kg		1.901	mg/kg	0.00019 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		pH				7.16	pH		7.16	pH	7.16 pH		
				PH									
27		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				27.3	mg/kg	1.462	28.521	mg/kg	0.00285 %	✓	
			215-160-9	1308-38-9									
										Total:	0.175 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 1: Explosive "waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included"

Force this Hazardous property to non hazardous because Not explosive at this concentration.

Hazard Statements hit:

Unst. Expl.; H200 "Unstable explosives"

Because of determinand:

mercury difulminate: (compound conc.: 0.00001%)

Classification of sample: WS04-05/02/2021-0.10m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS04-05/02/2021-0.10m
Moisture content:
43.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 43.2% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				25.7	mg/kg	1.895	34.001	mg/kg	0.0034 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		2.5	mg/kg	1.855	3.238	mg/kg	0.000324 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		117	mg/kg	3.929	321.019	mg/kg	0.0321 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	904	mg/kg	1.56	984.688	mg/kg	0.0631 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		1.2	mg/kg	1.419	1.189	mg/kg	0.000119 %	✓	
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		35.6	mg/kg	5.324	132.364	mg/kg	0.0132 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1	mg/kg	2.554	1.783	mg/kg	0.000178 %	✓	
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		430	mg/kg	4.398	1320.606	mg/kg	0.132 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		**<LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		0.16	mg/kg		0.112	mg/kg	0.0000112 %	✓	
11		acenaphthylene		205-917-1	208-96-8		0.17	mg/kg		0.119	mg/kg	0.0000119 %	✓	
12		acenaphthene		201-469-6	83-32-9		0.13	mg/kg		0.0908	mg/kg	0.00000908 %	✓	
13		fluorene		201-695-5	86-73-7		0.13	mg/kg		0.0908	mg/kg	0.00000908 %	✓	
14		phenanthrene		201-581-5	85-01-8		2.62	mg/kg		1.83	mg/kg	0.000183 %	✓	
15		anthracene		204-371-1	120-12-7		0.54	mg/kg		0.377	mg/kg	0.0000377 %	✓	
16		fluoranthene		205-912-4	206-44-0		5.34	mg/kg		3.729	mg/kg	0.000373 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		pyrene		204-927-3	129-00-0		4.73	mg/kg		3.303	mg/kg	0.00033 %	✓	
18		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.53	mg/kg		1.767	mg/kg	0.000177 %	✓	
19		chrysene	601-048-00-0	205-923-4	218-01-9		3.08	mg/kg		2.151	mg/kg	0.000215 %	✓	
20		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.02	mg/kg		2.109	mg/kg	0.000211 %	✓	
21		indeno[123-cd]pyrene		205-893-2	193-39-5		2.08	mg/kg		1.453	mg/kg	0.000145 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.4	mg/kg		0.279	mg/kg	0.0000279 %	✓	
23		benzo[ghi]perylene		205-883-8	191-24-2		2.18	mg/kg		1.522	mg/kg	0.000152 %	✓	
24		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		3.91	mg/kg		2.73	mg/kg	0.000273 %	✓	
25		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.52	mg/kg		1.061	mg/kg	0.000106 %	✓	
26		heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene	602-046-00-2	200-962-3	76-44-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
27		aldrin (ISO)	602-048-00-3	206-215-8	309-00-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
28		heptachlor epoxide; 2,3-epoxy-1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	602-063-00-5	213-831-0	1024-57-3		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
29		p,p'-DDE		200-784-6	72-55-9		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
30		dieldrin (ISO)	602-049-00-9	200-484-5	60-57-1		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
31		p,p'-DDD		200-783-0	72-54-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
32		endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene	602-051-00-X	200-775-7	72-20-8		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
33		DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane	602-045-00-7	200-024-3	50-29-3		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
34		dichlorvos (ISO); 2,2-dichlorovinyl dimethyl phosphate	015-019-00-X	200-547-7	62-73-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
35		azinphos-methyl (ISO); O,O-dimethyl-4-oxobenzotriazin-3-ylmethyl phosphorodithioate	015-039-00-9	201-676-1	86-50-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
36		diazinon (ISO); O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-yl phosphorothioate	015-040-00-4	206-373-8	333-41-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
37		ethion (ISO); O,O,O',O'-tetraethyl S,S'-methylenedi (phosphorodithioate); diethion	015-047-00-2	209-242-3	563-12-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		parathion (ISO); O,O-diethyl O-4-nitrophenyl phosphorothioate	015-034-00-1	200-271-7	56-38-2		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
39		fenitrothion (ISO); O,O-dimethyl O-4-nitro-m-tolyl phosphorothioate	015-054-00-0	204-524-2	122-14-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
40		malathion (ISO); 1,2-bis(ethoxycarbonyl)ethyl O,O-dimethyl phosphorodithioate; [containing £ 0.03 % isomalathion]	015-041-00-X	204-497-7	121-75-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
41		parathion - methyl (ISO); O,O-dimethyl O-4-nitrophenyl phosphorothioate	015-035-00-7	206-050-1	298-00-0		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
42		mevinphos (ISO); 2-methoxycarbonyl-1-methylvinyl dimethyl phosphate	015-020-00-5	232-095-1	7786-34-7		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
43		p,p'-methoxychlor		200-779-9	72-43-5		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
44		disulfoton (ISO); O,O-diethyl 2-ethylthioethyl phosphorodithioate	015-060-00-3	206-054-3	298-04-4		<10	µg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
45		pH			PH		7.37	pH		7.37	pH	7.37 pH		
46		endosulfan (ISO); 1,2,3,4,7,7-hexachloro-8,9,10-trinorborn-2-en-5,6-ylenedimethylene sulfite; 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenedimethylene sulfite	602-052-00-5	204-079-4	115-29-7		<30	µg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
47		hexachlorocyclohexanes, including lindane	602-043-00-6	210-168-9, 200-401-2, 206-270-8, 206-271-3	58-89-9, 319-84-6, 319-85-7, 608-73-1		<40	µg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
48		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		42.5	mg/kg	1.462	43.377	mg/kg	0.00434 %	✓	
											Total:	0.251 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 1: Explosive "waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included"

