BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

ALDI STORES LTD

Westgate, Skelmersdale

Desk Study Assessment Report

JMC/C3788/7347

January 2018

William Smith House
173-183 Witton Street
Northwich, Cheshire CW9 5LP

Tel: +44 (0) 1606 334 844

brownfield-solutions.com

PROJECT QUALITY CONTROL DATA SHEET

Site Name:	Westgate, Skelmersdale		
Report Title:	Desk Study Assessment Report		
Report No:	JMC/C3788/7347		
Status:			
Date:	26 January 2018		
Revision:			

Client: Aldi Stores Ltd	**Engineer: SWF Consulting Ltd**
Unit D1 Logistics North Bridgewater Avenue Middle Hulton Bolton BL5 1EE	Unit 4 Millbank House Riverside Park Wilmslow Cheshire SK9 1BJ
Contact:	Contact: Mr D Rogers

Written by:	Checked by:	Approved by:
J Campion BSc (Hons) FGS	W Griffiths BSc(Hons) CEnv MIEnvSc	W Griffiths BSc(Hons) CEnv MIEnvSc

CONTENTS

DRAWINGS

Drawing Number	Rev	Title
C3788/01	-	Site Location Plan
C3788/02	-	Pertinent Site Features Plan

APPENDICES

**DESK STUDY ASSESSMENT REPORT
FOR A SITE OFF WESTGATE,
SKELMERSDALE**

1.0 INTRODUCTION

1.1 Objectives

1.1.1 This report describes a Desk Study Assessment carried out by Brownfield Solutions Limited (BSL) for Aldi Stores Limited on a site off Westgate, Skelmersdale.

1.1.2 The objectives of the Desk Study Assessment were to determine the sites environmental setting and likely site conditions, highlighting potential areas of concern that may govern the sites redevelopment.

1.1.3 The report has been completed to fulfil the requirements of a preliminary risk assessment in accordance with CLR11 "Model Procedures for the Management of Land Contamination".

1.2 Proposed Development

1.2.1 The proposed development is commercial end use comprising a steel framed retail building and associated car park areas.

1.3 Limitations

1.3.1 This Desk Study Assessment has been carried out based on information obtained from a number of areas, BSL have assumed that this information is correct.

1.3.2 There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been taken into account by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

1.3.3 This report has been prepared for the sole use of the client. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report they rely on it at their own risk and BSL do not owe them any Duty of Care.

2.0 THE SITE

2.1 Location & Access

2.1.1 The site covers an area of approximately 1.24 hectares and is situated approximately 11.3km west of Wigan Town Centre.

2.1.2 The site is centred on National Grid Reference 346912, 405873 as shown on the Site Location Plan C3788/01.

2.1.3 Access to the site is gained off High Street to the north of the site or off Westgate to the west of the site.

2.2 Site Description

2.2.1 The site is currently a vacant office with associated car park. The main building is irregular in shape and occupies the majority of the north of the site.

2.2.2 The area surrounding the building to the north and west are surfaced in soft landscaping with trees and there are shrubs and steps down to the main office from High Street the north of the site. The car park areas located to the east and south of the building are surfaced with tarmac.

2.2.3 The site is split on two levels by a retaining wall and an embankment covered in soft landscaping with steps. The southern car park is circa 1.00m lower in level than the building and eastern car park area. There are fences along the boundary surrounding the eastern car park and the main building. The southern car park is bound by fencing to the east and south and by removable concrete blocks to the west.

2.2.4 Electronic gates are situated towards the north of the site and to the east of the northern car park area. The road beyond the eastern gate slopes down towards the southern car park.

2.2.5 The site slopes from north to the south and the difference in height is circa 4.50m.

2.2.6 Anecdotal evidence indicates asbestos is present in the existing building.

2.2.7 The above features are shown on the Pertinent Site Features Plan, Drawing No. C3788/02.

3.0 ENVIRONMENTAL SETTING

3.1 Geological Search

3.1.1 The following publications of the British Geological Survey (BGS) were examined in respect of the geology underlying the site:

- 1:50,000 Scale Geological Sheet 84, Wigan. Solid and Drift Edition.
- BGS Geology Sheet 84 Memoir of Wigan District, 1938.
- BGS Interactive map viewer.

Made Ground

3.1.2 There are no records of any artificial or made ground on site.

Superficial Deposits

3.1.3 The site is indicated to be underlain by Glacial Till. This strata typically comprises firm to stiff clay with variable sand and gravel content.

Solid Geology

3.1.4 The deeper solid geology beneath the site is the Pennine Lower Coal Measures, this strata comprises interbedded mudstone, siltstone and sandstone with coal seams. This is Carboniferous in age with strata indicated to be dipping circa 6-8 degrees to the east**.**

3.1.5 The following coal seams are indicated to lie beneath the site:

Seam	Approximate Distance From Site	Thickness (m)	Anticipated Depth Beneath Site (m)
Unknown Seam	Onsite	Unknown	Sub-cropping on site beneath the superficial deposits
Sk ED-Skelmersdale Earthy Delf	200m W	1.8m-2.28m	21m-28m
Rv-Ravine, Plodder	400m W	6.1m- 9.1m	42m-56m
P-Park Yard	700m W	>2.1m	73m-98m
BN-Bone	1000m W	0.60m	105m-140m
R Pk-Rushy Park, Smith	1080m W	0.60m-0.91m	113m-151m
AM- Arley Mine	1360m W	1.2m-1.3m	142m-192m

3.1.6 Blaguegate Fault is located circa 250m east of the site. The fault trends from north to south east with strata being downthrown to the east.

3.2 Hydrogeology

3.2.1 The superficial deposits beneath the site are classified by the Environment Agency as a Secondary Aquifer (Undifferentiated). The classification is assigned where it is not possible to attribute either category A or B to the aquifer. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the superficial deposits.

3.2.2 The bedrock is classified 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.

3.2.3 The site is not indicated to lie within 500m of a Source Protection Zone.

3.2.4 There are no groundwater or potable water abstraction licences within 500m of the site.

3.2.5 The soils on site have been assigned a Soil Vulnerability Category of HU (High). This is a worst case classification for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site specific information.

3.3 Hydrology

3.3.1 There are no detailed river network entries within 500m of the site.

3.3.2 There are no surface water features within 250m of the site.

3.3.3 Information obtained from the Environment Agency indicates that the site will not be affected by an extreme flood event.

3.3.4 There are no surface water abstraction licences within 500m of the site.

3.4 Historical Setting

3.4.1 Information has been obtained from historical Ordnance Survey Maps with the pertinent issues that may have affected the site or its environs summarised below.

3.4.2 The following plans produced by the Ordnance Survey were examined.

Scale	Date
1:1250	1974, 1977-1978, 1990-1993, 1993-1995.
1:2500	1891, 1908, 1927, 1956-1960.
1:10000/10560	1849, 1891-1892, 1907, 1926-1928, 1938, 1947-1952, 1955, 1970-1975, 1982, 1990, 2002, 2010, 2014.

<u>The Site</u>

3.4.3 The earliest map dated 1849 shows the site to be undeveloped any occupies by enclosed fields.

3.4.4 The map of 1891 indicates the site to be largely undeveloped with a football pitch across the centre of the site.

3.4.5 By the map dated 1927 two small structures, one square and one rectangular, have been developed south of the football pitch and are likely to be stands associated with the football ground.

3.4.6 The map dated 1959-1960 shows the football ground and the rectangular structure are no longer present, however the square structure remains.

3.4.7 The map dated 1974 shows all previous structures are no longer present and the site has been developed with a large irregular shaped building across the majority of the centre of the site. A second rectangular building is present towards the north eastern site boundary. A **tank** is present towards the centre of the site.

3.4.8 The map dated 1977-1978 shows the existing building has been extended towards the southern area of the site. The map shows an **electricity substation** to be present at the north west corner of the main building.

3.4.9 By the map dated 2010 part of the main building and the smaller building in the north east have been demolished.

3.4.10 No further change has been observed up to the latest map of 2014.

Surrounding Area

3.4.11 The earliest map available of 1848 shows the site to be surrounded by enclosed fields with a road abutting the site to the north. A **railway** is located circa 230m west of the site.

3.4.12 The map of 1891 shows residential properties have been constructed circa 10m from the north of the site beyond the road and circa 50m west of the site. Several **ponds** surround the site with the closest being 110m east and west of the site. Circa 120m to the southwest of the site lies **Moss Side Brick Works** with associated **pits**.

3.4.13 The map dated 1927 shows the brick works is now **Moss Side Straw Rope Works**. West of the site, approximately 50m from the boundary, now lies **Progressive Shoe and Slipper Works.**

3.4.14 By the map dated 1908, the **pond** to the east of the site is no longer present, presumed to have been backfilled.

3.4.15 Little significant change has occurred until the map dated 1959-1960 which shows the **pits** associated with the brick works is now a **pond** and none of the previously identified ponds surrounding the site are present, presumed to have been backfilled. **Moss Side Works** is now indicated to be ruins and a smaller **works** has been constructed in one part of the site from 100m south west of the study site. West of the site circa 20m from the boundary lies a Labour Club. Further west circa 150m from the boundary lies a **depot** and unspecified **works**.

3.4.16 The map dated 1974 shows further development with residential properties developed abutting the site to the east and west. A **tank** is shown at the Labour Club, circa 50m from the site. The residential properties to the north of the site have been demolished and this area is now undeveloped. The **railway** is no longer present and has been replaced by a road with cuttings either side. Towards the south west and west of the site are **industrial Processing Works, several depots, a garage, builders' yard, coal yard** and **tanks** with the closest being circa 50m from the site. The **pond** in this area is no longer shown, presumed to have been backfilled. Towards

the north west of the site lies a **footwear works** and associated **tanks** circa 80m from the site. Several **electricity substations** surround the site with the closest being 80m north west of the site.

3.4.17 The map of 1977-1978 shows residential properties have been constructed to the north of the site beyond the road.

3.4.18 The map dated 2010 shows the **footwear works** to the north west of the site is no longer present and this area is now occupied by a road and smaller unlabelled buildings. No further significant change has been observed up to the latest map of 2014.

3.4.19 The Historical Maps are presented in Appendix A.

3.5 Environmental Searches

3.5.1 An Environmental Search has been conducted through Groundsure, which utilises British Geological Survey and Environment Agency databases. The full report can be found in Appendix B, although a summary of the more relevant findings is presented below.

Entry	On Site	0 – 249m	250 – 500m	Details
Authorised Industrial Processes (IPC/IPPC/LAPPC)	0	2	13	The closest record is a historic Part B process located 133m south west at Bodycote Heat Treatments for surface cleaning.
Pollution Incidents	0	1	2	The closest record was 19m south of the site from April 2002. The pollutant description was 'landfill odour' and the air impact category was 3 (minor).
Landfill and Waste Treatment	0	0	3	The closest record is a historic landfill 328m south of the site at a railway cutting off Coal Pit Lane. The waste type was inert.
Discharge Consents	0	0	0	
Control of Major Accident Hazard (COMAH) Sites	0	0	0	
Consents Issued under Planning (Hazardous Substances) Act 1990	0	0	0	
Radioactive Substances	0	0	0	
Fuel Station Entries	0	0	0	
Historic Tank Database	1	25	26	There is a record of an unspecified tank onsite.
Other Current Industrial Land Uses	0	31	-	The closest industrial land uses within 50m of the site include an Ambulance Station (32m SW) and generic tanks (48m W).

3.6 Radon

3.6.1 Map 13 Northern Welsh Marches and Liverpool was inspected which defines areas which require radon protective measures. Skelmersdale is not an area requiring Radon precautions in foundations in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2007 Edition.

3.6.2 BRE Report 211 provides a general indication of which areas require radon protection, a site specific assessment should be carried out through UK Radon or BGS.

3.7 Coal Authority Search

3.7.1 The site lies in an area where the Law Society and Coal Authority recommends a mining search be undertaken as the site could be affected by past or current mining.

3.7.2 In addition the site lies in a High Risk Development Area.

3.7.3 A Coal Mining Risk Assessment will be produced and issued under a separate cover.

3.8 BGS Boreholes

3.8.1 There are several BGS boreholes between 60m and 150m of the site which prove coal has been worked in the area.

3.8.2 A summary of the information obtained from the boreholes is shown in the table below. The BGS Borehole Logs are presented in Appendix C.

Borehole	Made ground	Superficial	Bedrock	Workings	Shallowest Coal
SD40NE1253 60m NE	GL-2ft GL-0.60m	2-24f 6in 0.60-7.5m	24ft 6in-64ft 7.5-19.5m	70ft 6-74ft 6in 21—22.7m	64-66ft 6in 19.5-20.26m
SD40NE1254 100m NW	GL-2ft 6 GL-0.7m	2ft 6-32ft 6in 0.7-9.9m	32ft 6in-44ft 9.9-13.4m	50ft 6in-54ft 15.4-16.4m	44-f -45ft 6in 13.4-13.86m
SD40NE1255 100m N	GL-2ft 6in GL-0.7m	2ft 6-28ft 6in 0.7-8.7m	28ft 6in-31ft 8.7-9.4m	31ft-48ft 9.4-14.6m	-
SD40NE1252 140m NE	GL-2ft 9in GL-0.8m	2ft 9-28ft 0.8-8.5m	28-52ft 8.5m-15.84	52-60ft 15.84-18.28m	61-62ft 18.6-18.8m
SD40NE1256 150m NW	GL-2 ft GL-0.6m	2-28ft 0.6-8.5m	28-31ft 8.5-9.4m	31-45ft 9.4-13.7m	45-46ft 13.7-14.0m

4.0 DESK STUDY SUMMARY AND RISK ASSESSMENT

4.1 Introduction

4.1.1 The risk posed by any contaminants in soil or groundwater will depend on the nature and level of the source, the probability of exposure occurring, the potential pollution pathway and the likely effects on the receptors.

4.1.2 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 through which a receptor could be exposed to the contaminant.

4.1.3 The following sections discuss the identified potential on-site and off-site sources, and any pollution that could impact receptors via the pathways associated with the proposed development. Pollution linkages are assessed which may represent a risk to human health and/or controlled water receptors from the information gained from the desk study searches. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model.

4.1.4 Three potential impacts exist for any given site and all three need to be considered in the qualitative risk assessment, these are:

- On-site impacts;
- The site impacting its surroundings;
- Off-site sources impacting the subject site.

4.2 Potential Contaminative Sources

4.2.1 From the information obtained during the desk study there are several sources which may affect the redevelopment of the site for commercial end use. These are:

- Made ground associated with previous developments.
- Ground Gas including mine gas.
- Unspecified Generic tank (1974).
- Electricity substation (1977).

4.2.2 The off-site sources of contamination identified include:

- Railway 230m W.
- Ponds and Pits from 110m E.
- Brick Works 120m SW.
- Rope Works 120m SW.
- Unidentified Works 50 SW.
- Shoe works 50m W, 80m NW.
- Depot and garages 50m W and SW
- Tank 20m W.
- Electricity substations (1974) 80m NW.
- Industrial Processing Works 50m SW.

- Builders Yard 50m SW.
- Coal Yard 50m SW.

Associated Contaminants

4.2.3 The contaminants commonly associated with the potential sources of contamination identified include:

Contaminative Sources	Department of the Environment Industry Profile	Commonly Associated Contaminants
Made Ground		Heavy Metals, PAHs, Asbestos
Made Ground (backfilled ponds/pits)		Ground Gas
Mine workings		Mine Gas, metals
Tanks		Fuels, oils, solvents and dyes
General works including brickworks and rope works		Oils and solvents, VOC's, SVOC's, PAHs TPH, metals
Electricity Substation	Electrical Works	PCBs (pre 1970s)
Industrial Processing Works		Oils and solvents, VOC's, SVOC's, PAHs TPH, metals
Builders yard		Hydrocarbons, oils and solvents, Pesticides, metals
Coal Yard		Hydrocarbons, oils and solvents, metals
Railways	Railway Lands	Hydrocarbons, oils and solvents, Pesticides, metals
Garage, Depots	Road vehicle fuelling, service and repair	Hydrocarbons, oils and solvents

4.3 Pathways

4.3.1 A pathway is defined as a medium by which a contaminant comes into contact with, or otherwise impacts a receptor. Due to the sites proposed end use being commercial, potential pollution pathways for contaminant migration at the site will exist.

4.3.2 At this stage the potential contaminants identified above are considered to present potential risks to site end users and controlled waters through the following pathways:

- Ingestion or inhalation of contaminated soils/dusts;
- Dermal contact with contamination;
- Inhalation of gases or vapours in both indoor and outdoor air;
- Direct contact by buried structures such as services pipes;
- Surface run-off;
- Leaching of mobile contamination into groundwater;
- Migration of perched groundwater in any permeable soils or along existing or proposed service runs;
- Saturated zone flow through the Secondary (A) Aquifers underlying the site.

4.4 Receptors

4.4.1 Receptors generally fall into the categories of human health or controlled waters. The identified receptors are listed below:

- Commercial end users.
- Secondary (A) Aquifers within bedrock and superficial deposits.

4.4.2 Contaminants within the soil and groundwater could potentially attack the clean potable water supply pipe, the contaminants should be assessed to determine the correct pipe material and level of precautions.

4.5 Preliminary Conceptual Site Model

4.5.1 The information obtained in the previous sections has been used to compile a Preliminary CSM. The identified potential contaminants and receptors have been assessed in the table below as to whether a plausible source-pathway-receptor pollutant linkage for the proposed end use of the site exists. The risk classification has been estimated in accordance with information in Appendix E.

Human Health

4.5.2 The Preliminary CSM for human health is presented in the table below:

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
ON-SITE					
Made Ground	Ingestion, direct contact, inhalation of dusts/vapour	End-users	Low Likelihood	Medium	Moderate/Low
Made Ground (Ground Gas)	Migration of gasses into confined spaces	Property	Low Likelihood	Severe	Moderate/Low
Mine Gas	Migration of gasses into confined spaces	Property	Unlikely to Low Likelihood	Medium	Moderate/Low
Tank	Ingestion, direct contact, inhalation of dusts.	End-users	Low likelihood	Medium	Moderate/Low
Electricity Substation	Ingestion, direct contact, inhalation of dusts.	End-users	Low Likelihood	Medium	Moderate/Low
OFF-SITE					
Railway	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low
Infilled Ponds and Pits	Migration into confined spaces	End-users	Unlikely	Medium to severe	Moderate to Low
Works and industrial processes , including brick, shoe and rope works and industrial processes	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
ON-SITE					
Garage and Depots	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low
Builders yard	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low
Tanks	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low
Electricity substations	Ingestion, direct contact, inhalation of vapours	End-users	Unlikely	Medium	Low

Human Health Justification

4.5.3 The site has only undergone one significant phase of previous development; the commercial office building which remains on site. Therefore, significant amounts of made ground are unlikely to exist on site. Asbestos has been identified in the existing building and therefore may be present in near surface soils associated with the demolition of the other buildings.

4.5.4 It is unknown what was stored in the tank on site however the site is predominantly covered in hardstanding and will remain so as part of the new development and this will reduce the risk from any contamination from the tank. The hardstanding will also break the pathway from any contamination from made ground from previous site uses. Therefore the risk to human health is considered to be moderate to low.

4.5.5 If deep made ground is encountered this could be a source of ground gas however this is considered unlikely. Mine gas may be an issue as there are workings underlying the site however the impermeable nature of the clay will restrict the migration upwards. Due to the possibility of disturbance during investigation the risk is considered to be low to moderate at this stage.

4.5.6 There is an electricity substation on site which may contain PCBs in the transformers. The substation was first shown on the map dated 1977 by which time PCBS were banned therefore it is unlikely to have contained PCBs. Transformers are closed systems and the likelihood of significant leaks during maintenance or sue to system failures is low. Whilst PCBs are not highly soluble in water they are persistent in their environment. The site is underlain by glacial till and if PCBs are present they would be in a localised hotspot. Therefore the risk is considered to be low.

4.5.7 The off-site sources are not considered to be within an influencing distance of the site and the majority have been redeveloped and gross contamination is unlikely to still be present. Due to the presence of hardstanding and impermeable strata no pathway exists for any contamination that has migrated onto the site. The risks to site end users are considered to be low.

Controlled Waters

4.5.8 The Preliminary CSM for controlled waters is presented in the table below:

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
Made Ground	Migration through groundwater or granular soils	Secondary A Aquifer	Low Likelihood	Mild	Low
Tank	Migration through groundwater or granular soils	Secondary A Aquifer	Low likelihood	Mild	Low
Substation	Migration through groundwater or granular soils	Secondary A Aquifer	Low likelihood	Mild	Low

Controlled Waters Justification

4.5.9 There are no watercourses or surface water feature within 500m of the site and the bedrock aquifer is not considered to be a sensitive receptor. In addition the site does not lie in a Source Protection Zone and there are no abstraction licences near the site.

4.5.6 Significant contamination is not anticipated on site and the majority of the site is surfaced in hardstanding and will remain so. Furthermore the low permeability of the superficial deposits underlying the site will restrict the downward migration of any leachate to the underlying Secondary (A) Aquifer. The risk to controlled waters is considered to be low.

4.6 Ground Gas Risk Assessment

4.6.1 Potential on-site gas source have been identified associated with the made ground and mine gas, these sources pose a moderate to low risk to site end users and property, with the gas potential being low.

4.6.2 In accordance with CIRIA C665 as set out in Appendix F of this report, the recommended gas monitoring should comprise 6 visits over a 2month period, however this can be reduced to 4 visits if no ground gas has been recorded on site.

5.0 DEVELOPMENT CONSTRAINTS

5.1 Foundations

5.1.1 The site is indicated to be under lain by Glacial Till overlying Coal Measures. Significant thickness of made ground is not anticipated, therefore shallow foundations bearing in natural firm/stiff clay are likely to be suitable for the proposed steel framed structure.

5.1.2 This should be confirmed by an intrusive investigation.

5.2 Other Constraints

5.2.1 Asbestos was not covered in this report. It should be noted that an asbestos survey will be required prior to demolition.

5.2.2 The site is not topographically level and earthworks may be required at the site to create a level development platform.

5.2.3 The site is located in a coal mining area and a High Risk Development Area and this will be addressed in a separate Coal Mining Risk Assessment.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Environmental

6.1.1 The site has only been developed with the current building and significant contamination is not anticipated at the site. The risk is considered to be moderate to low.

6.1.2 The risk to site end users and the property from ground gas is considered to be moderate to low. In addition the site is in an area where coal workings are beneath the property therefore the risk from mine gas is considered to be moderate to low.

6.1.3 The risk to controlled waters is considered to be low.

6.2 Geotechnical

6.2.1 The most suitable foundations are likely to be tradition pads and/or strip foundations founding in the natural firm/ stiff clay. This will be confirmed by an on-site intrusive investigation.

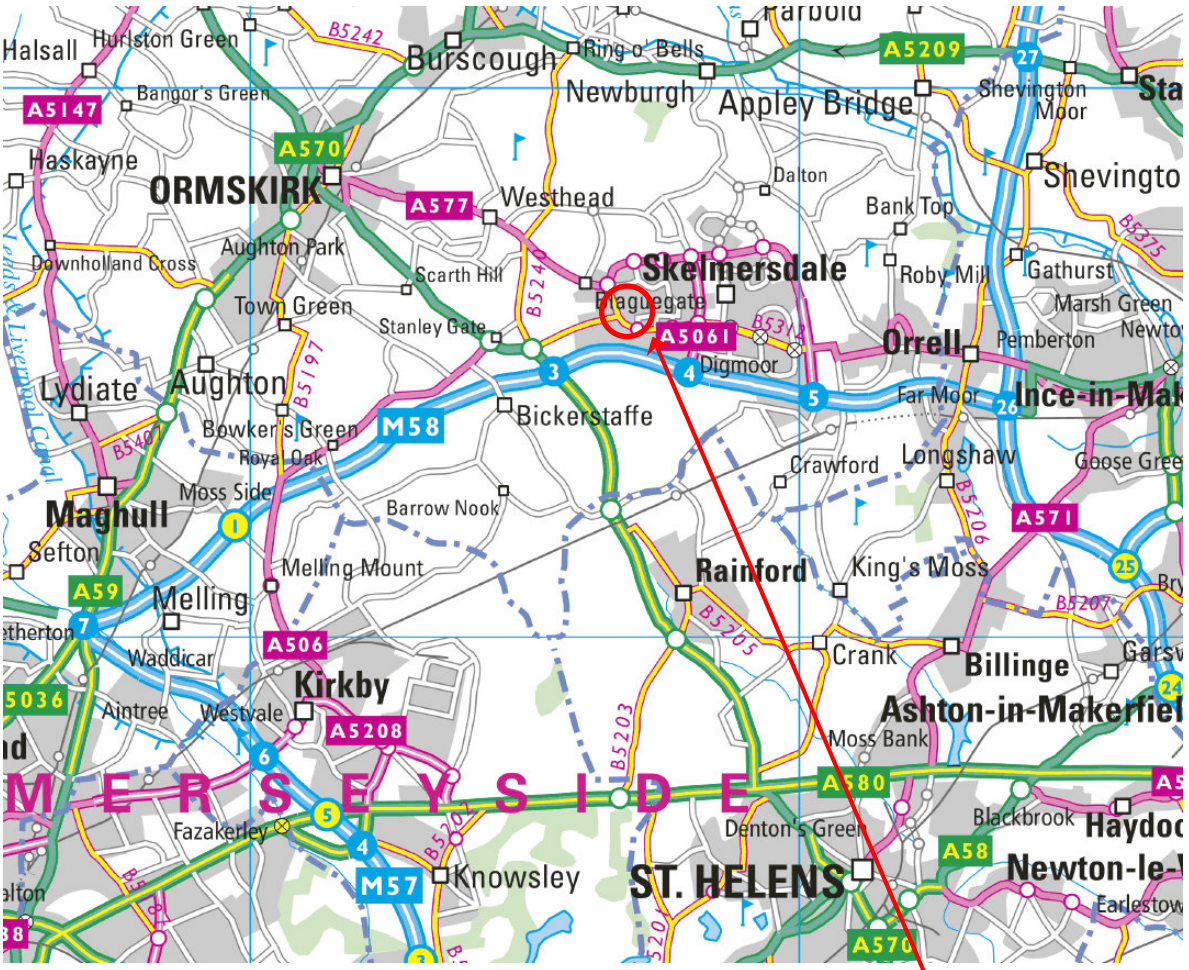
6.2.2 The site is in a coal mining area and the risks to the proposed development will be discussed in a separate cover however the site will require a coal mining investigation.

6.3 Further Work

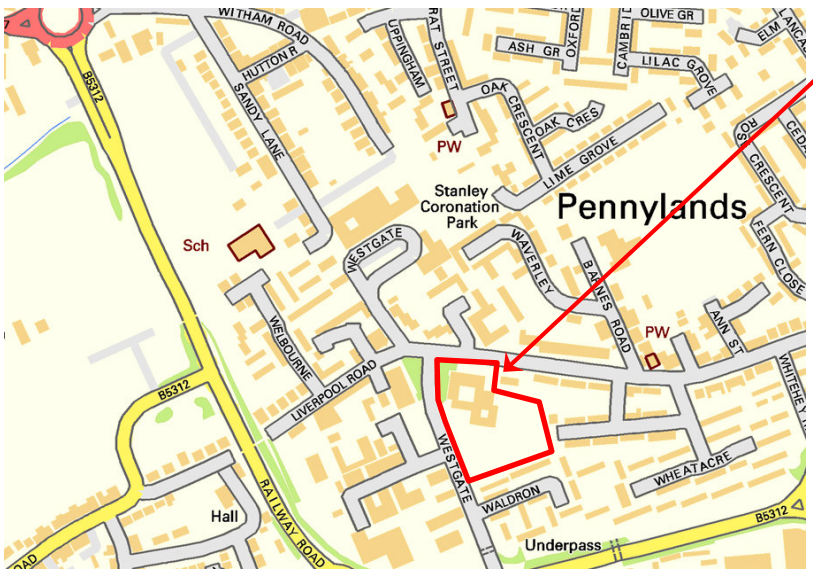
6.3.1 To allow future development of the site the following further works are recommended, although this list is not exhaustive and should be read in conjunction with any planning conditions that are applicable to the site.

- Intrusive site investigations to further investigate geo-environmental constraints.
- Coal Mining Risk Assessment.
- Asbestos survey.
- Foundation design
- Design of remedial strategy if required.
- Confirmation of recommendations with the Local Authority

DRAWINGS

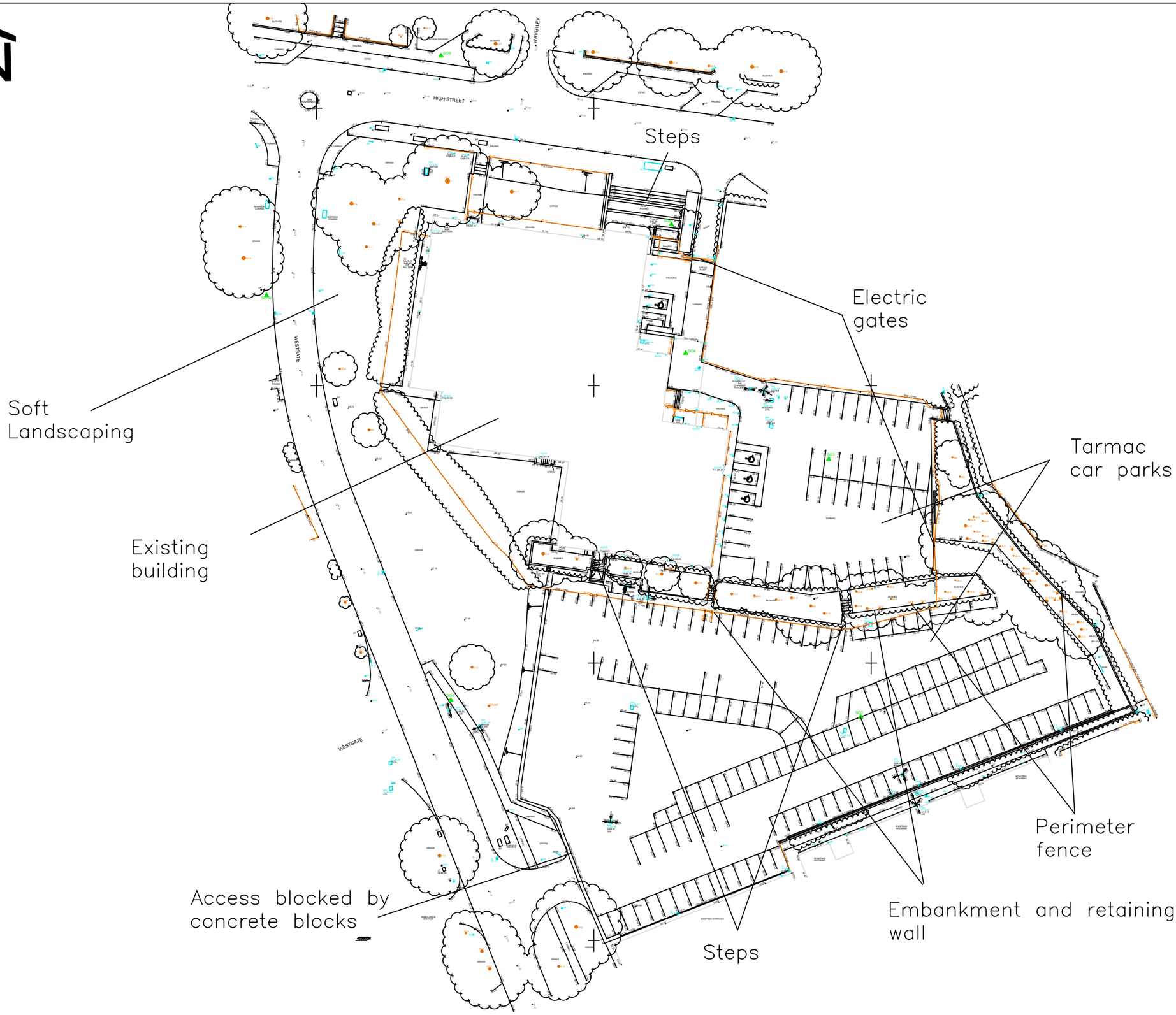


SITE



BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

ALDI STORES LTD
Westgate, Skelmersdale
Site Location Plan
Drawing Number C3788/01
Scale: NTS
Drawn By: JMC | Checked By: AJS



NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.

DESCRIPTION	REV	DATE

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
ALDI STORES LTD

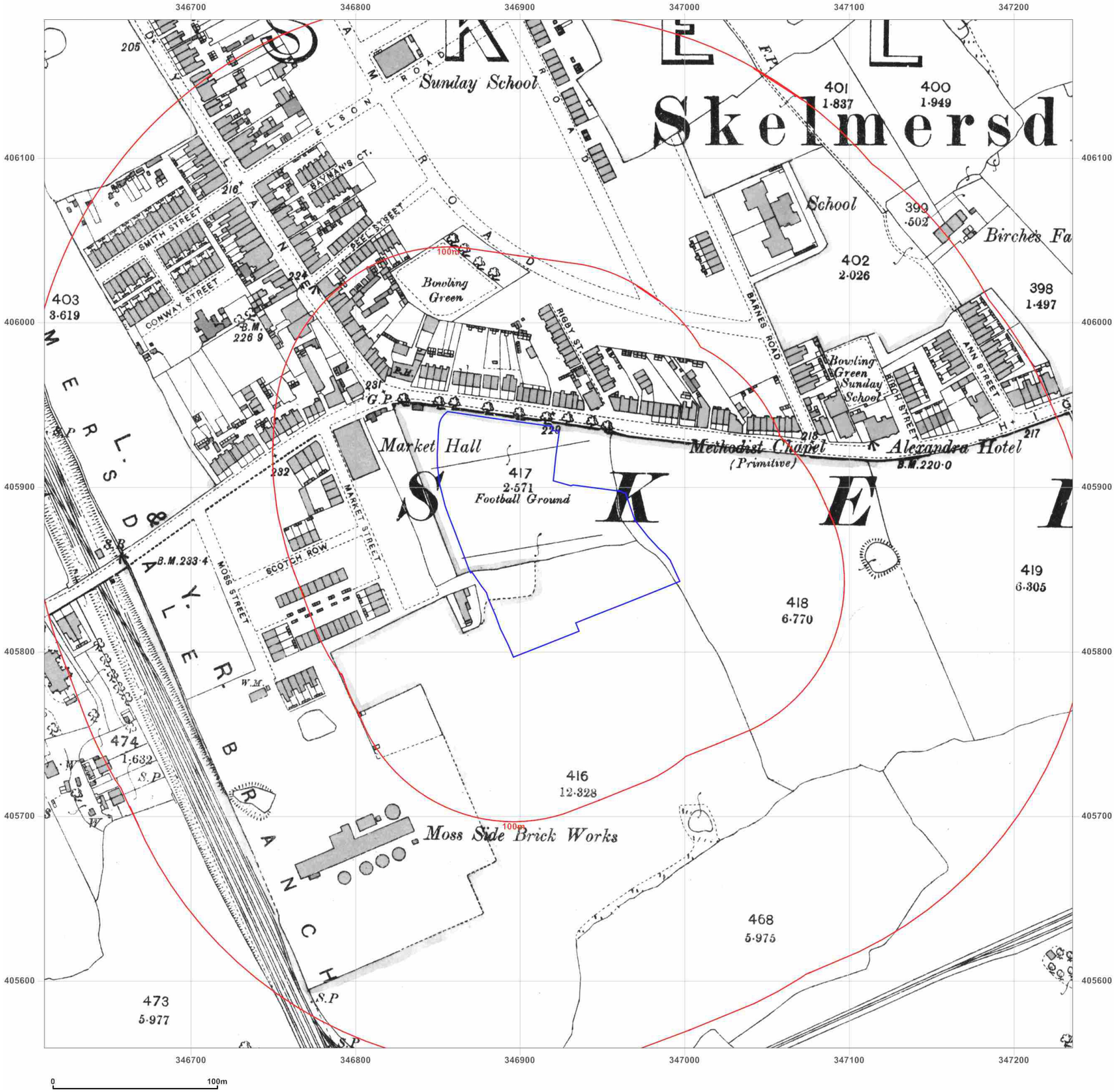
PROJECT TITLE
WESTGATE, SKELMERSDALE

DRAWING DETAIL
PERTINENT SITE FEATURES PLAN

DRAWN	CHECKED
JMC	JMJ
DATE	**SCALE**
JANUARY 2018	NTS

DRAWING NUMBER	REVISION
C3788/02	–

APPENDIX A
HISTORICAL MAPS



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1891**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Groundsure INSIGHTS

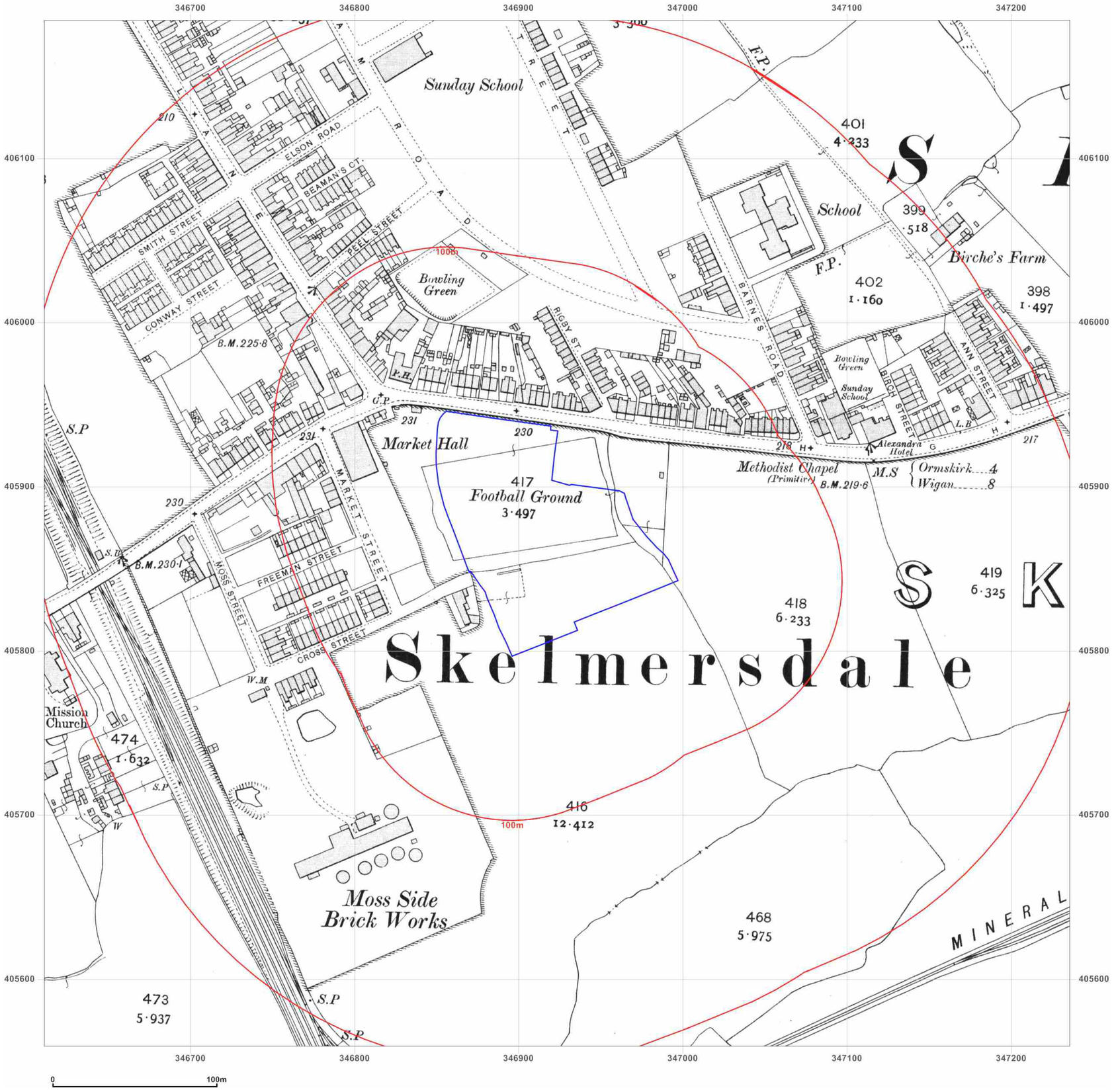
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1908**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Groundsure INSIGHTS

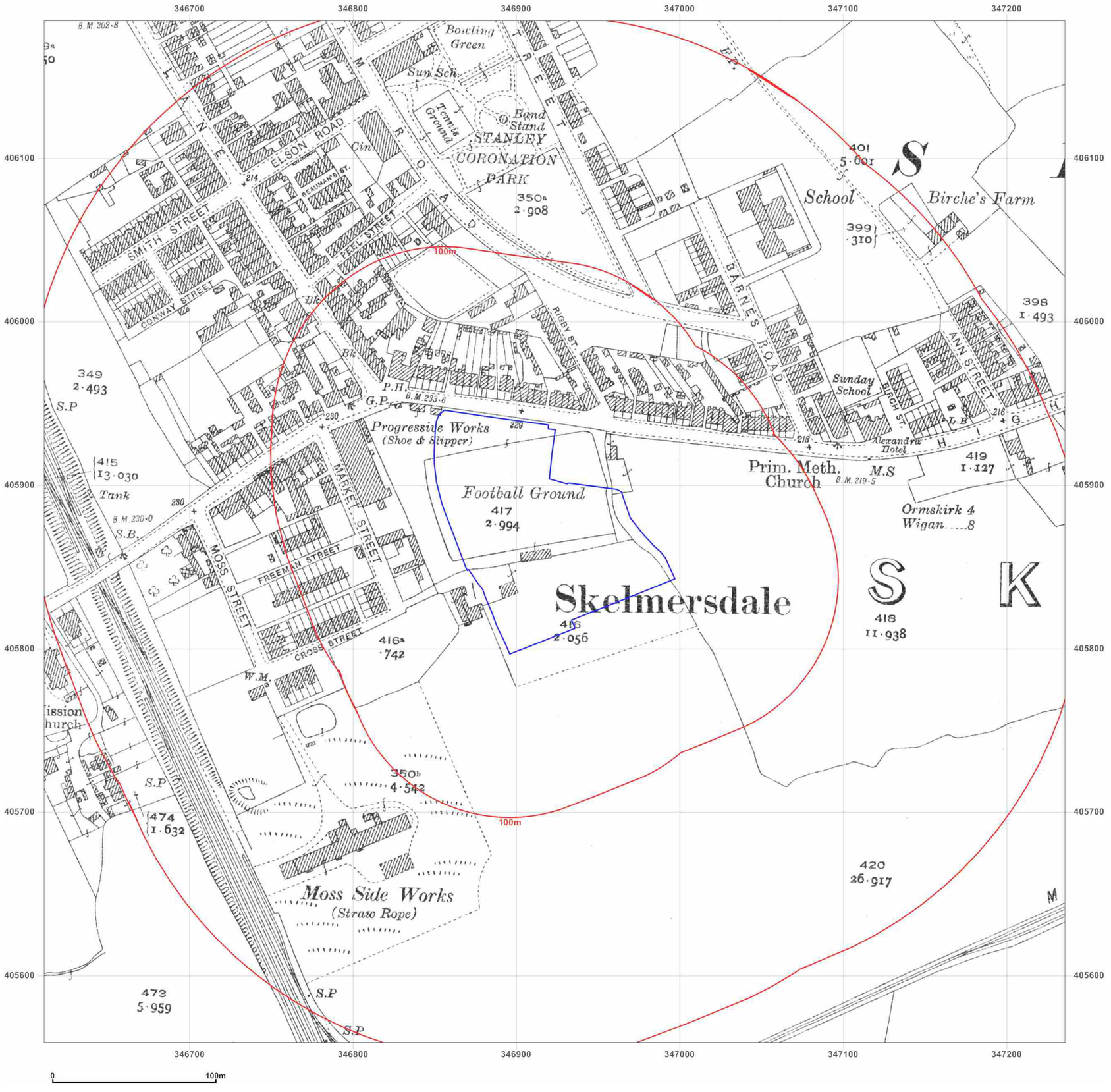
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1927**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1959-1960**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1961
Levelled 1957

Groundsure INSIGHTS

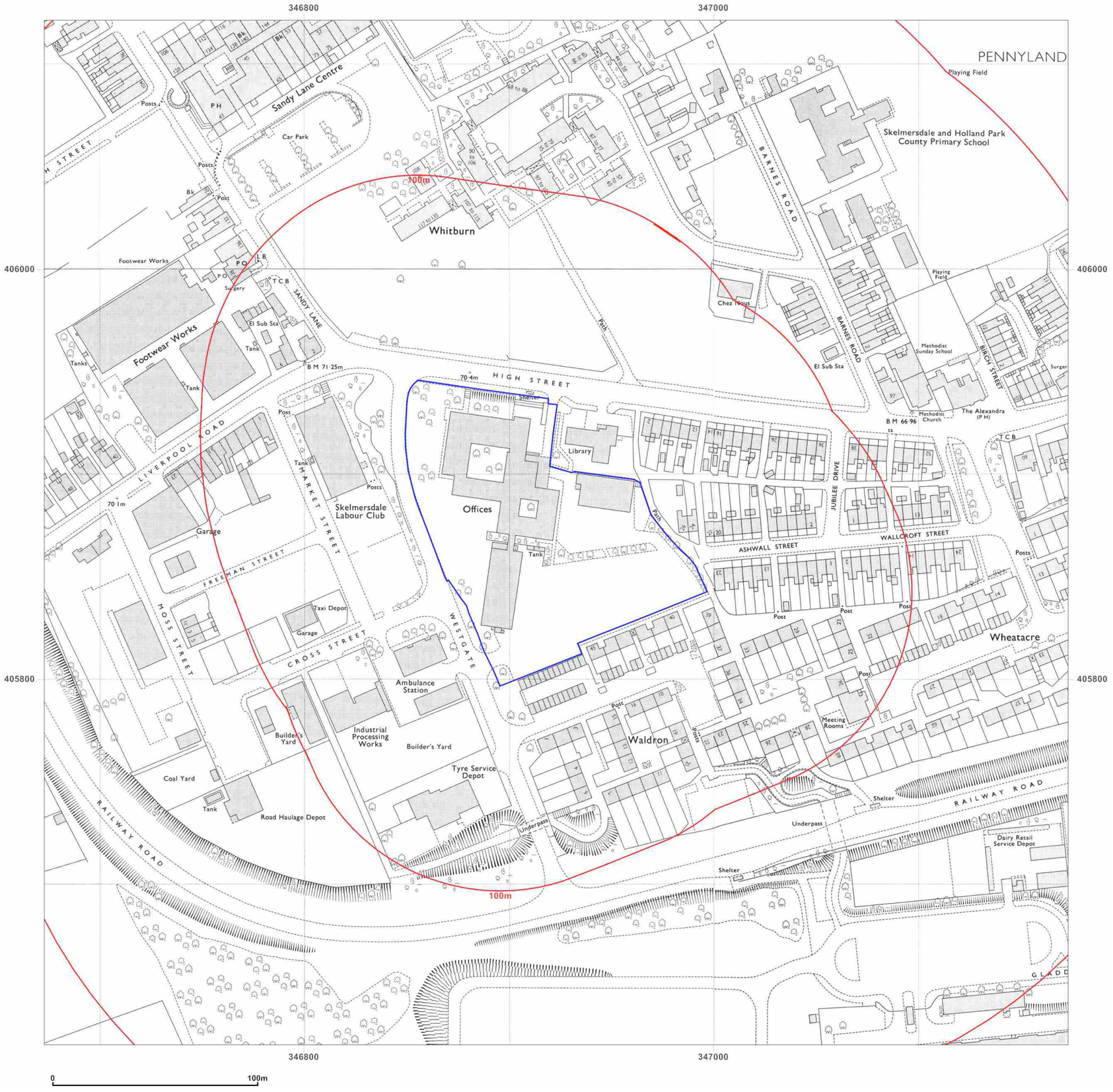
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1974**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1957