Force this Hazardous property to non hazardous because Not explosive at this concentration.

Hazard Statements hit:

Unst. Expl.; H200 "Unstable explosives"

Because of determinand:

mercury difulminate: (compound conc.: 0.00011%)

Classification of sample: WS05-05/02/2021-1.00m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS05-05/02/2021-1.00m
Moisture content:
33.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 33.8% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				24.3	mg/kg	1.895	34.407	mg/kg	0.00344 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2	mg/kg	1.855	0.277	mg/kg	0.0000277 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		48	mg/kg	3.929	140.953	mg/kg	0.0141 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	237	mg/kg	1.56	276.29	mg/kg	0.0177 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		0.3	mg/kg	1.419	0.318	mg/kg	0.0000318 %	✓	
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		23.8	mg/kg	5.324	94.707	mg/kg	0.00947 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1	mg/kg	2.554	1.909	mg/kg	0.000191 %	✓	
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		115	mg/kg	4.398	377.998	mg/kg	0.0378 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<**LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
11		acenaphthylene		205-917-1	208-96-8		0.13	mg/kg		0.0972	mg/kg	0.00000972 %	✓	
12		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
13		fluorene		201-695-5	86-73-7		0.17	mg/kg		0.127	mg/kg	0.0000127 %	✓	
14		phenanthrene		201-581-5	85-01-8		1.22	mg/kg		0.912	mg/kg	0.0000912 %	✓	
15		anthracene		204-371-1	120-12-7		0.45	mg/kg		0.336	mg/kg	0.0000336 %	✓	
16		fluoranthene		205-912-4	206-44-0		1.38	mg/kg		1.031	mg/kg	0.000103 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		pyrene				1.14	mg/kg		0.852	mg/kg	0.0000852 %	✓	
			204-927-3	129-00-0									
18		benzo[a]anthracene				0.66	mg/kg		0.493	mg/kg	0.0000493 %	✓	
		601-033-00-9	200-280-6	56-55-3									
19		chrysene				0.62	mg/kg		0.463	mg/kg	0.0000463 %	✓	
		601-048-00-0	205-923-4	218-01-9									
20		benzo[a]pyrene; benzo[def]chrysene				0.7	mg/kg		0.523	mg/kg	0.0000523 %	✓	
		601-032-00-3	200-028-5	50-32-8									
21		indeno[123-cd]pyrene				0.45	mg/kg		0.336	mg/kg	0.0000336 %	✓	
			205-893-2	193-39-5									
22		dibenz[a,h]anthracene				0.09	mg/kg		0.0673	mg/kg	0.00000673 %	✓	
		601-041-00-2	200-181-8	53-70-3									
23		benzo[ghi]perylene				0.52	mg/kg		0.389	mg/kg	0.0000389 %	✓	
			205-883-8	191-24-2									
24		benzo[b]fluoranthene				0.86	mg/kg		0.643	mg/kg	0.0000643 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.33	mg/kg		0.247	mg/kg	0.0000247 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		pH				7.22	pH		7.22	pH	7.22 pH		
				PH									
27		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				23.6	mg/kg	1.462	25.779	mg/kg	0.00258 %	✓	
			215-160-9	1308-38-9									
										Total:	0.0861 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 1: Explosive "waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included"

Force this Hazardous property to non hazardous because Not explosive at this concentration.