Surveyed 1974
Revised 1974
Edition N/A
Copyright 1974
Levelled 1957

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1957

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1963

Groundsure INSIGHTS

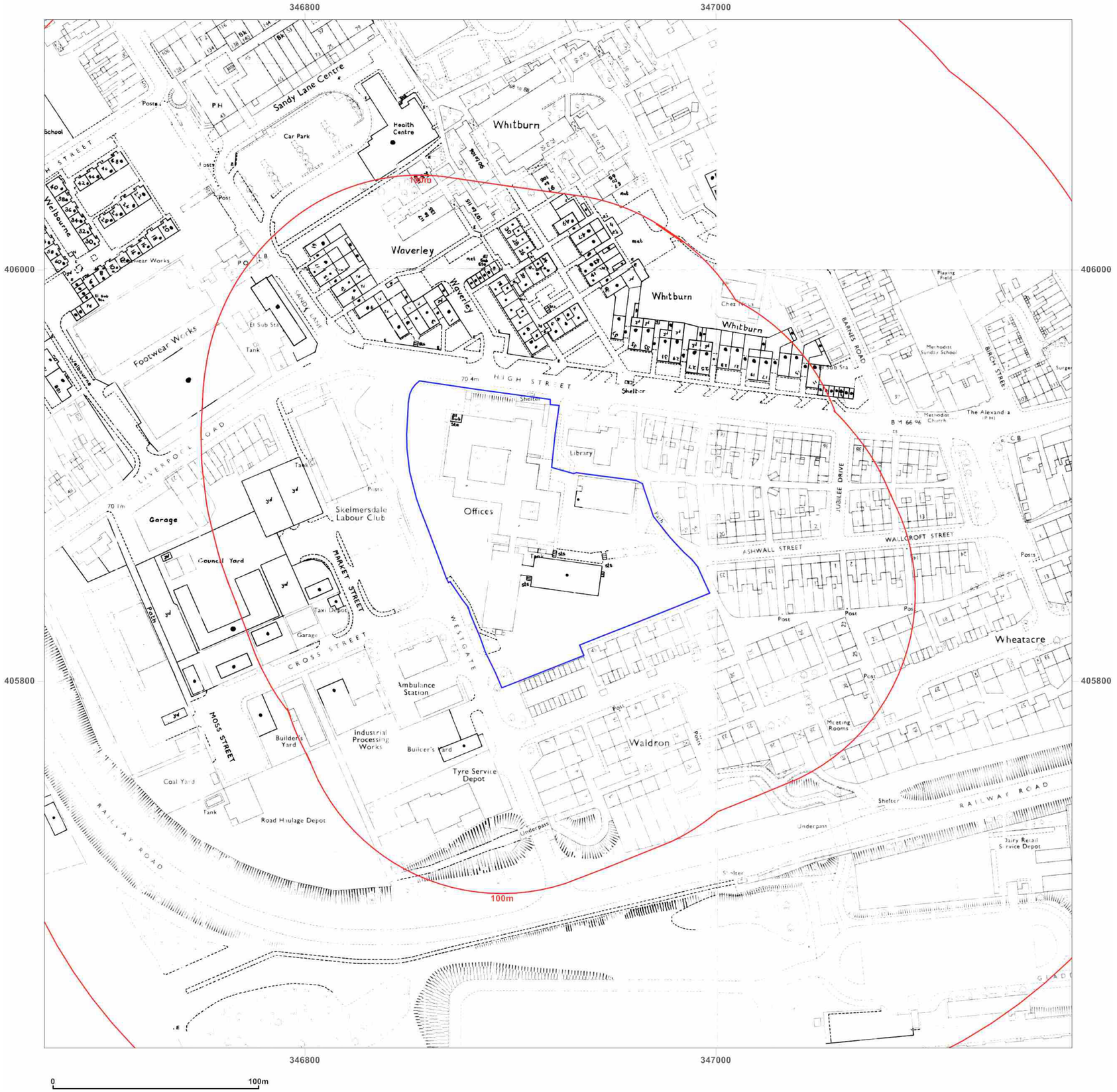
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1977-1978**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1957

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1963

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1990-1993**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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

Surveyed 1993 Revised N/A Edition N/A Copyright 1993 Levelled N/A	Surveyed 1963 Revised 1990 Edition N/A Copyright 1990 Levelled 1963

Groundsure INSIGHTS

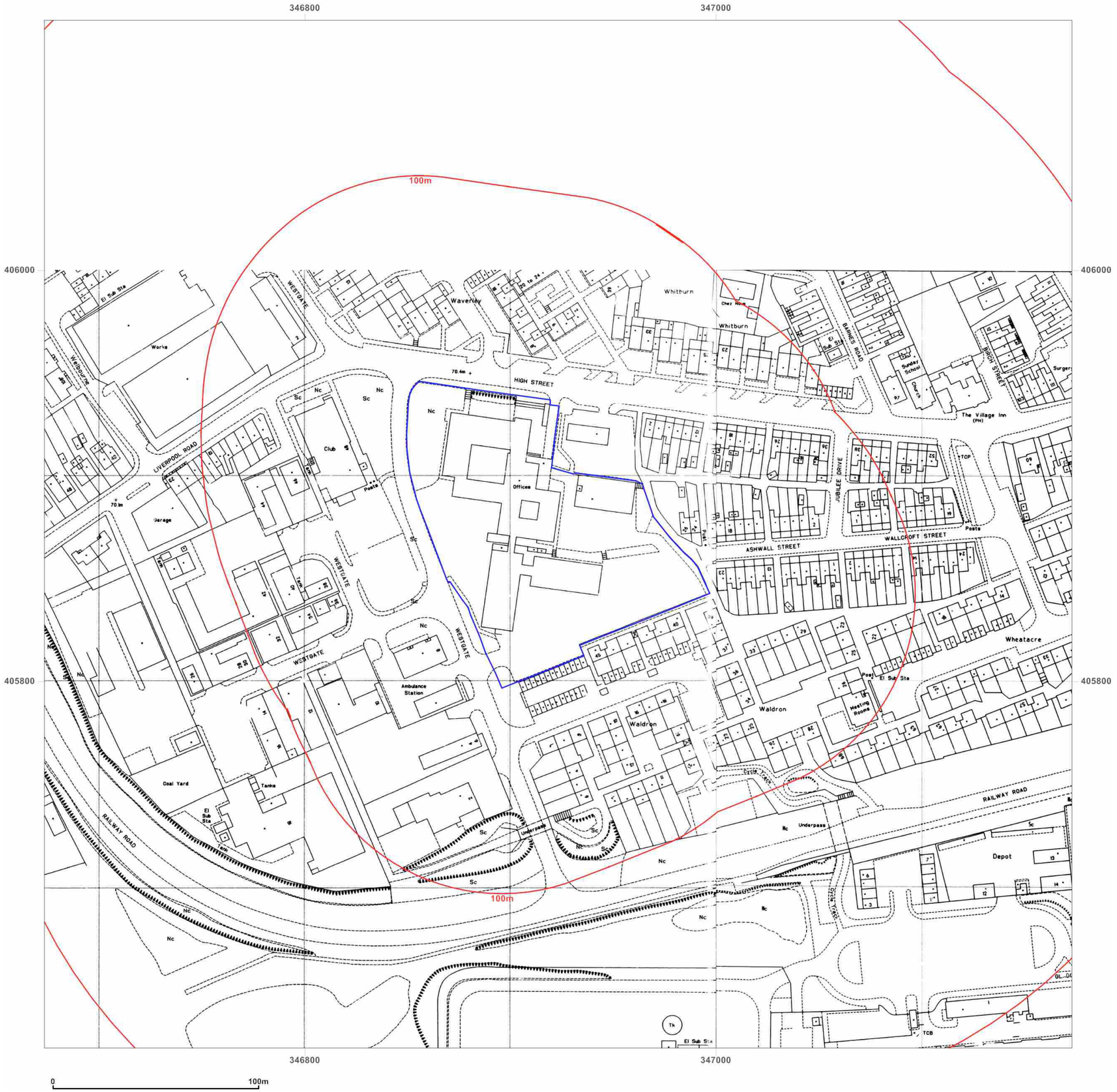
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1993-1995**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1995	Surveyed 1993
Revised N/A	Revised N/A
Edition N/A	Edition N/A
Copyright 1995	Copyright 1993
Levelled N/A	Levelled N/A

Groundsure INSIGHTS

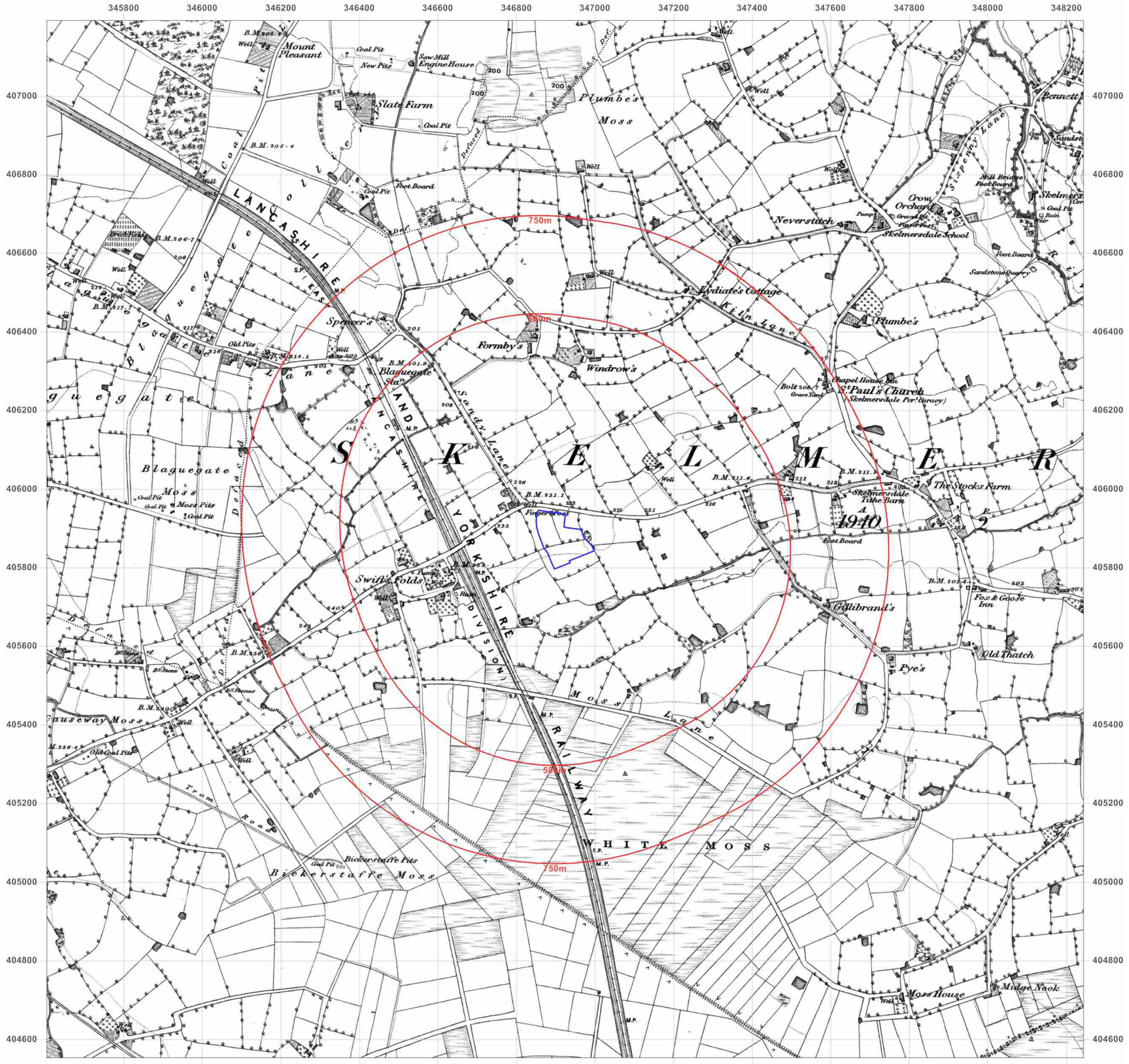
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1849**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

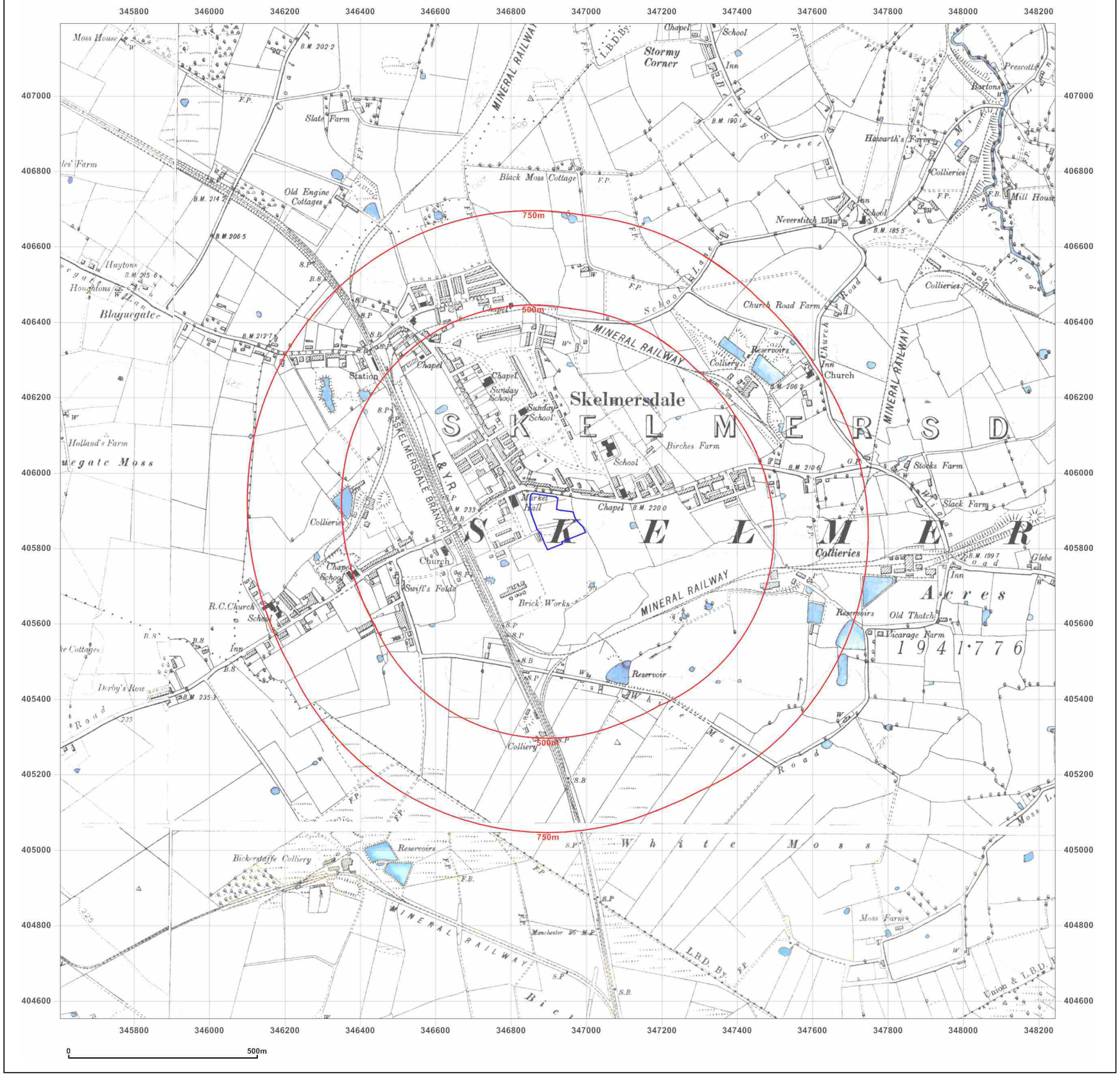
Surveyed 1846
Revised N/A
Edition 1849
Copyright N/A
Levelled N/A

Produced by
Groundsure Insights
www.groundsure.com

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1891-1892**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

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

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

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

Groundsure INSIGHTS

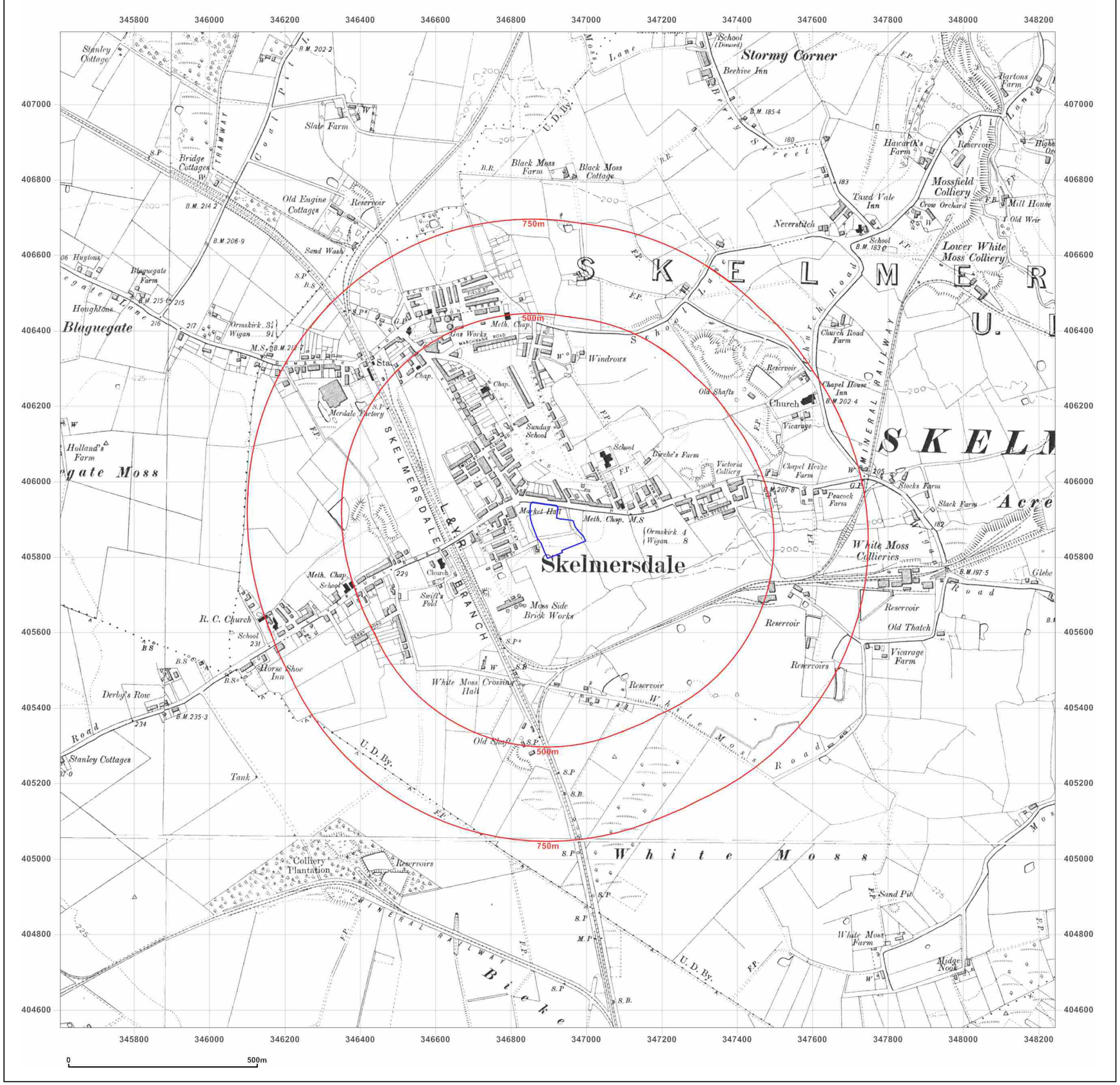
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1907**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1845
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1845
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1845
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1845
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

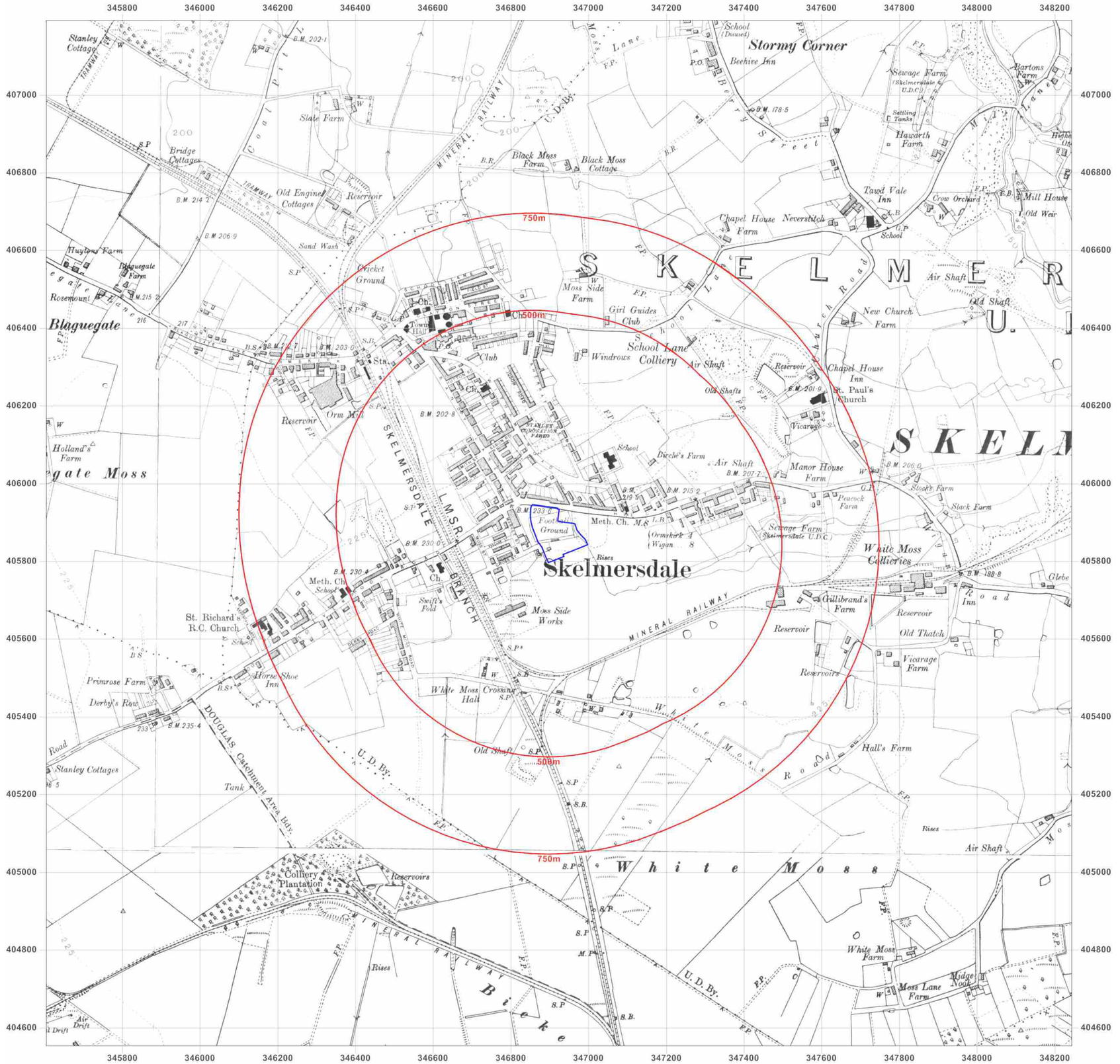
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1926-1928**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1845
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1845
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1847
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

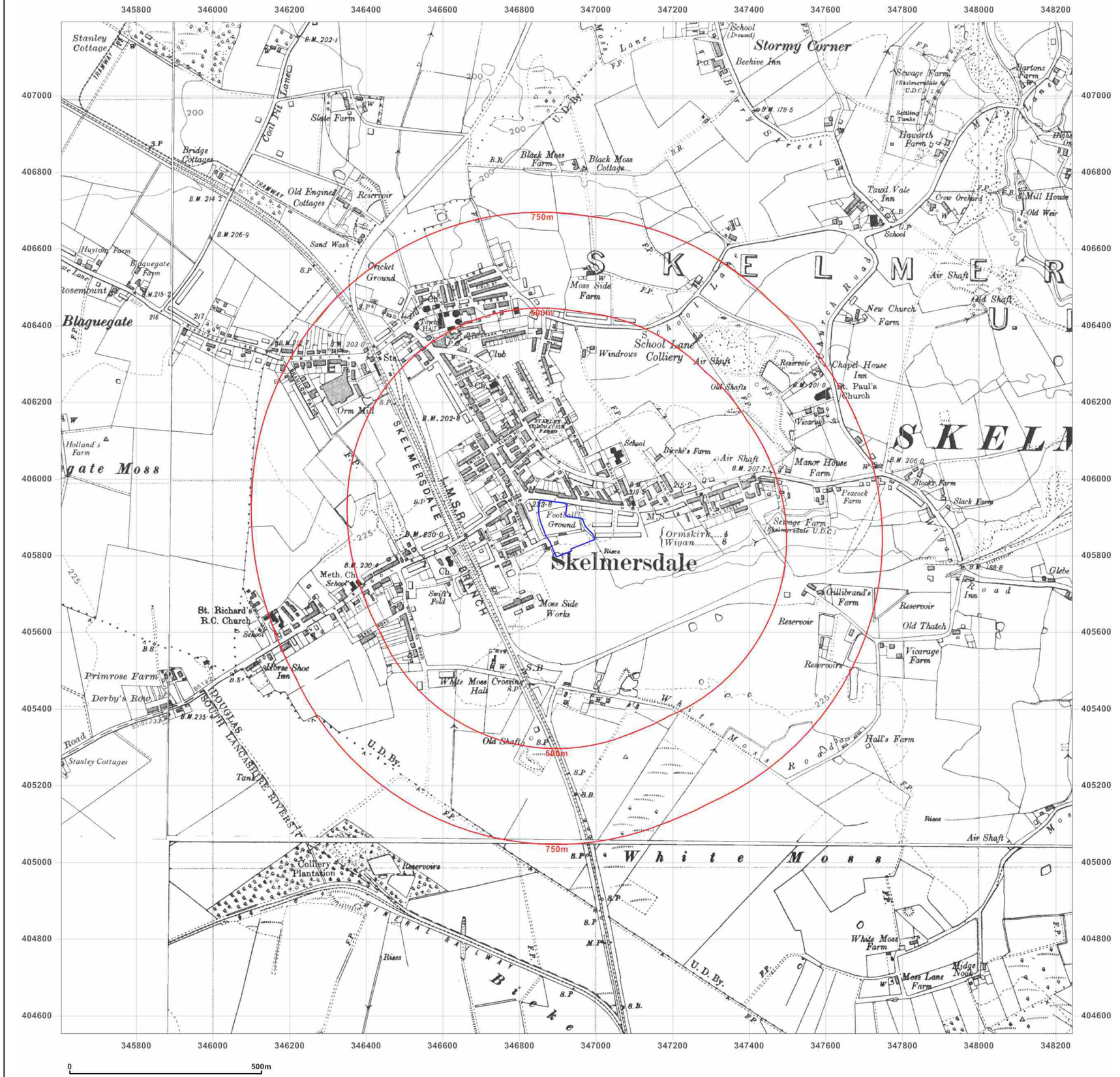
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1845
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1845
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

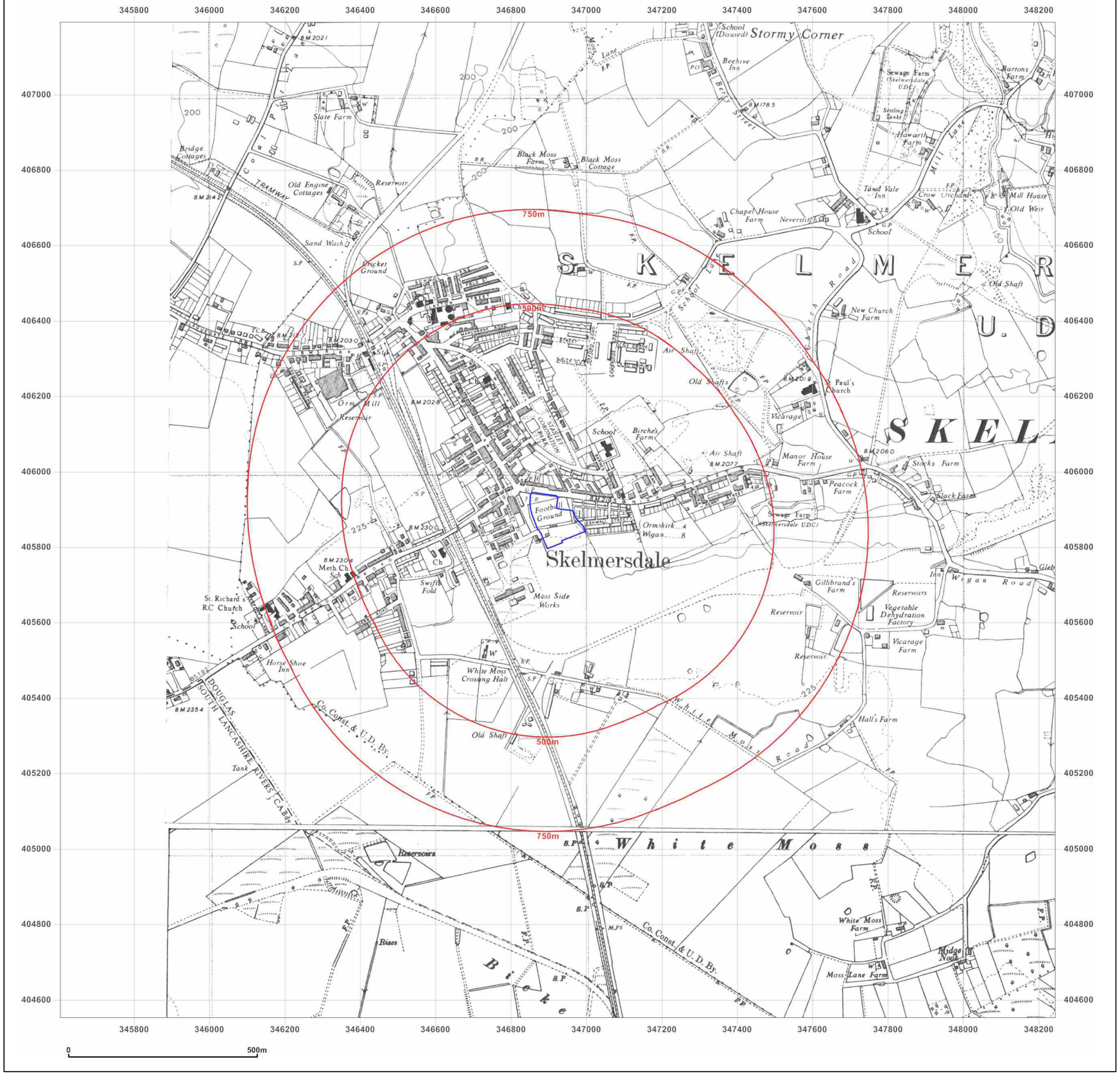
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

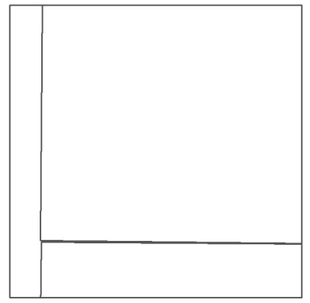
Map Name: County Series

Map date: **1947-1952**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1845
Revised 1947
Edition 1947
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1950
Edition N/A
Copyright 1952
Levelled N/A

Groundsure INSIGHTS

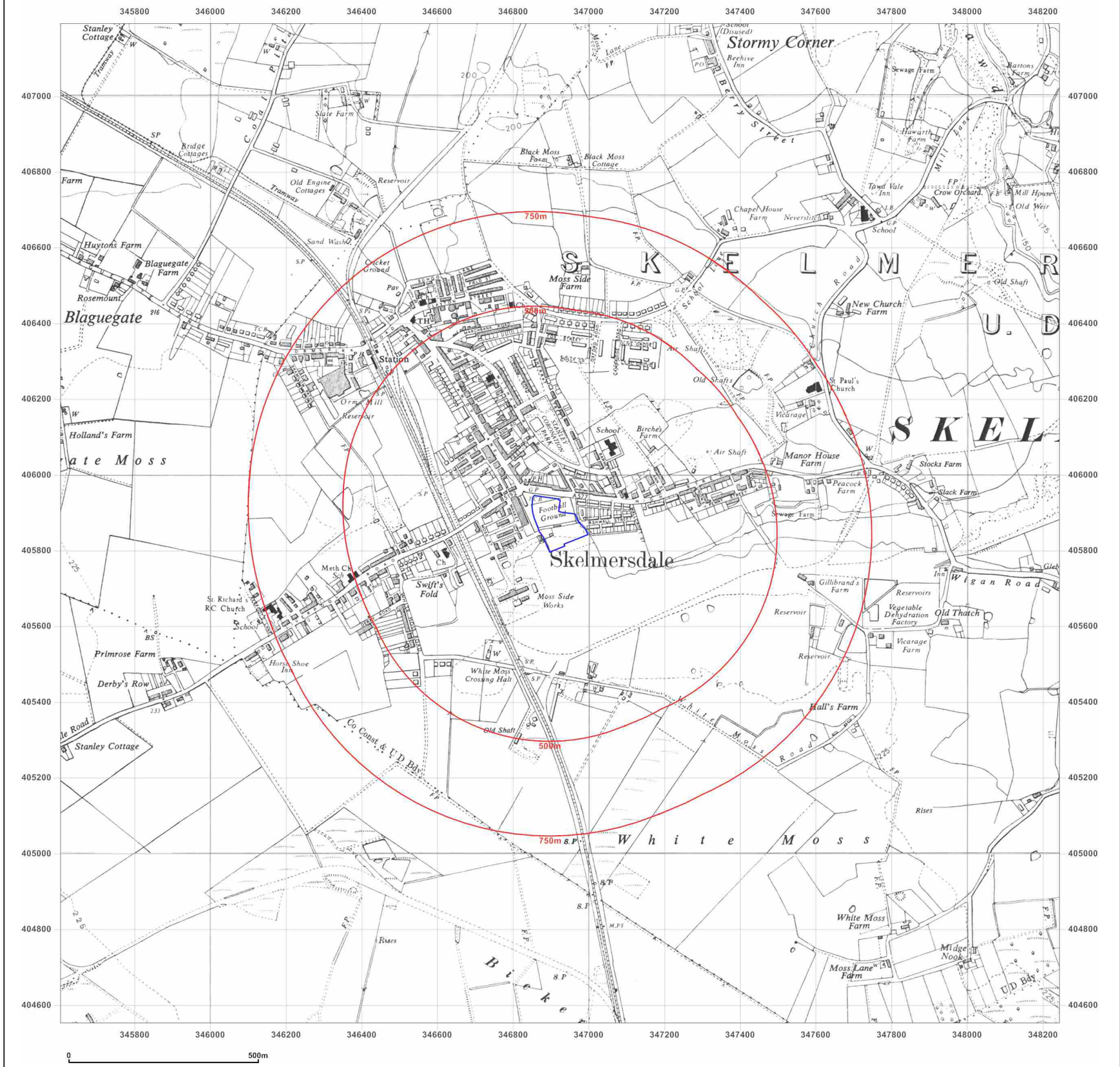
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

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

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1970-1975**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1970
Revised 1970
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1975
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

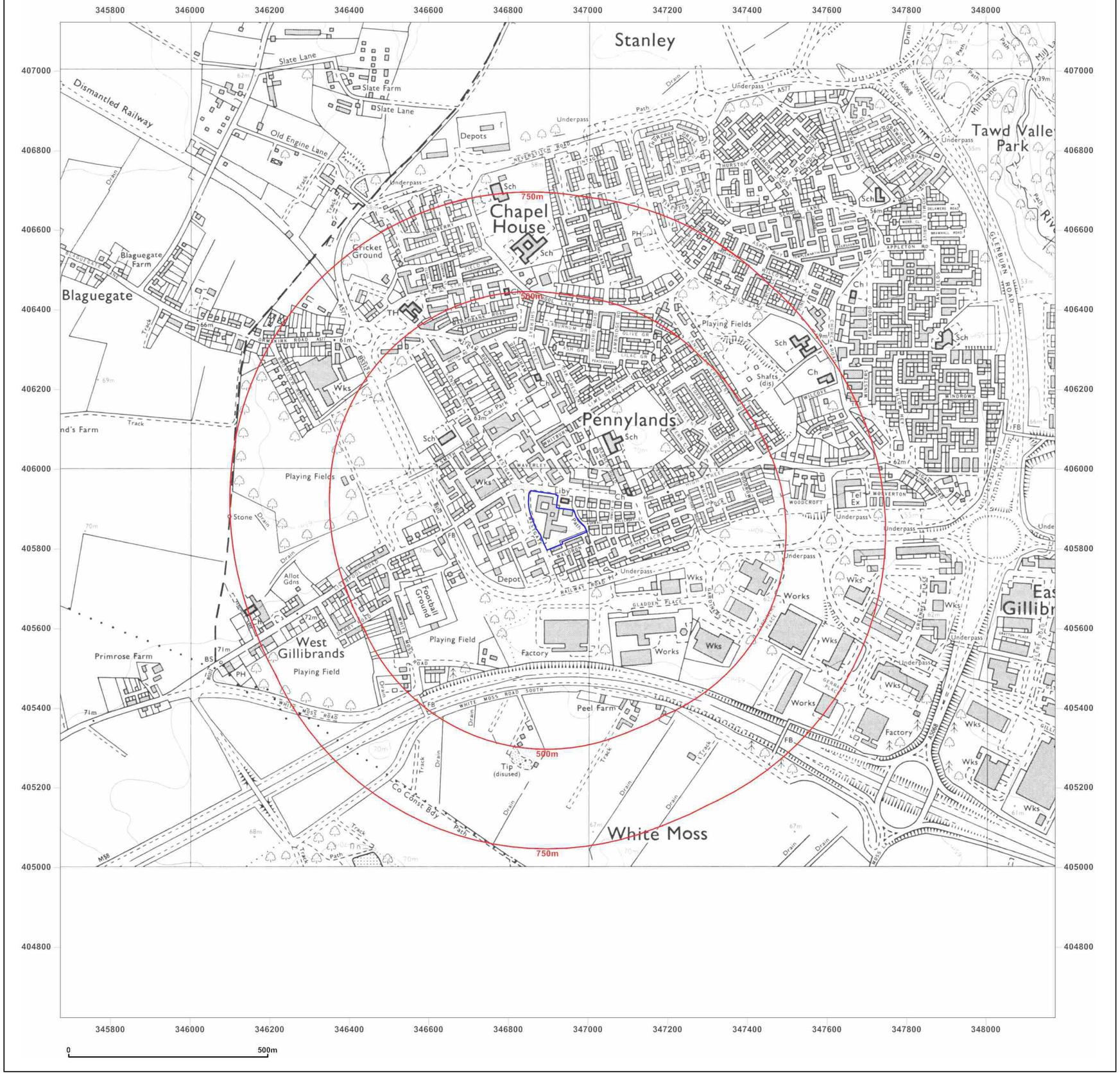
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1981
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

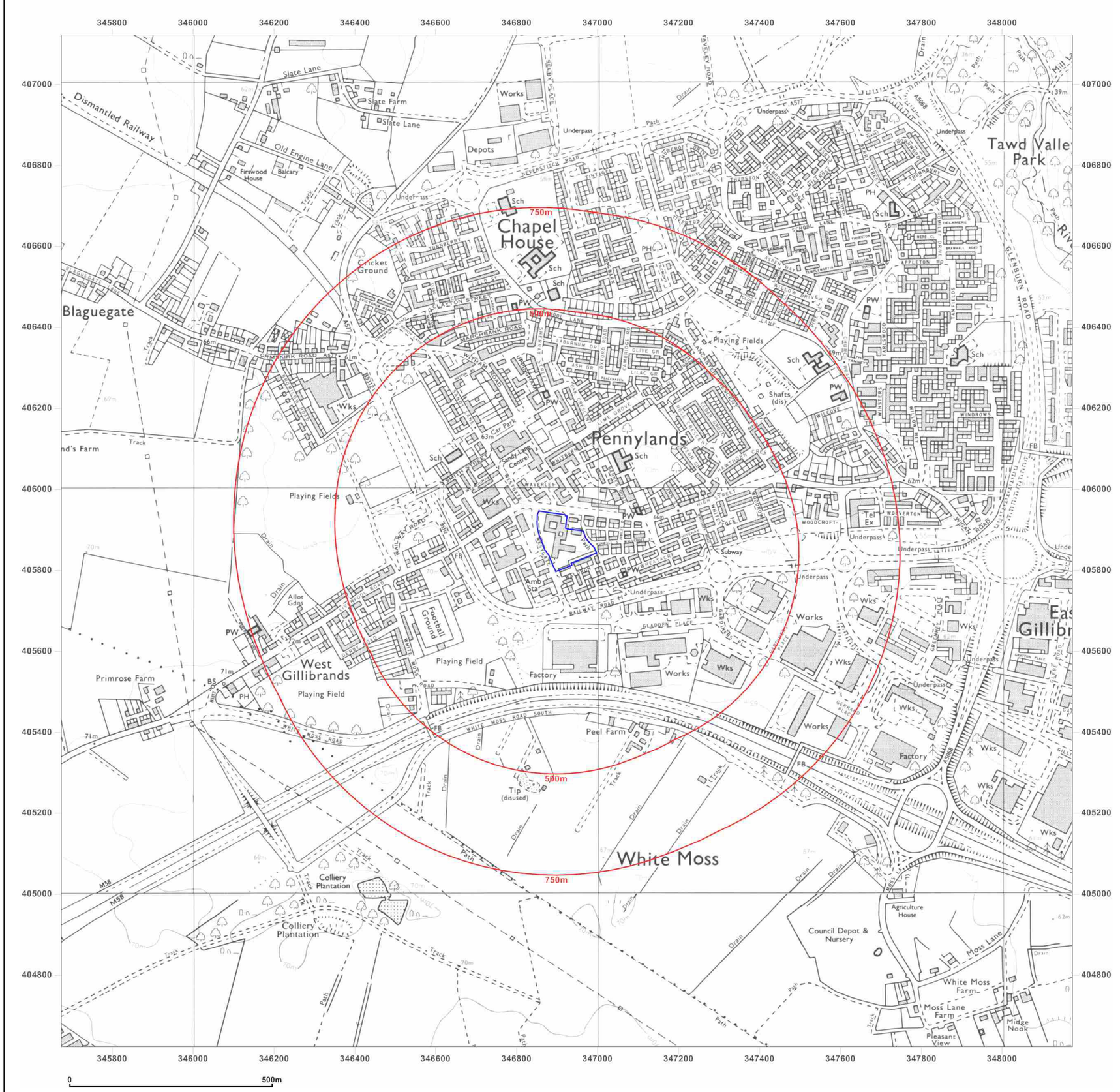
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **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 1983
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2002

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

Groundsure INSIGHTS

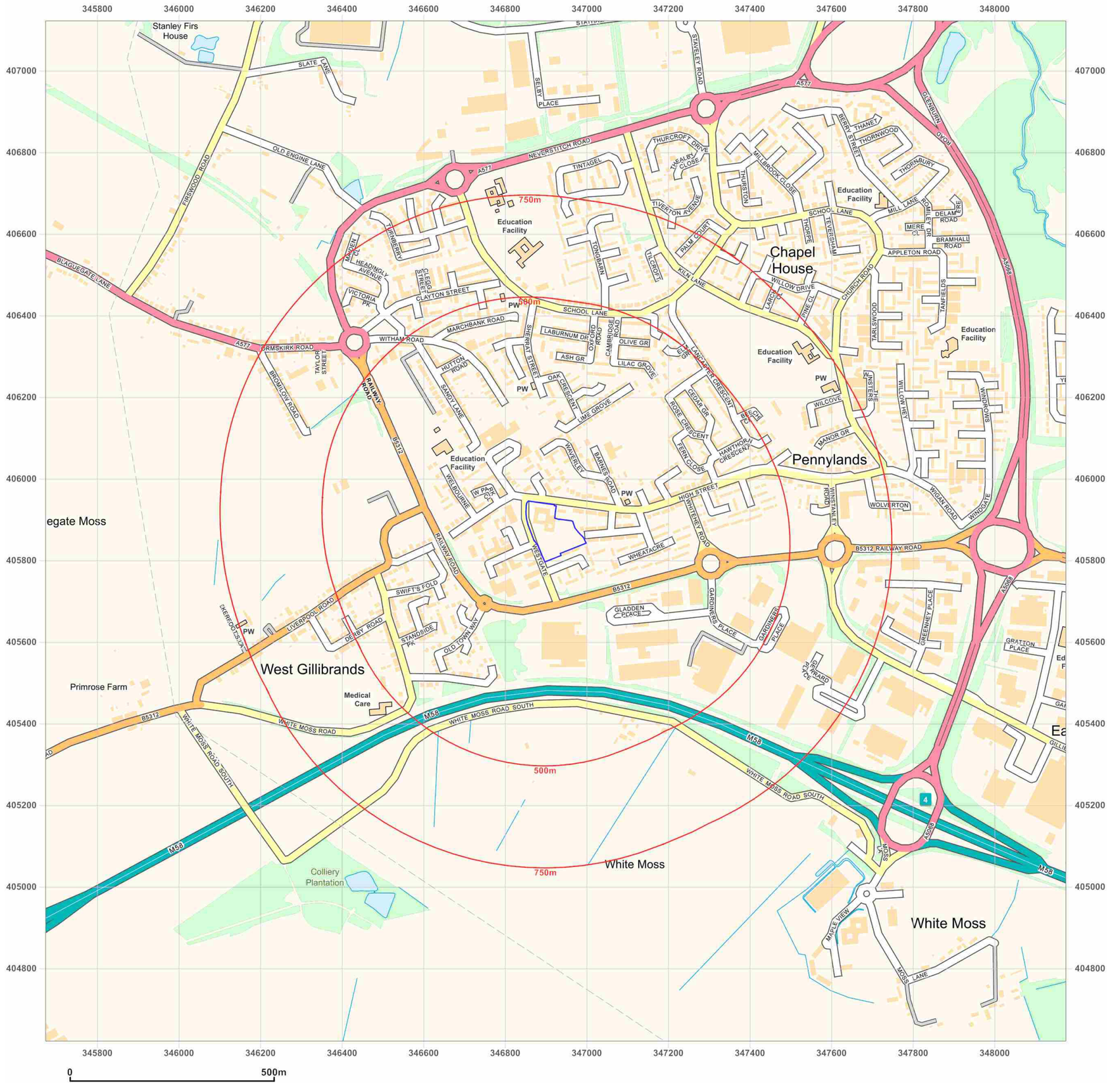
Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*



emapsite™

Site Details:

Skelmersdale

Client Ref: EMS_455797_611379
Report Ref: EMS-455797_611379
Grid Ref: 346923, 405871

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2014

Groundsure INSIGHTS

Produced by
Groundsure Insights
www.groundsure.com

Powered by

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 03 January 2018

To view map legend click here *Legend*

APPENDIX B
Groundsure Report

emapsite

Masdar House, 1 Reading Road,
Eversley, RG27 0RP

Groundsure Reference:	EMS-455797_611380
Your Reference:	EMS_455797_611380
Report Date	3 Jan 2018
Report Delivery Method:	Email - pdf