Hazard Statements hit:

Unst. Expl.; H200 "Unstable explosives"

Because of determinand:

mercury difulminate: (compound conc.: 0.00003%)

Classification of sample: SP01-05/02/2021

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
SP01-05/02/2021
Moisture content:
30.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 30.4% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				20	mg/kg	1.895	29.057	mg/kg	0.00291 %	✓	
2		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5	mg/kg	1.855	0.711	mg/kg	0.0000711 %	✓	
3		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		87	mg/kg	3.929	262.138	mg/kg	0.0262 %	✓	
4		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	153	mg/kg	1.56	183.015	mg/kg	0.0117 %	✓	
5		mercury { mercury difulminate }	080-005-00-2	211-057-8	628-86-4		<0.1	mg/kg	1.419	<0.142	mg/kg	<0.0000142 %		<**LOD**
6		nickel { nickel diiodide }	028-029-00-4	236-666-6	13462-90-3		60.1	mg/kg	5.324	245.392	mg/kg	0.0245 %	✓	
7		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		2	mg/kg	2.554	3.917	mg/kg	0.000392 %	✓	
8		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		218	mg/kg	4.398	735.236	mg/kg	0.0735 %	✓	
9		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<**LOD**
10		naphthalene	601-052-00-2	202-049-5	91-20-3		0.3	mg/kg		0.23	mg/kg	0.000023 %	✓	
11		acenaphthylene		205-917-1	208-96-8		0.09	mg/kg		0.069	mg/kg	0.0000069 %	✓	
12		acenaphthene		201-469-6	83-32-9		0.09	mg/kg		0.069	mg/kg	0.0000069 %	✓	
13		fluorene		201-695-5	86-73-7		0.07	mg/kg		0.0537	mg/kg	0.00000537 %	✓	
14		phenanthrene		201-581-5	85-01-8		1.03	mg/kg		0.79	mg/kg	0.000079 %	✓	
15		anthracene		204-371-1	120-12-7		0.31	mg/kg		0.238	mg/kg	0.0000238 %	✓	
16		fluoranthene		205-912-4	206-44-0		3.59	mg/kg		2.753	mg/kg	0.000275 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		pyrene				3.21	mg/kg		2.462	mg/kg	0.000246 %	✓	
			204-927-3	129-00-0									
18		benzo[a]anthracene				2.7	mg/kg		2.071	mg/kg	0.000207 %	✓	
		601-033-00-9	200-280-6	56-55-3									
19		chrysene				2.06	mg/kg		1.58	mg/kg	0.000158 %	✓	
		601-048-00-0	205-923-4	218-01-9									
20		benzo[a]pyrene; benzo[def]chrysene				2.32	mg/kg		1.779	mg/kg	0.000178 %	✓	
		601-032-00-3	200-028-5	50-32-8									
21		indeno[123-cd]pyrene				1.4	mg/kg		1.074	mg/kg	0.000107 %	✓	
			205-893-2	193-39-5									
22		dibenz[a,h]anthracene				0.25	mg/kg		0.192	mg/kg	0.0000192 %	✓	
		601-041-00-2	200-181-8	53-70-3									
23		benzo[ghi]perylene				1.66	mg/kg		1.273	mg/kg	0.000127 %	✓	
			205-883-8	191-24-2									
24		benzo[b]fluoranthene				2.97	mg/kg		2.278	mg/kg	0.000228 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				1.16	mg/kg		0.89	mg/kg	0.000089 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		pH				7.76	pH		7.76	pH	7.76 pH		
				PH									
27		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				29.6	mg/kg	1.462	33.176	mg/kg	0.00332 %	✓	
			215-160-9	1308-38-9									
										Total:	0.145 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **p,p'-DDE** (EC Number: 200-784-6, CAS Number: 72-55-9)