Enviro Insight

Address: Skelmersdale,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**Skelmersdale,**
Date:	**3 Jan 2018**
Reference:	**EMS-455797_611380**
Client:	**emapsite**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	11-Jun-2015
Grid Reference:	346912,405873
Site Size:	1.24ha

Report Reference: EMS-455797_611380
Client Reference: EMS_455797_611380

Groundsure
LOCATION INTELLIGENCE

emapsite™

Contents Page

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	7	42	80
1.2 Additional Information – Historical Tank Database	1	3	22	26
1.3 Additional Information – Historical Energy Features Database	0	0	17	12
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	5	7
1.6 Potentially Infilled Land	0	1	16	77

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	10
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	1
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	2	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	1
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	1	0	2
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	1	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	1	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	1	8	4

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	2	29	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	0	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	No
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	No
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	0	1	0
8.14 Records of Green Belt land	0	0	1	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	Yes
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

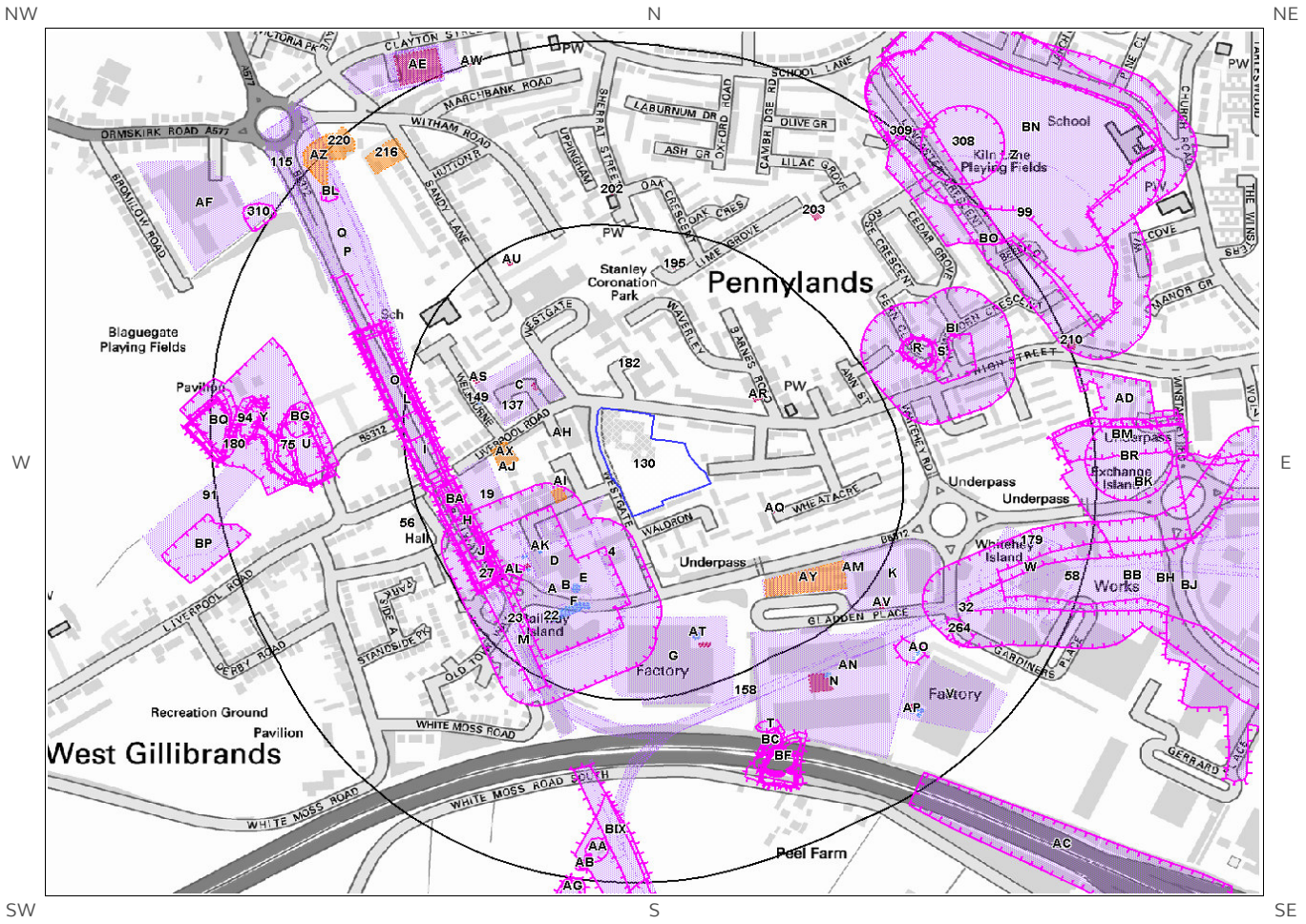
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 129

ID	Distance [m]	Direction	Use	Date
1A	18	SW	Bricks Works	1907
2A	18	SW	Unspecified Works	1926
3B	22	SW	Unspecified Works	1947
4	43	S	Ambulance Station	1990
5B	48	SW	Unspecified Works	1955
6C	50	NW	Unspecified Works	1982
7C	50	NW	Unspecified Works	1990
8A	55	SW	Brick Works	1892
9B	58	SW	Unspecified Works	1938
10A	58	SW	Unspecified Works	1926
11D	87	SW	Unspecified Commercial/Industrial	1990
12D	87	SW	Unspecified Depot	1982
13E	104	SW	Unspecified Tank	1892
14F	120	SW	Unspecified Tanks	1892
15E	120	SW	Unspecified Tank	1907
16F	135	SW	Unspecified Tanks	1907
17G	137	S	Unspecified Factory	1982
18G	137	S	Unspecified Factory	1990
19	139	W	Unspecified Works	1970
20AY	148	SE	Unspecified Depot	1970
21AL	156	SW	Unspecified Pit	1955
22	171	SW	Unspecified Tank	1907
23	180	SW	Railway Sidings	1892
24H	183	SW	Cuttings	1892
25J	184	SW	Cuttings	1955
26BA	187	W	Cuttings	1955
27	189	SW	Cuttings	1851
28H	189	SW	Cuttings	1926
29I	191	SW	Cuttings	1926
30I	191	SW	Cuttings	1938
31M	193	SW	Railway Sidings	1955
32	194	SW	Railway Sidings	1907
33	194	SW	Mineral Railway Sidings	1926

34J	194	SW	Cuttings	1907
35K	194	SE	Unspecified Works	1990
36K	194	SE	Unspecified Works	1970
37K	194	SE	Unspecified Works	1982
38I	194	SW	Railway Sidings	1947
39	197	SW	Mineral Railway Sidings	1926
40L	197	W	Cuttings	1955
41L	198	W	Cuttings	1926
42O	198	W	Cuttings	1851
43M	203	SW	Railway Sidings	1947
44N	207	SE	Unspecified Factory	1990
45N	207	SE	Unspecified Factory	1970
46N	207	SE	Unspecified Factory	1982
47O	210	W	Cuttings	1892
48P	210	W	Railway Sidings	1892
49O	236	W	Cuttings	1907
50S	251	NE	Colliery	1907
51P	253	W	Railway Sidings	1947
52P	255	W	Railway Sidings	1938
53Q	256	W	Railway Sidings	1955
54P	258	W	Railway Sidings	1926
55P	258	W	Railway Sidings	1907
56	271	W	Pump	1851
57Q	271	W	Railway Sidings	1926
58	275	SE	Mineral Railway Sidings	1892
59R	301	NE	Unspecified Heap	1907
60R	301	NE	Refuse Heap	1926
61R	301	NE	Refuse Heap	1926
62R	305	NE	Refuse Heap	1938
63R	305	NE	Refuse Heap	1947
64R	305	NE	Refuse Heap	1947
65BB	312	SE	Collieries	1907
66T	322	SE	Unspecified Heap	1892
67S	325	NE	Unspecified Heap	1907
68X	335	S	Railway Sidings	1892
69T	336	SE	Unspecified Heap	1938
70BC	337	SE	Unspecified Heap	1926
71Y	338	W	Collieries	1892
72U	341	W	Refuse Heap	1926
73BD	343	S	Cuttings	1851
74U	346	W	Refuse Heaps	1947
75	346	W	Refuse Heaps	1947
76U	351	W	Refuse Heap	1938
77U	351	W	Unspecified Heap	1907
78U	351	W	Refuse Heap	1926
79V	357	SE	Unspecified Works	1982

80V	357	SE	Unspecified Works	1990
81BG	366	W	Unspecified Heap	1892
82BH	368	SE	Collieries	1926
83W	369	E	Unspecified Works	1982
84W	369	E	Unspecified Works	1990
85X	379	S	Colliery	1892
86BJ	392	E	Collieries	1892
87BE	394	W	Refuse Heap	1926
88Y	397	W	Refuse Heap	1938
89W	415	SE	Unspecified Works	1970
90Y	428	W	Unspecified Heap	1892
91	430	W	Railway Sidings	1892
92Y	432	W	Refuse Heap	1926
93Z	433	NE	Colliery	1892
94	435	W	Unspecified Heap	1907
95AA	441	S	Unspecified Heap	1892
96BK	446	E	Sewage Farm	1926
97BL	446	NW	Unspecified Heap	1892
98BM	447	E	Sewage Farm	1955
99	453	NE	Mineral Railway Sidings	1892
100Z	464	NE	Colliery	1938
101BN	464	NE	Colliery	1926
102AA	464	S	Unspecified Old Shaft	1955
103BO	466	NE	Unspecified Ground Workings	1926
104BP	467	W	Unspecified Pit	1892
105AA	474	S	Unspecified Old Shaft	1938
106AB	477	S	Unspecified Old Shaft	1926
107AB	478	S	Unspecified Old Shaft	1926
108AB	478	S	Unspecified Old Shaft	1907
109AC	482	SE	Cuttings	1982
110AC	482	SE	Cuttings	1990
111AC	482	SE	Cuttings	1970
112AD	484	E	Sewage Farm	1947
113AD	484	E	Sewage Farm	1947
114BR	486	E	Sewage Farm	1926
115	488	NW	Railway Station	1926
116AE	491	NW	Unspecified Commercial/Industrial	1926
117AE	492	NW	Unspecified Commercial/Industrial	1926
118AE	493	NW	Unspecified Commercial/Industrial	1938
119AE	494	NW	Unspecified Commercial/Industrial	1947
120AE	494	N	Gas Works	1907
121AF	496	NW	Unspecified Works	1982

122AF	496	NW	Unspecified Works	1990
123AF	496	NW	Unspecified Works	1970
124Z	497	NE	Colliery	1926
125AG	499	S	Refuse Heap	1926
126AG	499	S	Unspecified Disused Tip	1990
127AG	499	S	Unspecified Disused Tip	1982
128AG	499	S	Unspecified Heap	1970
129AG	499	S	Refuse Heap	1938

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 52

ID	Distance (m)	Direction	Use	Date
130	0	On Site	Unspecified Tank	1974
131AH	45	W	Unspecified Tank	1974
132AH	45	W	Unspecified Tank	1990
133AH	45	W	Unspecified Tank	1995
134AI	65	W	Unspecified Tank	1990
135AI	65	W	Unspecified Tank	1995
136C	78	W	Unspecified Tank	1974
137	109	W	Unspecified Tank	1974
138B	116	SW	Unspecified Tank	1908
139B	118	SW	Unspecified Tank	1891
140AJ	122	W	Unspecified Tank	1995
141AJ	122	W	Unspecified Tank	1990
142AK	127	SW	Tanks	1995
143AK	127	SW	Tanks	1990
144F	131	SW	Tanks	1908
145F	138	SW	Tanks	1891
146AK	146	SW	Unspecified Tank	1974
147AL	151	SW	Unspecified Tank	1995
148AL	151	SW	Unspecified Tank	1990
149	152	W	Tanks	1974
150AT	177	S	Unspecified Tank	1995
151I	206	W	Unspecified Tank	1959
152I	210	W	Unspecified Tank	1927
153AM	219	SE	Unspecified Tank	1990
154AM	219	SE	Unspecified Tank	1990
155AM	219	SE	Unspecified Tank	1974
156K	260	SE	Unspecified Tank	1990

157K	261	SE	Unspecified Tank	1974
158	276	S	Tanks	1974
159N	298	SE	Tanks	1990
160N	298	SE	Tanks	1990
161AN	306	SE	Tanks	1990
162AN	306	SE	Tanks	1990
163AO	351	SE	Tanks	1990
164AO	351	SE	Tanks	1990
165AO	352	SE	Tanks	1974
166AO	355	SE	Unspecified Tank	1990
167AO	355	SE	Unspecified Tank	1990
168AP	405	SE	Unspecified Tank	1990
169AP	405	SE	Unspecified Tank	1990
170AP	405	SE	Tanks	1990
171AP	405	SE	Tanks	1990
172AP	407	SE	Unspecified Tank	1974
173AP	407	SE	Tanks	1974
174AP	411	SE	Tanks	1990
175AP	411	SE	Tanks	1990
176AP	414	SE	Unspecified Tank	1990
177AP	414	SE	Unspecified Tank	1990
178AP	416	SE	Unspecified Tank	1974
179	422	E	Unspecified Tank	1974
180	469	W	Unspecified Tank	1891
181AE	496	NW	Gas Works	1891

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 29

ID	Distance (m)	Direction	Use	Date
182	59	N	Electricity Substation	1982
183C	84	W	Electricity Substation	1974
184AQ	87	SE	Electricity Substation	1990
185AQ	87	SE	Electricity Substation	1990
186AR	107	NE	Electricity Substation	1974
187AR	108	NE	Electricity Substation	1990
188AR	108	NE	Electricity Substation	1990
189AL	149	SW	Electricity Substation	1995
190AL	149	SW	Electricity Substation	1990
191AS	157	W	Electricity Substation	1995

192AS	157	W	Electricity Substation	1990
193AT	191	S	Electricity Substation	1995
194AT	193	S	Electricity Substation	1990
195	200	N	Electricity Substation	1989
196AU	228	NW	Electricity Substation	1989
197AU	228	NW	Electricity Substation	1974
198AU	228	NW	Electricity Substation	1982
199AV	274	SE	Electricity Substation	1990
200AV	274	SE	Electricity Substation	1990
201N	291	SE	Electricity Substation	1974
202	291	N	Electricity Substation	1989
203	340	NE	Electricity Substation	1974
204AP	398	SE	Electricity Substation	1990
205AP	398	SE	Electricity Substation	1990
206AP	399	SE	Electricity Substation	1974
207AW	496	N	Electricity Substation	1989
208AE	496	NW	Gas Works	1891
209AW	497	N	Electricity Substation	1982
210	498	NE	Electricity Substation	1974

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 12

ID	Distance (m)	Direction	Use	Date
211AI	65	SW	Garage	1974
212AX	106	W	Garage	1995
213AX	106	W	Garage	1990
214AX	106	W	Garage	1974
215AY	150	SE	Dairy Retail Service Depot	1974
216	425	NW	Garage	1959
217AZ	466	NW	Garage	1974

218AZ	467	NW	Garage	1984
219AZ	468	NW	Garage	1994
220	475	NW	Garage	1982
221AZ	475	NW	Garage	1989
222AZ	475	NW	Garage	1974

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 94

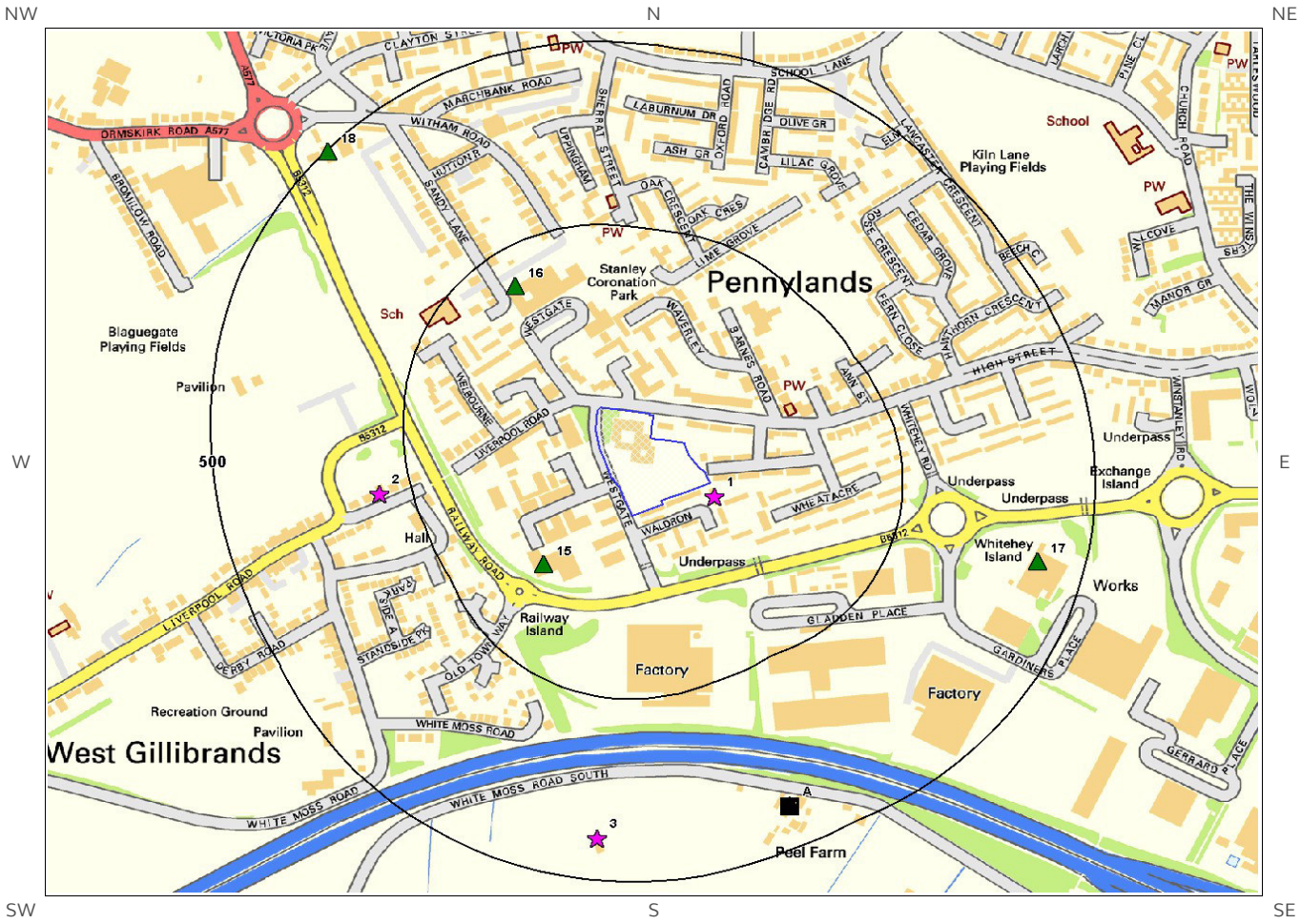
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
223A	18	SW	Bricks Works	1907
224A	55	SW	Brick Works	1892
225AL	156	SW	Unspecified Pit	1955
226AL	169	SW	Pond	1907
227H	183	SW	Cuttings	1892
228J	184	SW	Cuttings	1955
229BA	187	W	Cuttings	1955
230AL	189	SW	Cuttings	1851
231H	189	SW	Cuttings	1926
232I	191	SW	Cuttings	1926
233I	191	SW	Cuttings	1938
234J	194	SW	Cuttings	1907
235L	197	W	Cuttings	1955
236L	198	W	Cuttings	1926
237O	198	W	Cuttings	1851
238O	210	W	Cuttings	1892
239O	236	W	Cuttings	1907
240S	251	NE	Colliery	1907
241R	301	NE	Refuse Heap	1926
242R	301	NE	Unspecified Heap	1907
243R	301	NE	Refuse Heap	1926
244R	305	NE	Refuse Heap	1938
245R	305	NE	Refuse Heap	1947
246R	305	NE	Refuse Heap	1947
247BB	312	SE	Collieries	1907
248T	322	SE	Unspecified Heap	1892
249S	325	NE	Unspecified Heap	1907
250AO	327	SE	Pond	1851
251T	336	SE	Unspecified Heap	1938
252BC	337	SE	Unspecified Heap	1926
253Y	338	W	Collieries	1892
254U	341	W	Refuse Heap	1926
255BD	343	S	Cuttings	1851

256BE	346	W	Refuse Heaps	1947
257BE	346	W	Refuse Heaps	1947
258U	351	W	Refuse Heap	1938
259U	351	W	Refuse Heap	1926
260U	351	W	Unspecified Heap	1907
261BF	353	SE	Reservoir	1892
262BF	359	SE	Reservoir	1907
263BF	359	SE	Ponds	1938
264	359	SE	Pond	1851
265BF	363	SE	Pond	1926
266BF	365	SE	Pond	1926
267BG	366	W	Unspecified Heap	1892
268BH	368	SE	Collieries	1926
269BI	369	NE	Air Shaft	1947
270BI	369	NE	Air Shaft	1938
271BI	370	NE	Air Shaft	1926
272BI	370	NE	Air Shaft	1926
273BI	379	NE	Air Shaft	1955
274X	379	S	Colliery	1892
275BJ	392	E	Collieries	1892
276BE	394	W	Refuse Heap	1926
277BE	397	W	Refuse Heap	1938
278Y	428	W	Unspecified Heap	1892
279Y	432	W	Refuse Heap	1926
280Z	433	NE	Colliery	1892
281Y	435	W	Unspecified Heap	1907
282AA	441	S	Unspecified Heap	1892
283BK	446	E	Sewage Farm	1926
284BL	446	NW	Unspecified Heap	1892
285BM	447	E	Sewage Farm	1955
286Z	464	NE	Colliery	1938
287BN	464	NE	Colliery	1926
288AA	464	S	Unspecified Old Shaft	1955
289BQ	465	W	Pond	1892
290BO	466	NE	Unspecified Ground Workings	1926
291BP	467	W	Unspecified Pit	1892
292BQ	473	W	Pond	1955
293AB	474	S	Unspecified Old Shaft	1938
294BQ	474	W	Pond	1926
295BQ	475	W	Pond	1947
296BQ	476	W	Pond	1938
297AB	477	S	Unspecified Old Shaft	1926
298AB	478	S	Unspecified Old Shaft	1907
299AB	478	S	Unspecified Old Shaft	1926
300BQ	478	W	Pond	1907

301BQ	478	W	Pond	1926
302AC	482	SE	Cuttings	1990
303AC	482	SE	Cuttings	1982
304AC	482	SE	Cuttings	1970
305AD	484	E	Sewage Farm	1947
306AD	484	E	Sewage Farm	1947
307BR	486	E	Sewage Farm	1926
308	491	NE	Air Shaft	1926
309	494	NE	Air Shaft	1947
310	495	NW	Pond	1892
311Z	497	NE	Colliery	1926
312AG	499	S	Refuse Heap	1926
313AG	499	S	Unspecified Heap	1970
314AG	499	S	Unspecified Disused Tip	1982
315AG	499	S	Unspecified Disused Tip	1990
316AG	499	S	Refuse Heap	1938

2. Environmental Permits, Incidents and Registers Map



2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

10

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
20A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: KP3532GN Original Permit Number: DP3639LM EPR Reference: - Issue Date: 12/2/2009 Effective Date: 12/2/2009 Last date noted as effective: 2017-11-30 Status: Superceded
21A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: UP3530YN Original Permit Number: DP3639LM EPR Reference: - Issue Date: 13/4/2017 Effective Date: 13/4/2017 Last date noted as effective: 2017-11-30 Status: Effective
22A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT	Permit Number: UP3530YN Original Permit Number: DP3639LM EPR Reference: - Issue Date: 13/4/2017 Effective Date: 13/4/2017 Last date noted as effective: 2017-11-30 Status: Effective

ID	Distance (m)	Direction	NGR	Details	
23A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: NP3532HA Original Permit Number: DP3639LM EPR Reference: - Issue Date: 10/12/2010 Effective Date: 10/12/2010 Last date noted as effective: 2017-11-30 Status: Superceded
24A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: TP3031VS Original Permit Number: DP3639LM EPR Reference: - Issue Date: 12/9/2016 Effective Date: 12/9/2016 Last date noted as effective: 2017-11-30 Status: Superceded
25A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: DP3639LM Original Permit Number: DP3639LM EPR Reference: EA/EPR/DP3639LM/V001 Issue Date: 18/9/2008 Effective Date: 18/9/2008 Last date noted as effective: 2017-11-30 Status: Superceded
26A	444	S	347100 405400	Operator: J Routledge & Sons (liverpool) Limited Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: HP3937SW Original Permit Number: BV1682IP EPR Reference: - Issue Date: 22/6/2006 Effective Date: 22/6/2006 Last date noted as effective: 2017-11-30 Status: Superceded
27A	444	S	347100 405400	Operator: Whitemoss Landfill Ltd Installation Name: Whitemoss Landfill Site Epr/dp3639lm Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: WP3532ZY Original Permit Number: DP3639LM EPR Reference: - Issue Date: 13/10/2014 Effective Date: 13/10/2014 Last date noted as effective: 2017-11-30 Status: Superceded
28A	444	S	347100 405400	Operator: J Routledge & Sons (liverpool) Limited Installation Name: Whitemoss Landfill Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: VP3835MR Original Permit Number: BV1682IP EPR Reference: - Issue Date: 16/5/2007 Effective Date: 16/5/2007 Last date noted as effective: 2017-11-30 Status: Superceded
29A	444	S	347100 405400	Operator: J Routledge And Sons (liverpool) Ltd Installation Name: - Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: BV1682 Original Permit Number: BV1682 EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 2004-10-01 Status: Superseded By Pas

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

1

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
4A	444	S	347100 405400	Name: J Routledge & Sons (liverpool) Limited , Whitemoss Landfill Status: Active Receiving Water: -	Authorised Substances: Mercury (other), Cadmium

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

4

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
15	133	SW	346780 405728	Address: Bodycote Heat Treatments (Skelmersdale) Ltd, 18 Westgate, Skelmersdale, WN8 8AZ Process: Surface Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
16	198	NW	346743 406110	Address: Andrews Dry Cleaners, 110 Sandy Lane, Skelmersdale, WN8 8QN Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
17	438	E	347420 405733	Address: Coates LSF (Previously Stackright Ltd), 5 Gardiners Place, Skelmersdale, WN8 9SP Process: Coating of metal fabrications Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

ID	Distance (m)	Direction	NGR	Details	
18	497	NW	346501 406294	Address: Newtown Service Station (Skem Ltd), Railway Road, Skelmersdale, L39 2DW Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

1

The following Water Industry Referral records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Address	Permission reference	Local Authority	First Date Received	Last Date Received	Status
30A	444	S	J ROUTLEDGE AND SONS LTD, WHITEMOSS LANDFILL SITE, WHITEMOSS ROAD SOUTH, SKELMERSDALE, LANCASHIRE, WN8 8BW	AT2977	WEST LANCASHIRE DISTRICT COUNCIL	01-Jul-2010	01-Oct-2017	RECEIVED

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

3

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	19	S	347002 405824	Incident Date: 26-Apr-2002 Incident Identification: 74885 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
2	294	W	346567 405827	Incident Date: 11-Feb-2005 Incident Identification: 292873 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
3	443	S	346850 405356	Incident Date: 20-Apr-2006 Incident Identification: 392005 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

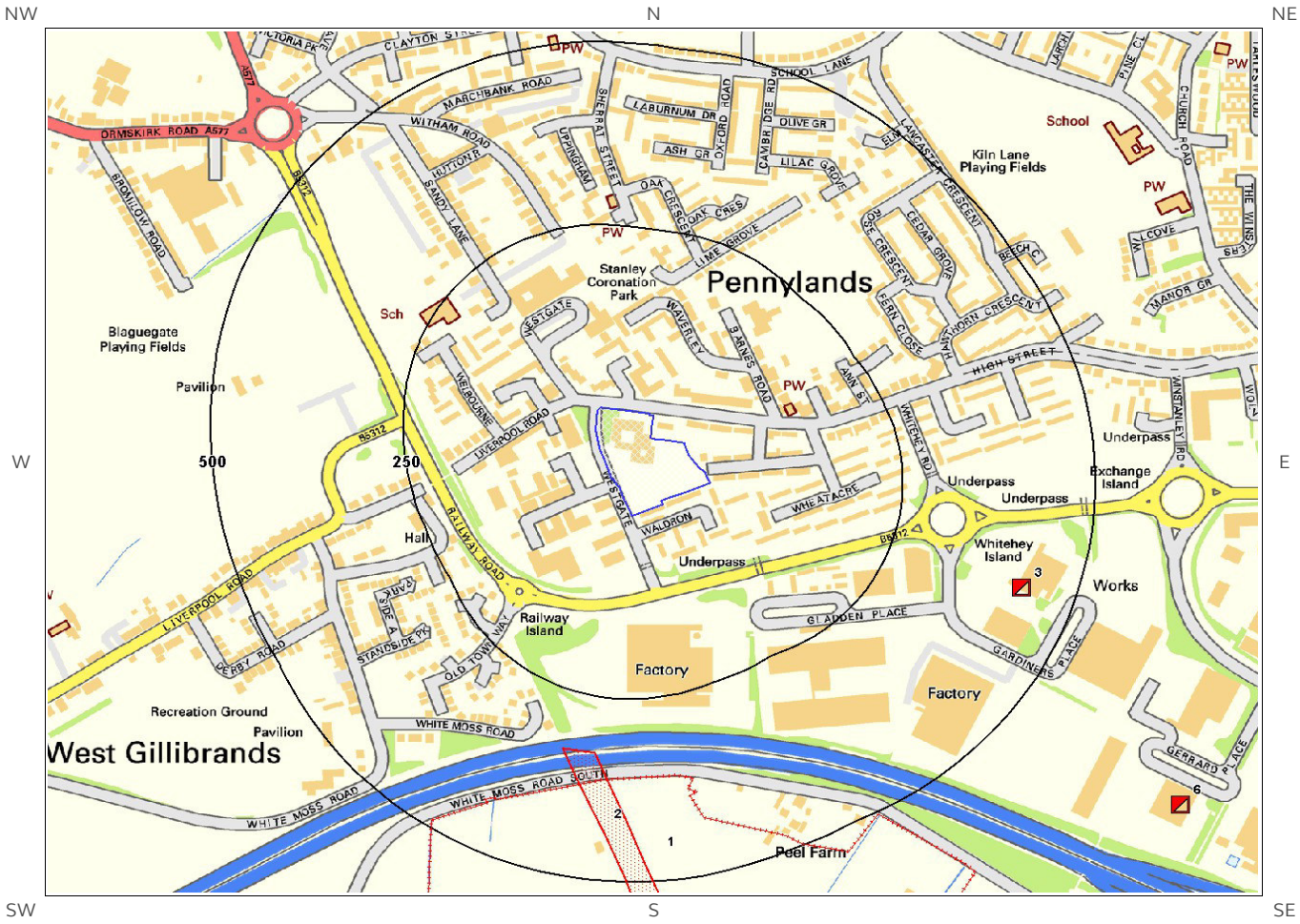
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

1

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	357	S	347100 405400	Address: Whitemoss Landfill Ltd, White Moss Road, Skelmersdale, Lancashire, WN8 9TH Landfill Reference: 0.0 Environmental Permitting Regulations (Waste) Reference: - Landfill Type: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Operator: Whitemoss Landfill Ltd Status: Effective IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

1

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	328	S	346900 404900	Site Address: Railway Cutting, Coal Pit Lane, Bickerstaffe Cross, Skelmersdale, Lancashire Waste Licence: Yes Site Reference: L1/08/145, 100/145, K1/08/009, Licence No 104 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 01-Nov-1978 Licence Surrendered: 31-Aug-1980 Licence Holder Address: Cunscough Lane, Melling, Near Liverpool Operator: - Licence Holder: Sir Alfred McAlpine and Sons Northern Limited First Recorded: 31-Dec-1978 Last Recorded: 31-Dec-1980

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

13

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

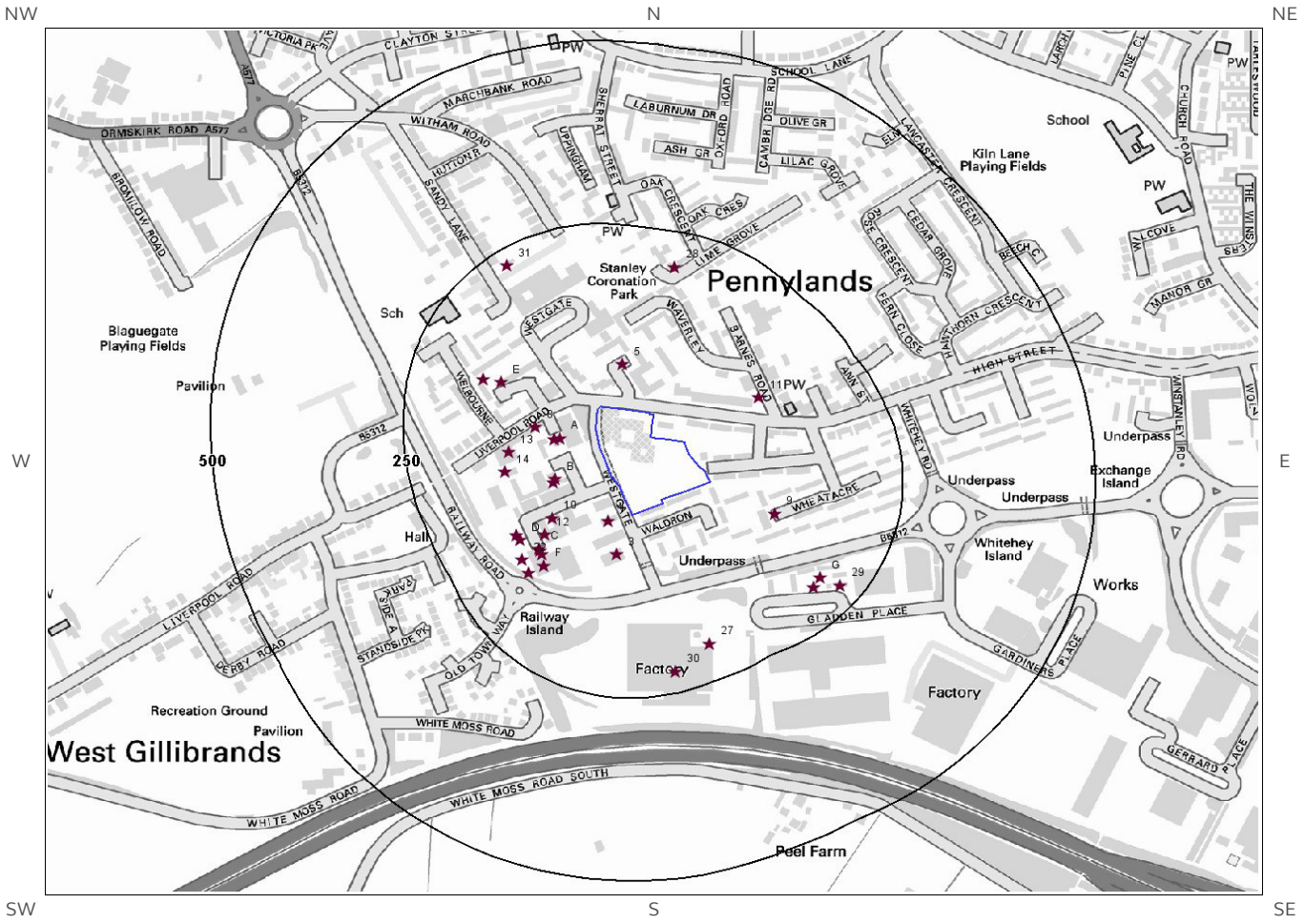
ID	Distance (m)	Direction	NGR	Details	
3	428	E	347400 405700	Site Address: Unit 5, Gardiners Place, West Gillibrands, Skelmersdale, Lancashire, WN8 9SP Type: Physical Treatment Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TRI002 EPR reference: EA/EPR/EP3997CM/V003 Operator: Peter Keenan Waste Management licence No: 54326 Annual Tonnage: 2000.0	Issue Date: 08/01/2001 Effective Date: - Modified: 11/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Bios Europe Ltd Correspondence Address: -
Not shown	667	SE	347200 405200	Site Address: Whitemoss Road South, Skelmersdale, Nr Wigan, Lancashire, WN8 8BW Type: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRO001 EPR reference: - Operator: J Routledge & Sons (Liverpool) Ltd Waste Management licence No: 54053 Annual Tonnage: 149500.0	Issue Date: 04/10/1991 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: J Routledge & Sons (Liverpool) Ltd Correspondence Address: Whitemoss Road South, Skelmersdale, Nr Wigan, Lancashire, WN8 8BW

ID	Distance (m)	Direction	NGR	Details	
Not shown	667	SE	347200 405200	Site Address: Whitemoss Landfill, Whitemoss Road South, Skelmersdale, Wigan, Lancashire, WN8 9TH Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRO001 EPR reference: EA/EPR/ZP3491CL/A001 Operator: J Routledge & Sons (Liverpool) Ltd Waste Management licence No: 54053 Annual Tonnage: 149500.0	Issue Date: 04/10/1991 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Whitemoss (J Routledge & Sons (Liverpool) Ltd) Correspondence Address: -
6	751	SE	347606 405403	Site Address: Land / Premises At, Gerrard Place, East Gillibrands Ind Est, Skelmersdale, Lancashire, WN8 9SU Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HIL018 EPR reference: EA/EPR/JP3797CU/A001 Operator: Hills Salvage And Recycling Ltd Waste Management licence No: 54432 Annual Tonnage: 4999.0	Issue Date: 21/06/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hills Salvage And Recycling Ltd Correspondence Address: -
Not shown	804	S	347000 405000	Site Address: Whitemoss Road South, Skelmersdale, Lancashire Type: Other Landfill Site taking Special Waste Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRO002 EPR reference: - Operator: J Routledge & Sons Ltd Waste Management licence No: 54369 Annual Tonnage: 0.0	Issue Date: 29/04/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Whitemoss Road Cell 3 D South Lfs Correspondence Address: 2, The Avenue, Leigh, Lancashire, WN7 1ES
Not shown	804	S	347000 405000	Site Address: Whitemoss Road South, Skelmersdale, Lancashire Type: Other Landfill Site taking Special Waste Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRO002 EPR reference: - Operator: J Routledge & Sons Ltd Waste Management licence No: 54369 Annual Tonnage: 0.0	Issue Date: 29/04/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Whitemoss Road Cell 3 D South Lfs Correspondence Address: 2, The Avenue, Leigh, Lancashire, WN7 1ES
Not shown	804	S	347000 405000	Site Address: Whitemoss Road South, Skelmersdale, Lancashire Type: Other Landfill Site taking Special Waste Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRO002 EPR reference: EA/EPR/AP3397CC/A001 Operator: Whitemoss Landfill Limited Waste Management licence No: 54369 Annual Tonnage: 149999.0	Issue Date: 29/04/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Whitemoss Road Cell 3 D South L F S Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	871	SE	347724 405363	Site Address: Gerrard Place, Off Gillibrands Road, East Gillbrands, Skelmersdale, Lancashire, WN8 9SF Type: Material Recycling Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: INT009 EPR reference: EA/EPR/SP3593ZB/V002 Operator: Viridor Polymer Recycling Ltd Waste Management licence No: 54473 Annual Tonnage: 30000.0	Issue Date: 02/04/2007 Effective Date: - Modified: 05/05/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Viridor Polymer Recycling Correspondence Address: -
Not shown	880	SE	347709 405326	Site Address: Gerrard Place, Off Gillibrands Road, East Gillbrands, Sklemersdale, Lancashire, WN8 9SF Type: Material Recycling Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: INT009 EPR reference: - Operator: Intercontinental Recycling Ltd Waste Management licence No: 54473 Annual Tonnage: 0.0	Issue Date: 02/04/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Intercontinental Recycling Ltd Correspondence Address: Gerrard Place, East Gillbrands, Sklemersdale, Lancashire, WN8 9SF
Not shown	1255	N	346900 407200	Site Address: Stanley Depot, Stanley Way, Skelmersdale, Lancashire, WN8 8EF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WES002 EPR reference: - Operator: West Lancashire Contracting Waste Management licence No: 54075 Annual Tonnage: 0.0	Issue Date: 12/11/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: West Lancashire Contracting Correspondence Address: Stanley Depot, Stanley Way, Skelmersdale, Lancashire, WN8 8EF
Not shown	1255	N	346900 407200	Site Address: Stanley Depot, Stanley Way, Skelmersdale, Lancashire, WN8 8EE Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WES002 EPR reference: EA/EPR/EP3291CS/V003 Operator: West Lancashire District Council Waste Management licence No: 54075 Annual Tonnage: 74999.0	Issue Date: 12/11/1992 Effective Date: - Modified: 23/06/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: West Lancashire District Council Correspondence Address: -
Not shown	1470	N	347070 407400	Site Address: Seaton Pl, Stanley Industrial Estate, Skelmersdale, Lancashire, WN8 8EA Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SKE001 EPR reference: EA/EPR/SP3893ZG/A001 Operator: Skelmersdale Skip Hire Ltd Waste Management licence No: 54475 Annual Tonnage: 24999.0	Issue Date: 26/10/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Skelmersdale Skip Hire Ltd Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	1470	N	347070 407400	Site Address: Seaton Pl, Stanley Industrial Estate, Skelmersdale, Lancashire, WN8 8EA Type: - Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SKE001 EPR reference: - Operator: Skelmersdale Skip Hire Ltd Waste Management licence No: 54475 Annual Tonnage: 0.0	Issue Date: 26/10/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: - Correspondence Address: 21, Smithy Lane, Scarisbrick, Lancashire, L40 8HL

4. Current Land Use Map



4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 31

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	32	SW	Skelmersdale Ambulance Station	346864 405789	Westgate, Skelmersdale, WN8 8AZ	Ambulance and Medical Transportation Services	Health Support Services
2A	48	W	Tank	346802 405903	WN8	Tanks (Generic)	Industrial Features
3	56	S	National Tyre and Autocare	346875 405744	2, Westgate, Skelmersdale, WN8 8AZ	Vehicle Repair, Testing and Servicing	Repair and Servicing
4A	57	W	Westgate Tyre & Service Centre	346794 405901	46, Westgate, Skelmersdale, WN8 8AZ	Vehicle Repair, Testing and Servicing	Repair and Servicing
5	61	N	Electricity Sub Station	346883 406004	WN8	Electrical Features	Infrastructure and Facilities
6B	69	W	Tank	346796 405847	WN8	Tanks (Generic)	Industrial Features
7B	74	W	Primus Energy	346792 405842	40, Westgate, Skelmersdale, WN8 8AZ	Construction Completion Services	Construction Services
8	79	W	N T S Auto Parts	346770 405918	5a, Liverpool Road, Skelmersdale, WN8 8AU	Vehicle Parts and Accessories	Motoring
9	94	SE	Electricity Sub Station	347080 405800	WN8	Electrical Features	Infrastructure and Facilities
10	94	SW	The Engine Rooms	346792 405793	14a, Westgate, Skelmersdale, WN8 8AZ	Recording Studios and Record Companies	IT, Advertising, Marketing and Media Services
11	114	NE	Electricity Sub Station	347059 405959	WN8	Electrical Features	Infrastructure and Facilities
12	114	W	Design 4 Print	346782 405771	16, Westgate, Skelmersdale, WN8 8AZ	Published Goods	Industrial Products
13	116	W	Moss Street Garage	346735 405884	Liverpool Road, Skelmersdale, WN8 8AU	Vehicle Repair, Testing and Servicing	Repair and Servicing
14	128	W	Tank	346730 405857	WN8	Tanks (Generic)	Industrial Features
15C	129	SW	Tank	346775 405752	WN8	Tanks (Generic)	Industrial Features
16C	129	SW	Tank	346778 405745	WN8	Tanks (Generic)	Industrial Features
17C	129	SW	Tank	346776 405749	WN8	Tanks (Generic)	Industrial Features
18E	131	W	R H Technologies Ltd	346725 405979	44, West Park Close, Skelmersdale, WN8 8AY	Electrical and Electronic Engineers	Engineering Services

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
19F	134	SW	Bodycote Heating Treatment Ltd	346780 405728	Westgate, Skelmersdale, WN8 8AZ	Cutting, Drilling and Welding Services	Construction Services
20D	147	SW	Mayor & Co	346749 405763	22A, Westgate, Skelmersdale, WN8 8AZ	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden
21D	147	SW	K K Toiletries Ltd	346745 405770	24, Westgate, Skelmersdale, WN8 8AZ	Cosmetics, Toiletries and Perfumes	Consumer Products
22	155	SW	Electricity Sub Station	346753 405737	WN8	Electrical Features	Infrastructure and Facilities
23E	155	W	Electricity Sub Station	346702 405984	WN8	Electrical Features	Infrastructure and Facilities
24F	156	SW	Tank	346761 405719	WN8	Tanks (Generic)	Industrial Features
25G	193	SE	Depot	347139 405712	WN8	Container and Storage	Transport, Storage and Delivery
26G	197	SE	K J Wright Service & Repairs	347131 405699	19, Gladden Place, Skelmersdale, WN8 9SX	Vehicle Repair, Testing and Servicing	Repair and Servicing
27	199	S	Electricity Sub Station	346995 405622	WN8	Electrical Features	Infrastructure and Facilities
28	202	N	Electricity Sub Station	346950 406137	WN8	Electrical Features	Infrastructure and Facilities
29	219	SE	The Fish Company	347165 405702	14, Gladden Place, Skelmersdale, WN8 9SX	Fish, Meat and Poultry Products	Foodstuffs
30	220	S	Factory	346952 405584	WN8	Unspecified Works Or Factories	Industrial Features
31	229	NW	Electricity Sub Station	346733 406139	WN8	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

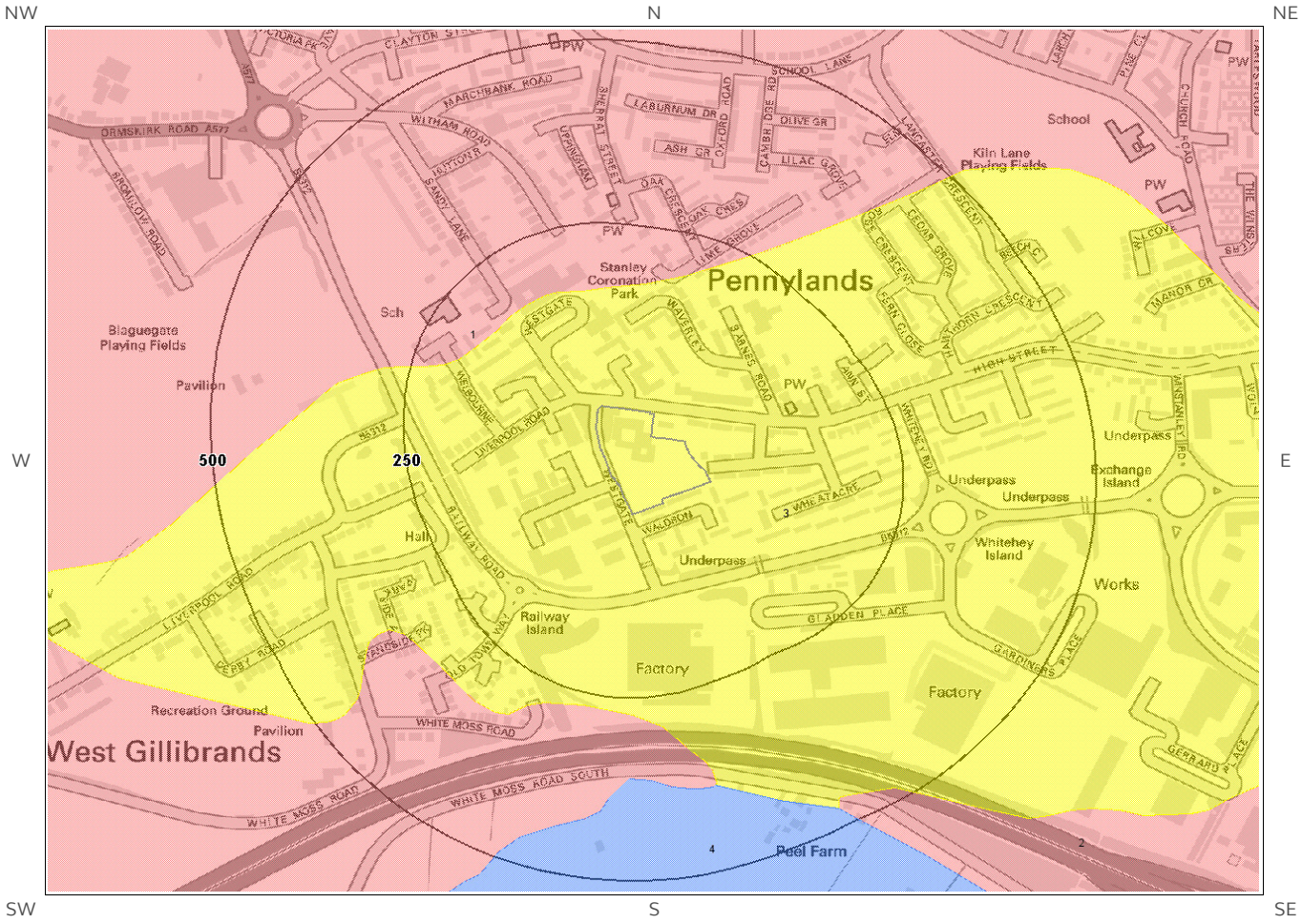
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