Description/Comments: other names: 4,4'-DDE; 2,2-bis(p-chlorophenyl)-1,1-dichloroethylene
Data source: ECHA's C&L inventory database
https://www.echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database/-/discli/details/21845
Data source date: 11 Jan 2018
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **p,p'-DDD** (EC Number: 200-783-0, CAS Number: 72-54-8)

Description/Comments: other names: Rhothane; p,p'-TDE; 4,4'-DDD; 4,4'-TDE;
Data source: ECHA's C&L inventory database
https://www.echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database/-/discli/details/21283
Data source date: 11 Jan 2018
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 4; H312 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **p,p'-methoxychlor** (EC Number: 200-779-9, CAS Number: 72-43-5)

Description/Comments: other names: Methoxychlor; DMDT; Dimethoxy-DDT; Methoxy-DDT; Methoxcide; p,p'-Dimethoxydiphenyltrichloroethane; 1,1,1-Trichloro-2,2-bis(4-methoxyphenyl)ethane
Data source: ECHA's C&L inventory database
https://www.echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database/-/discli/details/112624
Data source date: 11 Jan 2018
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Acute Tox. 4; H332 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , STOT RE 2; H373 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic acid and its salts with the exception of those specified elsewhere in this Annex}

Worst case scenario

cadmium {cadmium sulfate}

Worst case scenario

copper {copper sulphate pentahydrate}

Worst case scenario

lead {lead chromate}

Worst case scenario

mercury {mercury difulminate}

Worst case scenario

nickel {nickel diiodide}

Worst case scenario

selenium {nickel selenate}

Worst case scenario

zinc {zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2]}

Worst case scenario

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case scenario

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case scenario

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2022.263.5340.9974 (20 Sep 2022)
HazWasteOnline Database: 2022.273.5362.10003 (03 Oct 2022)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

APPENDIX 15 - Relevant Legislative Background

Legislative Background

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

1) Significant harm is being caused or there is a significant possibility of such harm being caused;
2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- LCRM – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;

APPENDIX 16 - Limitations

Limitations

This report (Report) forms part of the Services and if applicable Additional Services undertaken by Groundtech Consulting Ltd pursuant to a written contract (Agreement) which contains detailed provisions including express limitations of the liability of Groundtech Consulting Ltd.

This Report was prepared using reasonable skill and care as stated in the Agreement for the purpose including intended end use stated by the Client (Purpose) and the liability of Groundtech Consulting Ltd in respect of the form and content of this Report is no greater than its liability under the Agreement. All records, measurements notes, or any other data (Data) obtained by or for the benefit of the Consultant were obtained at a specific point in time and it may not be assumed by the Client or any person relying on this Report that the Data will remain unaffected by the passage of time, the seasons, weather conditions, changes in the water table or the carrying out and completion of works at the Site.

Unless otherwise agreed this Report has been prepared exclusively for the use and reliance of the Client and may not be relied upon, by any other party except as provided for in the Agreement. A third party who relies on this Report, does so at their own and sole risk and Groundtech Consulting Ltd has no liability to such parties.

Groundtech Consulting Ltd that this Report is to be used for the Purpose. The Purpose was instrumental in determining the scope and of the Services provided. If the Purpose should change, the Client may not be able to rely on the Report without the separate agreement of Groundtech Consulting Ltd.

Since the Report was written, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change (see below) and should be investigated if there is any significant delay in acting on the findings of this Report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions in this Report should not be relied upon in the future without written confirmation from Groundtech Consulting Ltd that it is safe to do so.

The observations and conclusions outlined in this Report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting Ltd.

Groundtech Consulting Ltd is not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The Report is based upon Groundtech Consulting Ltd's observations of existing physical conditions at the Site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the Client on the history and usage of the Site. The findings and recommendations contained in this Report are based in part upon information provided by third parties, and Groundtech Consulting Ltd have relied upon such information assuming it to be correct.

Groundtech Consulting Ltd accepts no responsibility for errors or inaccuracies in third party information presented in this Report. Groundtech Consulting Ltd was not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services or Additional Services. Groundtech Consulting Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting Ltd and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions may also vary due to the ground's heterogeneous properties and because investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this Report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. If so stipulated in the Agreement, geo-environmental testing was carried out for a limited number of parameters based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

Any groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and groundwater levels may occur at other times of the year which are higher than were recorded during this investigation.

Any site drawings provided in this Report are preliminary and used to present the general relative locations of features on, and surrounding, the Site.