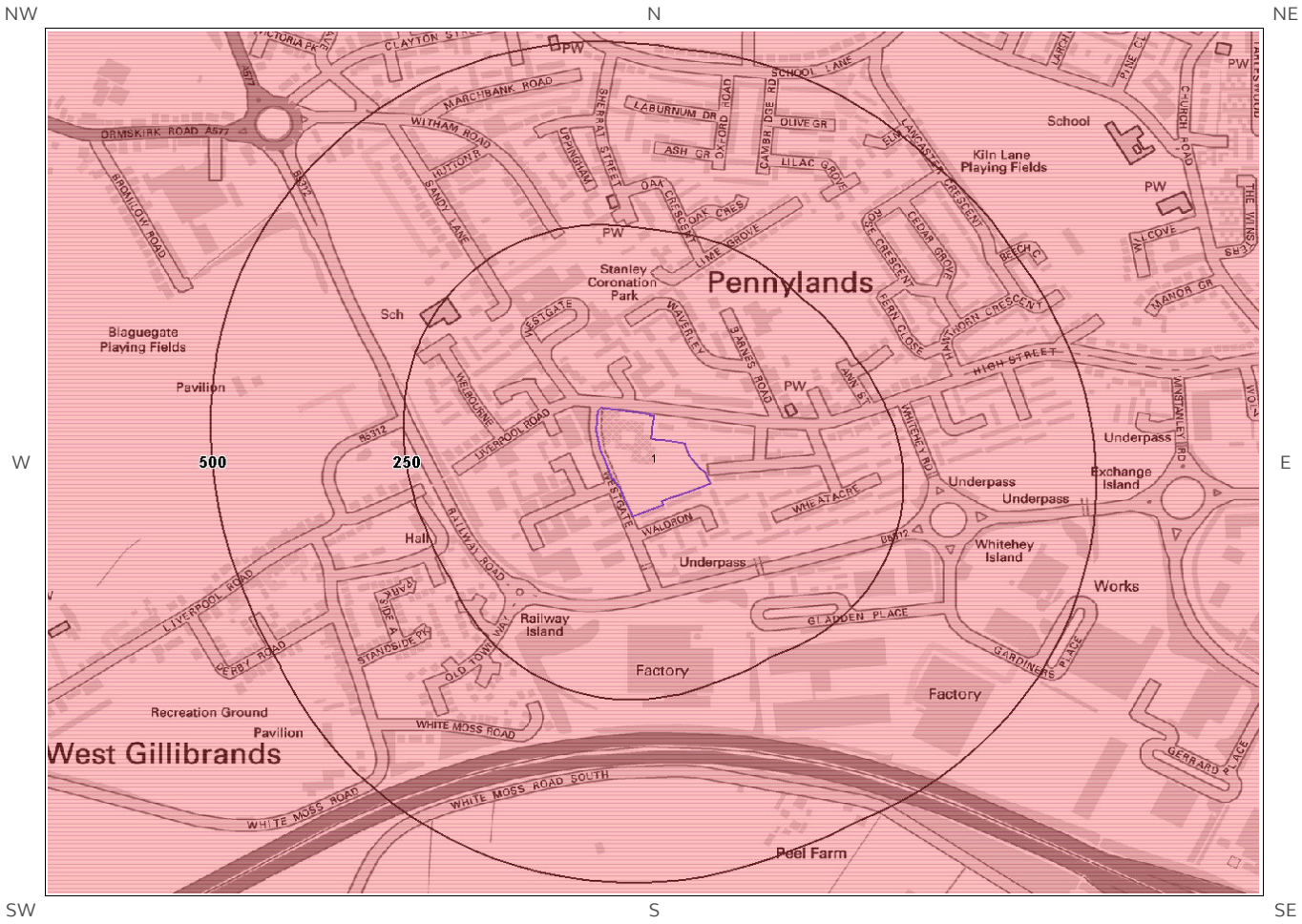
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

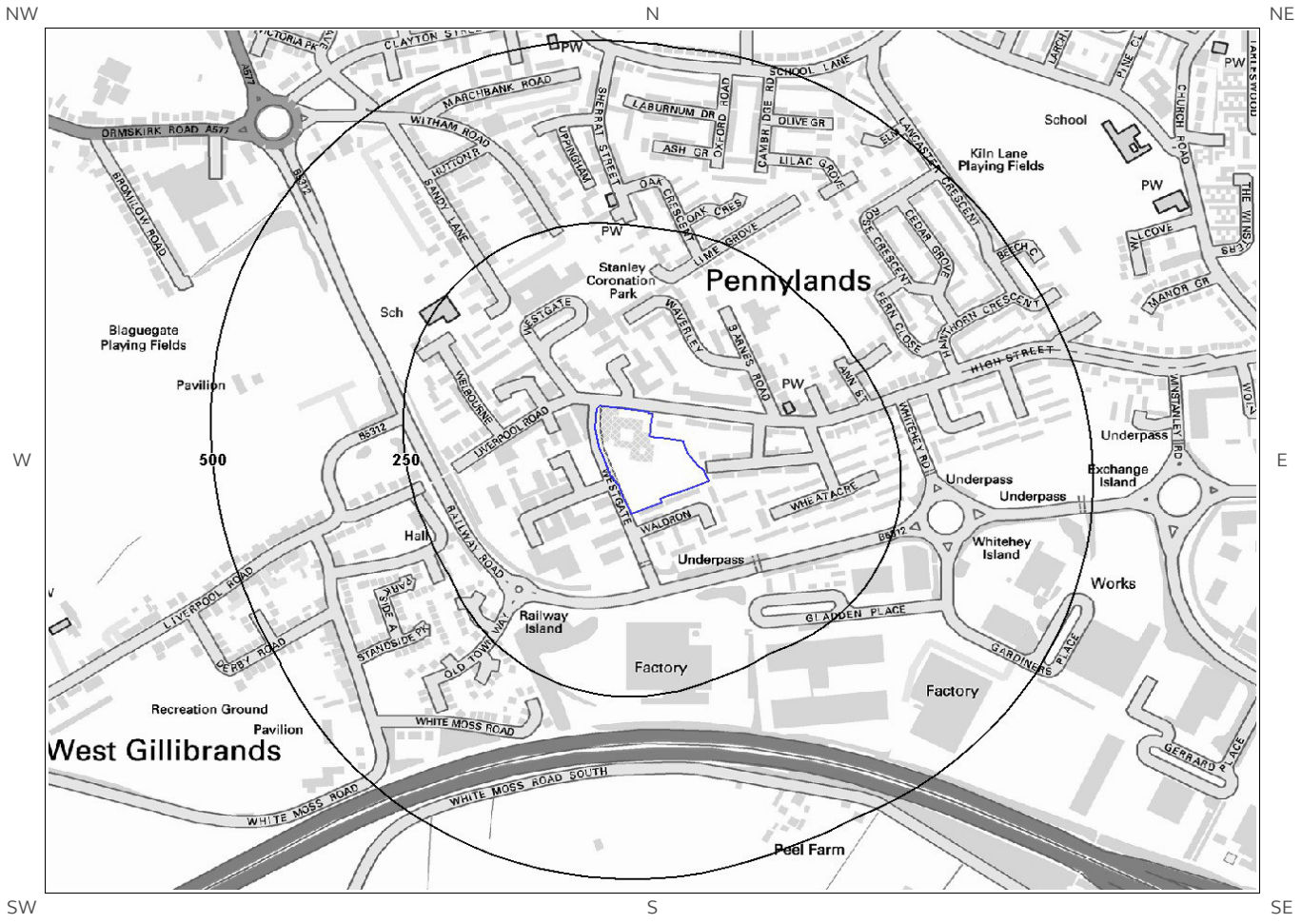
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

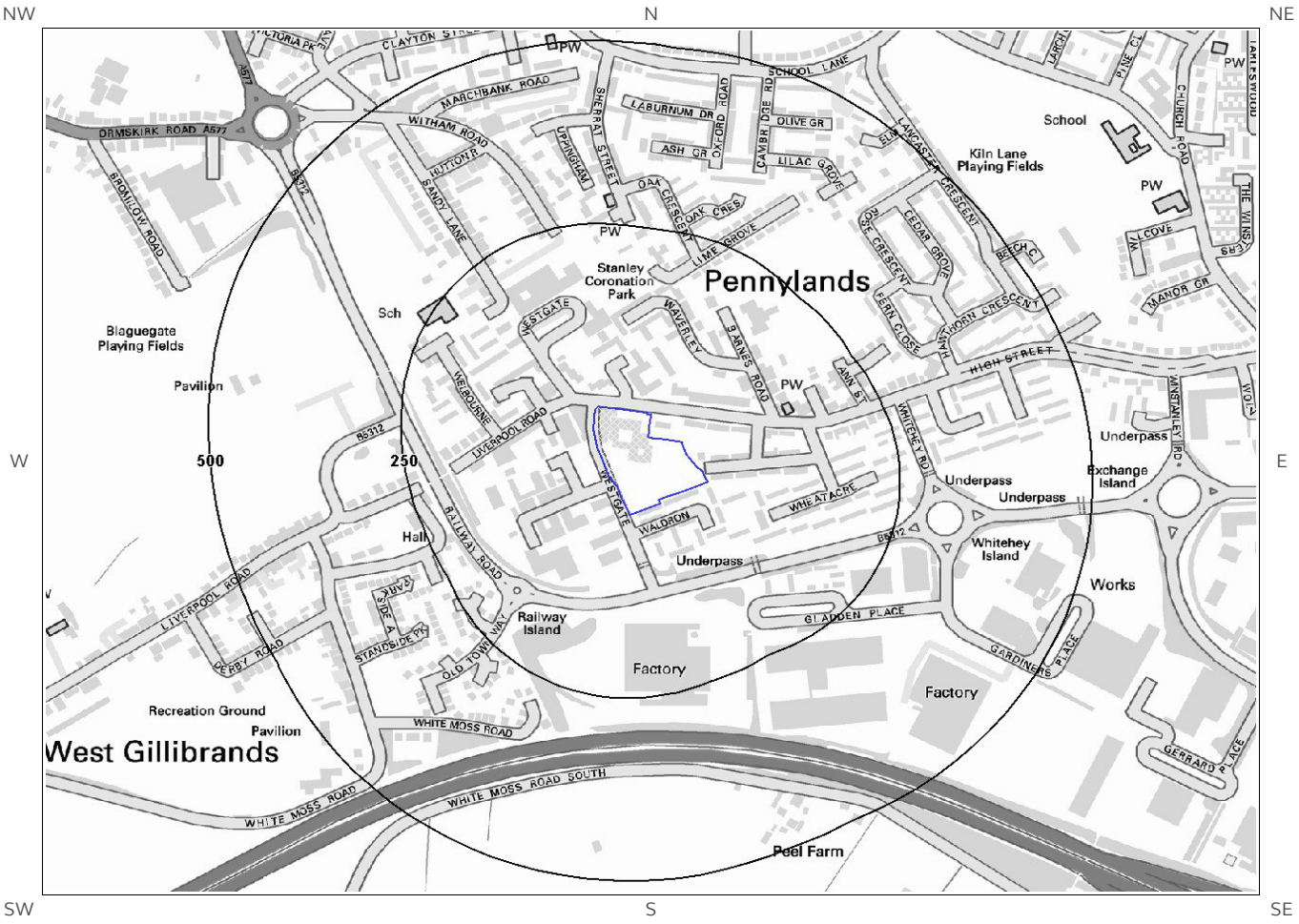
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

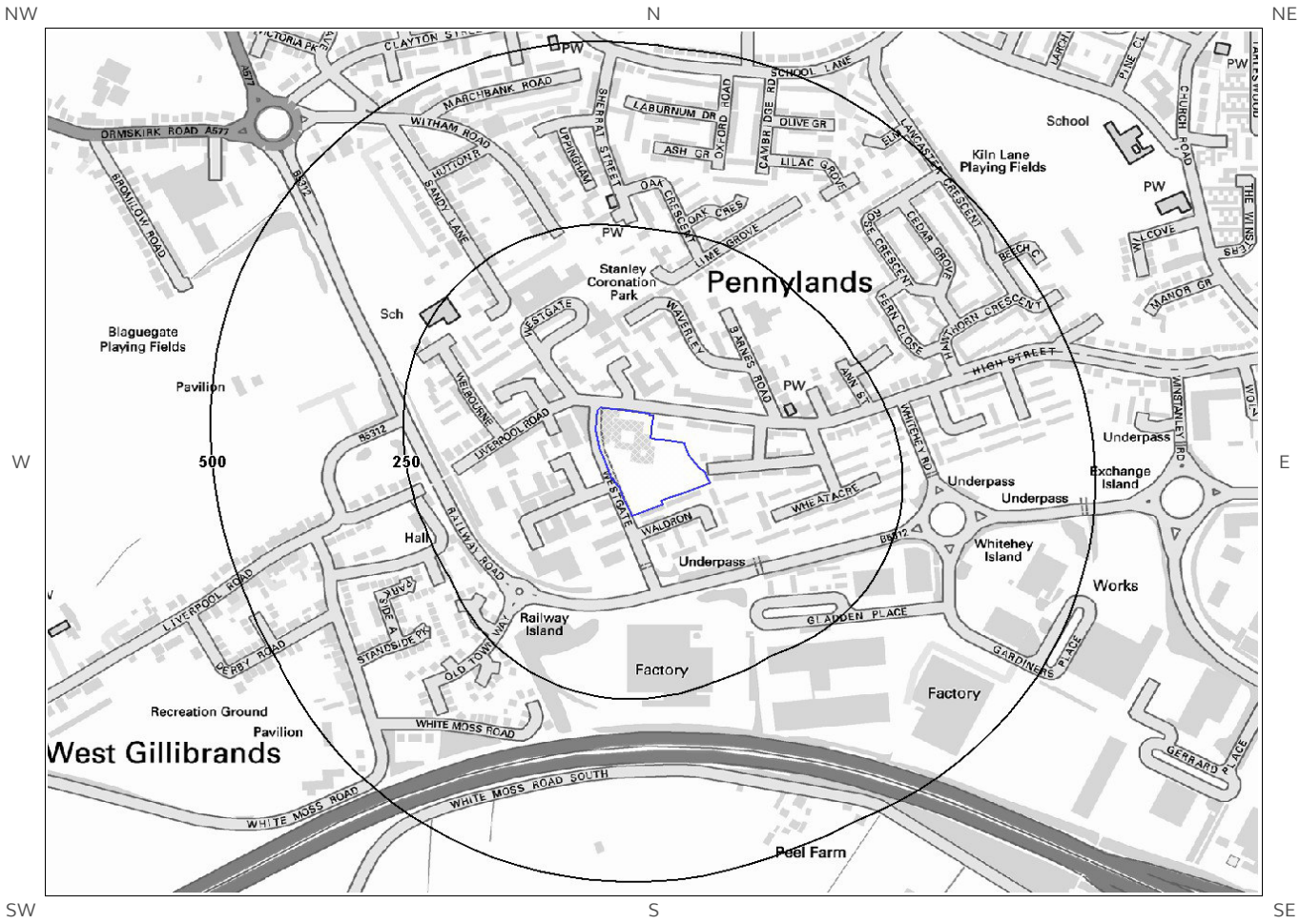
Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

Site Outline

250 500 Search Buffers (m)

6e. Hydrology – Detailed River Network and River Quality



Site Outline

250 — 500 — Search Buffers (m)

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	159	N	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	361	S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	462	SE	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

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	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

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
324	S	Minor Aquifer/Intermediate Leaching Potential	I2	Soils which can possibly transmit non – or weakly adsorbed pollutants and liquid discharges but are unlikely to transmit adsorbed pollutants.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? No

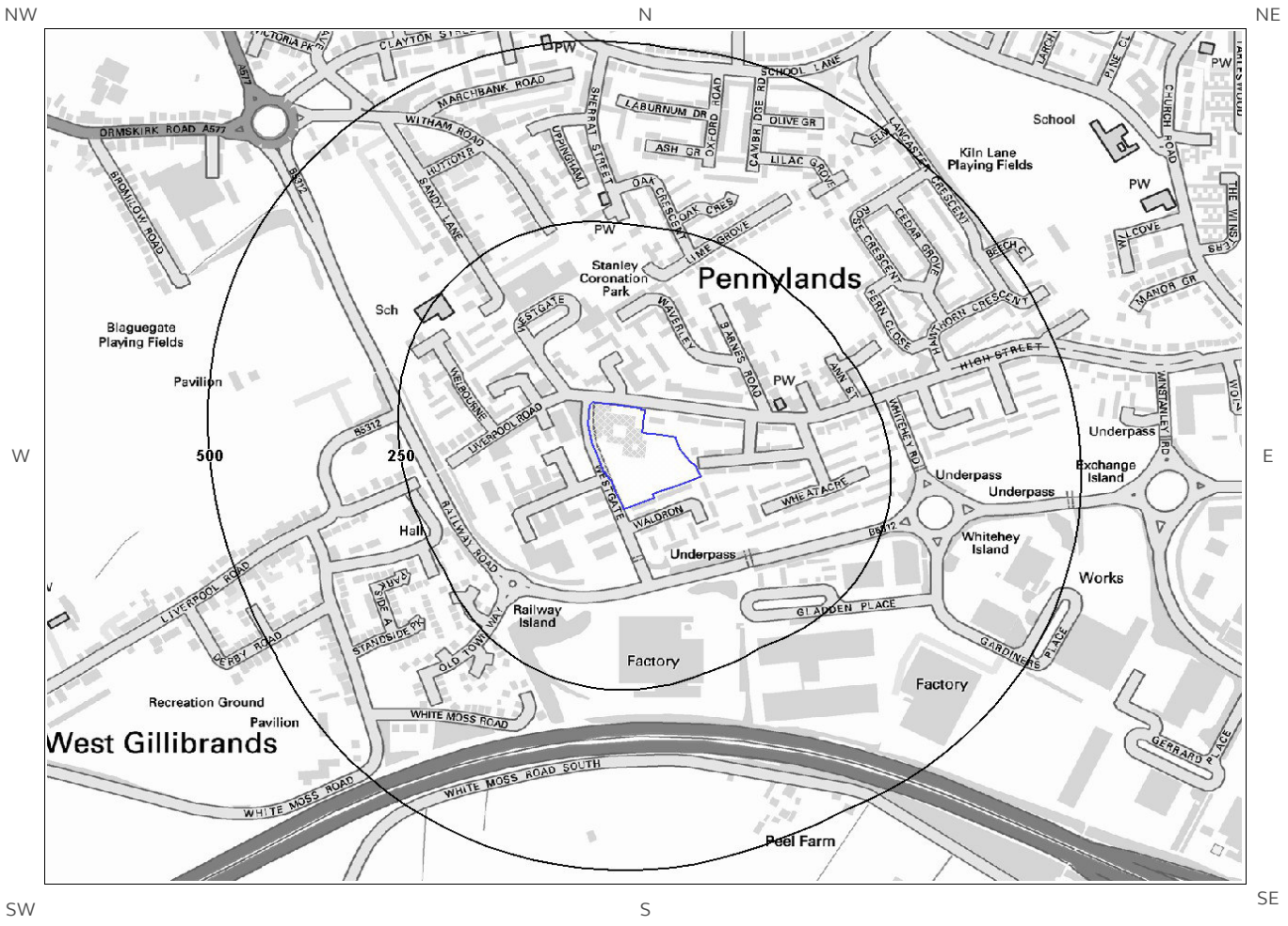
Database searched and no data found.

6.11 Surface Water Features

Are there any surface water features within 250m of the study site? No

Database searched and no data found.

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

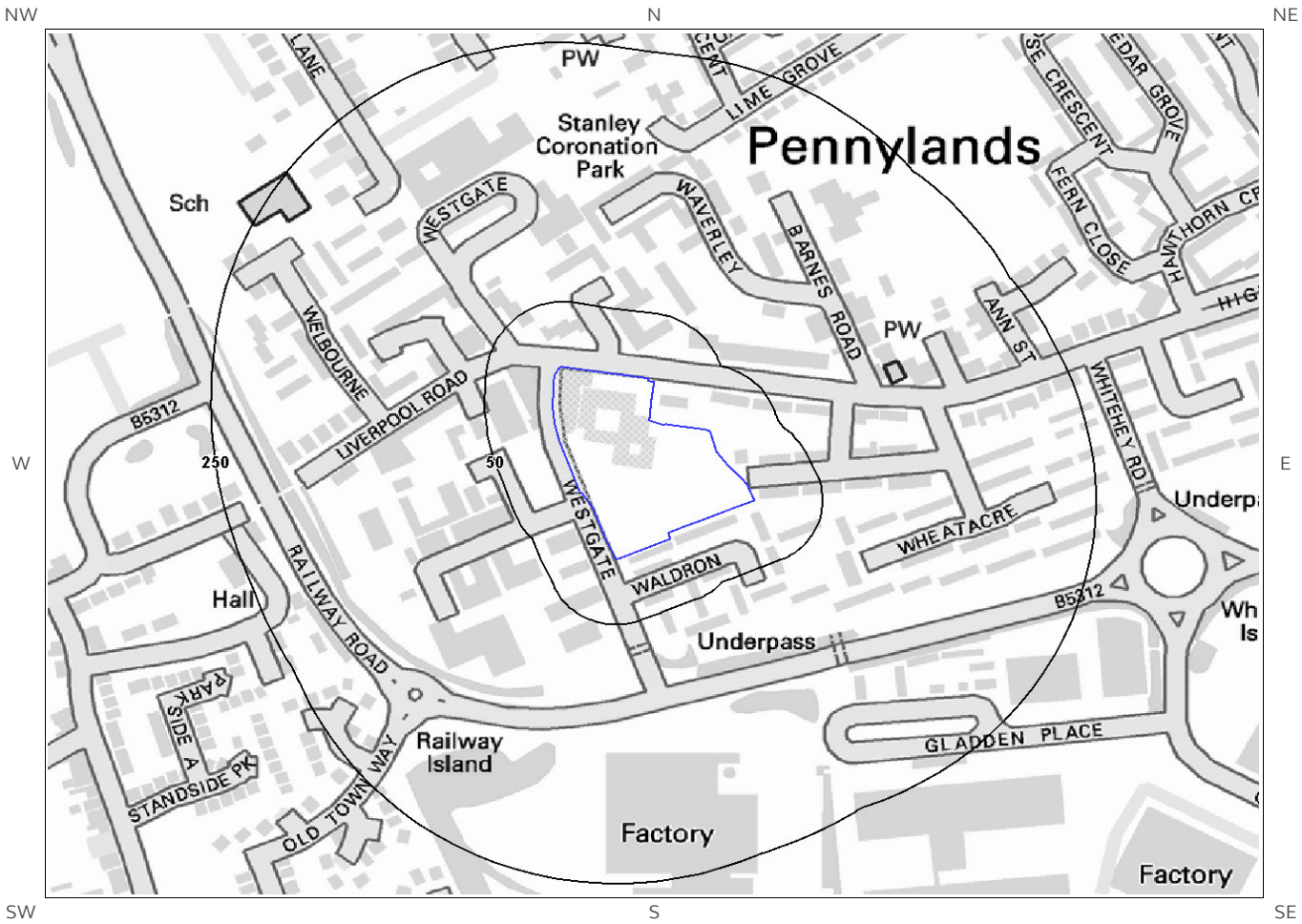
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



Site Outline

100 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? No

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? No

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

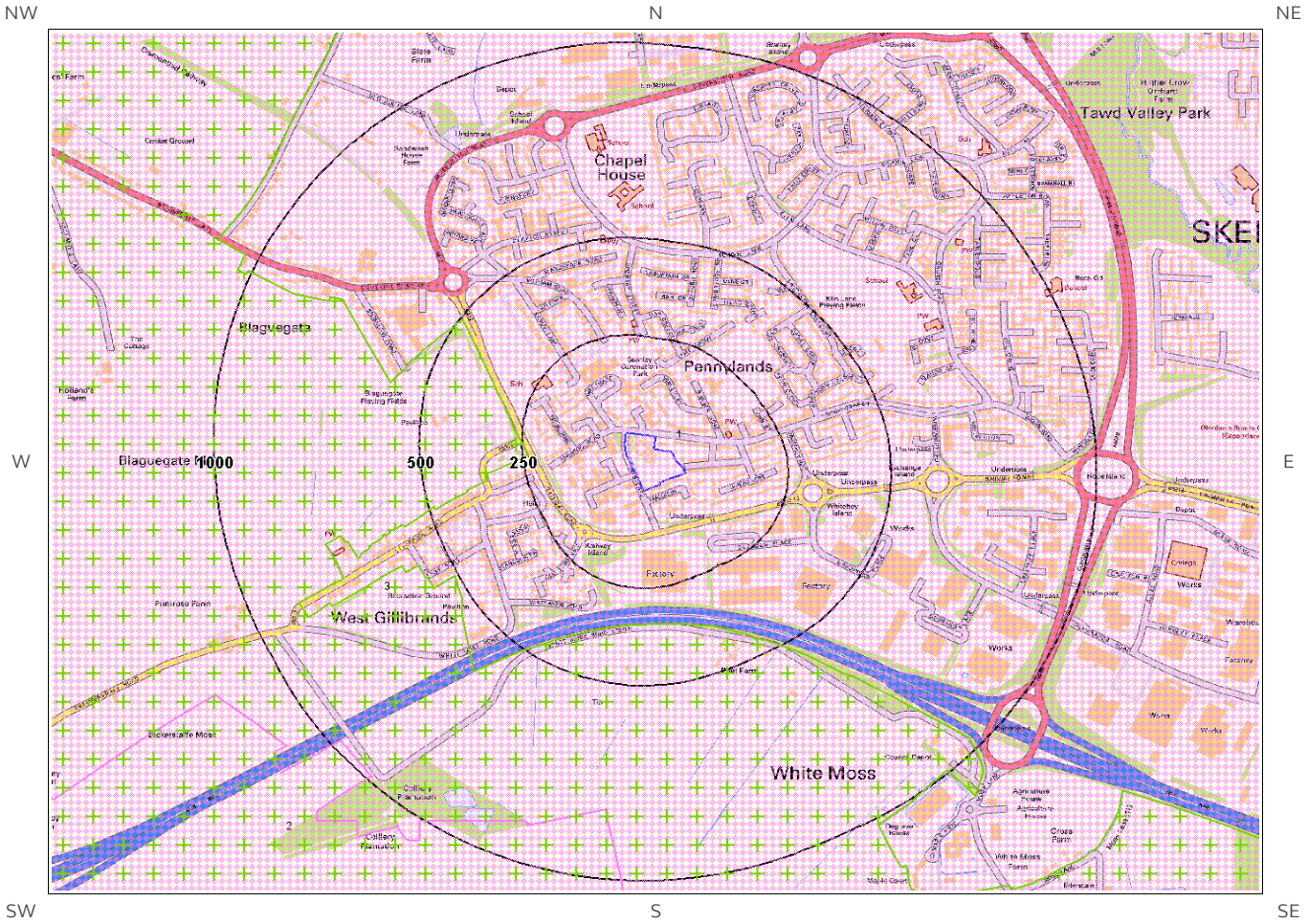
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Low

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



Site Outline

100 / 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?	Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

2

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
2	822	S	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

1

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
3	236	W	Liverpool, Manchester and West Yorks Greenbelt	West Lancashire District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this 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 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 supercede 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. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? Yes

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

emapsite
Telephone: 0118 9736883
sales@emapsite.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: West Lancashire Borough Council
Phone: 01695 577 177
Web: http://www.westlancs.gov.uk/
Address: P O Box 16, 52 Derby Street, Ormskirk, Lancashire, L39 2DF

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-sept-2016

APPENDIX C
BGS Boreholes

HIGHWAY & FOUNDATION SURVEYS LTD.,
BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
SEPTEMBER 1971	5/11:1 0mm	799	HIGH STREET REDEVELOPMENT.	1

Method	Client
SHELL AND AUGER / ROTARY.	SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
					Ft.		
		Shell and Auger. G.L. to 23'0"			222·0		0'0"
20ch	slight 2'0" rising 5'0" sealed 8'0"			FILLED SOIL, BRICKS, ETC.	220·0		2'0"
				DRY BROWN MED. COARSE SAND	218·7		3'3"
		x 3'6" - 5'0"	6	DARK BROWN SAND SLIGHT PEAT TRACES	215·0		5'0"
		U 6'6" - 8'0"	20·6 (8")	SOFT BROWN SANDY BOULDER CLAY TRACES OF OLD ROOTS	213·5		6'6"
		U 11'0" - 12'6"	20·6 (9")	FIRM BROWN BOULDER CLAY	212·0		10'0"
		U 17'0" - 18'6"	89·0	STIFF BROWN BOULDER CLAY.			
		Core Drilling 22'0" to 32'0" (2'6")		WEATHERED GREY SHALE.	201·5		20'6"
				SOFT GREY SHALE WITH SANDY SHALE BANDS.	199·0		23'0"
		32'0" to 39'0" (5'0")		GREY FRACTURED SHALE	197·0		25'0"
20ch		39'0" to 45'0" (2'6")			183·0		39'0"
21st		45'0" to 53'0" (5'0")		GREY FRACTURED SHALE WITH VERY SOFT BANDS.	174·0		48'0"
		53'0" to 63'0" (7'6")		GREY FRACTURED SANDY SHALE	168·0		54'0"
		63'0" to 72'0" (2'0")		GREY FRACTURED SHALE WITH IRONSTONE BANDS.	153·5		69'6"
	50% Water Loss	72'0" to 80'0" (4'6")		COAL, SHALE COLLAPSED WORKING VERY LOOSE DRILLING.	144·0		78'0"
21st.				GREY SHALE	142·0		80'0"

Bore depth
Cased depth
U Undisturbed sample
D Disturbed sample
X Standard penetration test
W Water sample
* Cohesion in kN/sq.m. (Ø is zero unless given in brackets)

HIGHWAY & FOUNDATION SURVEYS LTD., BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
SEPT/OCT. 1971	5ft:1/0mm.	733	HIGH STREET REDEVELOPMENT.	2

Method: SHELL AND AUGER/ROTARY.

Client: SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
					FT.		
		Shell and Auger. G.L. to 28'0"			226.0		0' 0"
28th		U. 3'6" - 5'0"	34.5 (21")	FILLED SOIL, BRICKS ETC.	223.2		2' 9"
		U 8'6" - 10'0"	39.5	FIRM BROWN MOTTLED CLAY	219.5		6' 6"
		U 13'6" - 15'0"	41.0				
		U 18'6" - 20'0"	67.5	STIFF BROWN BOULDER CLAY.			
28th.	DRY.	Core Drilling 28'0" to 37'0" (5'0)			198.0		28'0"
29th		37'0" to 46'0" (6'6")		GREY FRACTURED SANDY SHALE WITH SOFT GREY SHALE BANDS.	185.0		41'0"
		46'0" to 56'0" (8'0)		SOFT GREY SHALE			
					176.5		49'6"
		56'0" to 57'0" (ANL)		DARK GREY SHALE	176.0		52'0"
29th 30th		57'0" to 67'0" (8'0)		COAL, SHALE, FIRECLAY COLLAPSED WORKINGS.			
				GREY SHALE	166.0		60'0"
				COAL	164.0		62'0"
				GREY SHALE	164.0		62'0"
					162.0		64'0"
		67'0" to 72'0" (3'6")		DARK GREY SHALE WITH COAL	159.0		67'0"
		72'0" to 77'0" (5'0)		GREY SHALE WITH BANDS OF SANDY SHALE.			
		77'0" to 81'0" (2'6")					
		81'0" to 85'0" (3'6")					
30th		85'0" to 87'0" (2'0")			143.0		83'0"
1st		87'0" to 90'0" (2'0")		GREY FRACTURED SANDSTONE.	139.0		87'0"
		90'0" to 91'0" (1'0")		FRACTURED GREY SANDY SHALE	136.0		90'0"
	92'0" Complete water loss.	91'0" to 96'0" (4'6")		GREY FRACTURED SANDSTONE	134.5		91'6"
1st 2nd		96'0" to 100'0" (4'0)		FRACTURED GREY SANDY SHALE			
2nd					126.0		100'0"
				END OF BORE.			

Bore depth — Cased depth

U Undisturbed sample
D Disturbed sample
X Standard penetration test
W Water sample

* Cohesion in kN/sq m. 0 is zero unless given in brackets

HIGHWAY & FOUNDATION SURVEYS LTD., BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
SEPTEMBER 1971	5ft:1inch	739	HIGH STREET REDEVELOPMENT.	3

Method	Client
SHELL AND AUGER / ROTARY	SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
					O.D.		
		Shell and Auger G.L to 26'0"			225.0		0'0"
21st				FILLED SOIL, BRICKS, ETC.	223.0		2'0"
	slight 6'6" soaked 10'0"	X 3'6" - 5'0"		LIGHT BROWN MED. SAND.			
		X 6'6" - 8'0"		SOFT BROWN SANDY BOULDER CLAY	217.5		7'6"
		U 9'0" - 10'6"	69.5		216.0		9'0"
		U 16'0" - 18'6"	132.0	STIFF BROWN BOULDER CLAY			
		U 18'6" - 20'0"	141.2				
	small 2@1'0"	Core Drilling 26'0" - 35'0" (2'0")		LIGHT GREY SHALE	200.5		24'6"
					199.0		26'0"
		35'0" to 40'0" (1'0")		FRACTURED GREY SHALE WITH VERY SOFT BANDS. VERY LOOSE 30'0" - 38'0"			
		40'0" to 45'0" (2'0")					
21st					183.0		42'0"
24th		45'0" to 52'6" (3'6")		FRACTURED GREY SANDSTONE	179.0		46'0"
		52'6" to 68'0" (3'6")		FRACTURED GREY SANDY SHALE WITH SOFT BAND GREY SHALE	172.5		52'6"
				FRACTURED DARK GREY SHALE			
		68'0" to 70'0" (2'0")			161.0		64'0"
				COAL	158.5		66'6"
24th		70'0" to 76'0" (4'0")		DARK GREY SHALE			
25th					150.5		70'6"
				COAL AND SHALE COLLAPSED WORKINGS.	150.5		76'6"
25th				LIGHT GREY SHALE	149.0		76'0"

Bore depth — U Undisturbed sample — X Standard penetration test
Cased depth — D Disturbed sample — W Water sample
* Cohesion in kN/sq.m., Ø is zero unless given in brackets

HIGHWAY & FOUNDATION SURVEYS LTD.,
BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
OCTOBER 1971	5ft :10mm	799	HIGH STREET REDEVELOPMENT.	4

Method	Client
SHELL AND AUGER/ROTARY	SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
					Ft		
		Shell and Auger G.L. to 32'6"			230·0		0'0"
5th				FILLED SOIL, ASH, ETC.	228·7		1'3"
				CLAYEY SOIL FILL.	227·5		2'6"
	Small 7'3"	U 3'6" – 5'0" No Recovery					
		U 5'6" – 7'6" Unsuccessful					
		X 7'6" – 9'0"	9	VERY SANDY MOIST MOTTLED CLAY WITH MOIST SAND BANDS.			
	Seepage 12'6"	X 10'6" – 12'0"	12	CHANGING TO WET SILTY CLAYEY SAND WITH BANDS OF BOULDER CLAY	217·5		12'6"
		U 14'0" – 15'6"	71·5				
		U 19'0" – 20'6"	85·0	FIRM SILTY SANDY BOULDER CLAY WITH THIN MOIST SAND BANDS.			
		Core Drilling 32'6" to 38'0" (NX)		FIRM SANDY BOULDER CLAY	200·0		30'0"
5th				SLIGHTLY SHALEY	197·5		32'6"
9th				VERY SOFT GREY SHALE WITH COAL TRACES	196·0		34'0"
		38'0" to 42'0" (1'0")		VERY SOFT GREY SHALE WITH IRONSTONE BANDS.			
		42'0" to 47'0" (4'0")		FRACTURED BLACK SHALE	188·0		42'0"
				COAL	186·0		44'0"
7th		47'0" to 55'0" (4'0")			186·5		46'6"
11th				DARK GREY SHALE AND FIRECLAY			
				COAL, SHALE, FIRECLAY COLLAPSED WORKINGS.	179·5		50'6"
		55'0" to 65'0" (9'0")			176·0		54'0"
				FIRECLAY AND SOFT SHALE	173·0		57'0"
		65'0" to 71'0" (5'0")		GREY SANDY SHALE WITH SOFT GREY SHALE BANDS.			
		71'0" to 76'0" (2'6")			159·0		71'0"
		76'0" to 85'0" (7'6")		FRACTURED GREY SANDY SHALE WITH BANDS OF GREY SANDSTONE			
11th					165·0		85'0"

Bore depth — U Undisturbed sample — X Standard penetration test
Cased depth — D Disturbed sample — W Water sample
* Cohesion in kN/sq.m.. Ø is zero unless given in brackets

HIGHWAY & FOUNDATION SURVEYS LTD., BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
CTOBER 1971	5ft:1inch	739	HIGH STREET REDEVELOPMENT	5

Method	Client
SHELL AND AUGER / ROTARY	SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
		Shell and Auger G.L. to 3'0"			227.0		0'0"
2nd		U 3'6" to 5'0"	81.5	FILLED SOIL ETC.	224.5		2'6"
		U 6'6" to 10'0"	117.0	STIFF BROWN MOTTLED CLAY	219.5		7'6"
		U 13'6" to 15'0" No recovery U 15'0" to 18'0"	34.5 (11")				
		U 18'6" to 20'0"	54.5	STIFF BROWN BOULDER CLAY			
2nd							
4th.		Core Drilling 31'0" to 41'0" (9'0")			198.5		28'6"
				VERY SOFT GREY SHALE.	196.0		31'0"
		41'0" to 48'0" (3'6")		LOOSE GREY SHALE, FIRECLAY, COAL, COLLAPSED WORKINGS. VERY LOOSE DRILLING.			
		48'0" to 53'0" (4'6")			179.0		48'0"
		53'0" to 58'6" (4'0")		GREY SANDY SHALE WITH BAND SOFT GREY FRACTURED SHALE.			
		58'6" to 64'6" (5'6")					
		64'6" to 70'0" (3'0")			160.0		63'0"
				FRACTURED GREY SANDSTONE	161.5		65'6"
		70'0" to 75'0" (4'6")		FRACTURED GREY SANDY SHALE BANDS OF SOFT GREY SHALE AND IRONSTONE.			
4th		75'0" to 79'6" (4'6")					
5th		79'6" to 85'0" (5'0")					
		85'0" to 94'0" (8'6")			102.0		85'0"
				FRACTURED GREY SANDSTONE			
		94'0" to 98'0" (4'0")			133.0		94'0"
5th				FRACTURED DARK GREY SHALE	129.0		98'0"
				END OF BORE.			

Bore depth — U Undisturbed sample — X Standard penetration test
Cased depth — D Disturbed sample — W Water sample
* Cohesion in kN/sq m Ø is zero unless given in brackets

HIGHWAY & FOUNDATION SURVEYS LTD.,
BROOK LANE, PEMBERTON, WIGAN, LANCS.

BOREHOLE RECORD SHEET

Date	Scale	Job No.	Location	Borehole
OCTOBER 1971	5ft.:10mm	799	HIGH STREET REDEVELOPMENT	6

Method	Client
SHELL AND AUGER / ROTARY.	SKELMERSDALE DEVELOPMENT CORP.

Drilling & Casing Progress	Water Notes & Levels	Sample Type & Depths	S.P.T. 'N' value or Cohesion*	Description	O.D. Level	Legend	Depth
		Shell and Auger G.L. to 31'0"			Ft		
4th				STONE SETS	230.0 229.5		0'0" 0'6"
				FILLED ASH	228.0		2'0"
				MOIST VERY SANDY MOTTLED CLAY	227.0		3'0"
		U 3'6" to 5'0"	56.5	FIRM SANDY SILTY MOTTLED CLAY	224.0		6'0"
		U 8'6" to 10'0" U 13'6" to 15'0" No Recovery U 15'0" to 16'6" U 18'6" to 20'0"	114.0 (50 0) 69.5	FIRM SANDY BOULDER CLAY SLIGHTLY SILTY WITH MOIST SAND BANDS.	202.0		28'0"
4th 6th		Core Drilling 31'0" to 35'0" (NIL)		DARK CLAYEY SHALE WITH PIECES OF COAL.	199.0		31'0"
6th		35'0" to 42'0" (3'0") 42'0" to 45'0" (1'0") 45'0" to 55'0" (1'0")		COAL, SHALE, FIRECLAY VERY LOOSE DRILLING COLLAPSED WORKINGS.	185.0		45'0"
7th.				COAL	184.0		46'0"
		55'0" to 57'0" (2'0")		VERY SOFT GREY FIRECLAY AND SHALE, BANDS OF IRONSTONE.	175.0		55'0"
7th 8th		57'0" to 62'0" (5'0") 62'0" to 69'0" (5'0")		FRACTURED DARK GREY SHALE WITH BANDS OF IRONSTONE	167.0		63'0"
		69'0" to 75'0" (6'0")		FRACTURED GREY SANDY SHALE	162.0		72'0"
		75'0" to 85'0" (10'0")		GREY SANDSTONE	159.5		74'6"
		85'0" to 95'0" (9'6")		FRACTURED GREY SANDY SHALE	141.0		89'0"
		95'0" to 100'0" (4'8")		FRACTURED DARK GREY SHALE	133.0		97'0"
8th.				GREY SANDSTONE	130.0		100'0"
				END OF BORE.			

Bore depth — U Undisturbed sample — X Standard penetration test
Cased depth — D Disturbed sample — W Water sample
* Cohesion in kN/sq.m.. Ø is zero unless given in brackets

APPENDIX D
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:

- CLR11 – 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 E
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

CLR11 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. Under CLR11, three tiers of risk assessment exist - Preliminary, Generic Quantitative and Detailed Quantitative.

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 F
Frequency and Duration of Gas Monitoring

Ground Gas Guidance

Redevelopment on brownfield sites is an ever increasing occurrence, including those sites where a potential ground gas issue is present.

CIRIA C665 is the current guidance which gives up-to-date advice on all aspects of ground gas. It outlines good practice in investigation, the collection of relevant data and monitoring programmes in a risk-based approach to gas contaminated land. Two semi-quantitative methods are set out for the assessment of risk:

1 For low rise housing with a ventilated under floor void at minimum 150 mm (Boyle and Witherington);
2 For all other development types (Wilson and Card).

Both methods use the concept of Gas Screening Values (GSVs) to identify levels of risk. The mitigation and management of potentially unacceptable risk is described with reference to both passive and active systems of gas. Source removal is also discussed as an option.

CIRIA C665 and the advice it contains has been prepared to be generally consistent with CLR11 *Model Procedures for the management of land contamination* (Defra and Environment Agency, 2004a). The aim of CIRIA C665 is a consistent approach to decision making, particularly relating to the scope of protective design measures on a site specific basis.

Legislative Framework

CIRIA C665 provides technical guidance however also recognises the context into which the guidance has to be employed. Government policy is based upon a "suitable for use approach", which is relevant to both the current and proposed future use of land. When considering the current use of land, Part IIA of the Environment Protection Act 1990 provides the regulatory regime. The presence of hazardous ground gases could provide the "source" in a "pollutant linkage" which could lead the regulator to determine that considerable harm or there is a significant possibility of such harm being caused. Under such circumstances, the regulator would determine the land to be "contaminated land" under the provisions of the Act, setting out the process of remediation as described in the DETR Circular 02/2000 *Statutory guidance on contaminated land* (DETR, 2000a).

Frequency and Duration of Monitoring

The monitoring period for a specific site covers the "worst case" scenario. A "worst case" scenario will occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall, frost and dry weather.

The benefits of the additional information and whether it is likely to change the scope of gas protection should be considered, as are the consequences of failing to characterise adequately pollutant linkages. Investigations concerned with soil gas are required to provide monitoring data sufficient to allow prediction of worst case conditions enabling the confident assessment of risk and subsequent design of appropriate gas protection schemes. Monitoring programmes should not be an academic exercise in data collection.

Below are matrices that will aid in determining an appropriate number of gas monitoring visits and the length of monitoring period.

Typical/idealised periods of monitoring

		Generation of Potential Source				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Sensitivity of Development	**Low (Commercial)**	1 month	2 months	3 months	6 months	12 months
	Moderate (Flats)	2 months	3 months	6 months	12 months	24 months
	High (Residential with Gardens)	3 months	6 months	6 months	12 months	24 months

Typical/idealised frequency of monitoring

		Generation of Potential Source				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Sensitivity of Development	**Low (Commercial)**	4	6	6	12	12
	Moderate (Flats)	6	6	9	12	24
	High (Residential with Gardens)	6	9	12	24	24

Note

1 NHBC guidance also recommends this period of monitoring (Boyle and Witherington, 2007).
2 There is no industry consent over "high", "medium" or "low" generation potential of source.
3 At least two sets of readings should be at low and falling atmospheric pressure (but not restricted to periods below <1000 mb) known as worst case conditions. Historical data can be used as part of the data set (Table 5.5b).

It is recommended that newly installed monitoring wells are left for 24 hours to allow the soil gas to reach equilibrium. It should be recognised, however, that some soil gas regimes could take considerably longer (up to seven days). Interpretation of any initial readings should take this equilibrium process into account.

APPENDIX G
Limitations

Standard Limitations

This desk study report was conducted and has been prepared for the sole internal use and reliance of the Client, Aldi Stores Limited. This report shall not be relied upon or transferred to any other parties without the express written authorisation of BSL. If an unauthorised third party comes into possession of this report they rely on it at their risk and the authors owe them no duty of care or skill.

The findings and opinions conveyed via the desk study are based on information obtained from a variety of sources as detailed within this report, which BSL believes are reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

Any recommendations made in this report should be confirmed with the Regulatory bodies and Planning Authority prior to implementation to ensure compliance.

No existing manhole covers were lifted or drainage runs inspected during the course of this ground investigation.

The site plans enclosed in this report should not be scaled off.