PHASE I DESK STUDY REPORT FOR SUREGROW GARDEN CENTRE, COLLINS INDUSTRIAL ESTATE, MERTON BANK ROAD, ST. HELENS,WA9 1HY

23-10-01 Revision 0

REPORT STATUS: Final

October 2023

Prepared for

JMBC Ltd

This report has been prepared under the framework of ISO 9001:2015

Prepared by

Demeter Environmental Ltd

Liverpool Office:
Ropewalks, 301 Tea Factory
St Peters Square, Fleet Street
Liverpool, L1 4DQ
Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton, East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Website: http://www.demeter-environmental.co.uk

DOCUMENT ISSUE FORM

Client:	CL1234
Project Title:	Phase I Desk Study Report for Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens,WA9 1HY
Reference Number:	23-10-01
Prepared by:	Paul Hadjikyriacou MPhil MPhys MRes(Contaminated Land Management) MInstP
	[redacted]
Walkover Survey Undertaken by:	Despo Hadjikyriacou BEng(Hons) BSc(Hons) PGDip MInstP
	[redacted]
Reviewed by:	Despo Hadjikyriacou BEng(Hons) BSc(Hons) PGDip MInstP
	[redacted]
Approved by:	Paul Hadjikyriacou MPhil MPhys MRes(Contaminated Land Management) MInstP
	[redacted]
For and behalf of Demeter Environmental Ltd	
Date:	October 2023
Revision Number:	0
Comments:	N/A
Status:	Final
Distribution:	Lynwoods Building Consultancy - electronic copy

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EXECUTIVE SUMMARY

A Phase I Desk Study Report (which includes a preliminary risk assessment) was required by St Helens Metropolitan Borough Council under Part 2A of the Environmental Protection Act 1990, the Contaminated Land (Wales) Regulations, 2006 (as amended), regulations associated with radioactivity on contaminated land and the Guidance on 'Land contamination risk management (LCRM). This report is required to support the planning application for the site. St Helens Metropolitan Borough Council requires the report to satisfy the National Planning Policy Framework in which it is stated that:

1. "a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

2. "after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990"; and

3. "adequate site investigation information, prepared by a competent person, is available to inform these assessments."

In order to support the planning application for the site, JMBC Ltd commissioned Demeter Environmental Ltd to undertake a Phase I Desk Study Report (which includes a preliminarily risk assessment) at Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY, to support the planning application for the erection of a number on commercial units.

The report has been completed to fulfil the requirements of a preliminary risk assessment in accordance with and the Guidance on 'Land contamination risk management (LCRM)'. and the documents referred to in Appendix A.

These procedures relate to 'past' contamination, and assume that legislative controls such as Pollution Prevention and Control authorisations control current potentially polluting activities. Emphasis is therefore upon historic site use and how this may affect potential future users of the site should the proposed development plans be realised.

The project has been carried out within the existing legislative framework, which is outlined in Appendix B.

It should be noted that the table below only offers a brief summary of the information presented in this report and is for briefing purposes only. Reference should be made to the main report for detailed analysis undertaken.

Table 1: Executive Summary

	SUBJECT		DATA
SITE INFORMATION AND SETTING	Client		JMBC Ltd
	Site		Suregrow Garden Centre
	Site location		Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY
	Proposed development		It is proposed that a number of commercial units are erected on the site.
	Planning Reference		N/A
	Grid Reference		352285E 396197N
	Current Land Use		Cleared commercial plot
	Access		Via Merton Bank Road
CONCEPTUAL SITE MODEL	History		Initially (1849) the site formed part of a reservoir with the southern area being open land, by 1892 the reservoir had been in-filled. Excavations were noted on the 1926 map and were identified up to the 1947 map. The site was developed between 1965 and 1970 when a building was present on the southern area of the site which was identified as a works on the 1990 map with two additional buildings present on the site. The 2001 aerial plate indicated the site was used to store vehicles. Street level imagery indicates the site was occupied by Suregrow Garden Centre from prior to the April 2009 image with the site becoming vacant between November 2021 and November 2022.
	Geology	Drift	Deposits of made ground are present under the site and the surrounds. The drift geology is given as alluvium with Devensian Clay on the south western boundary.
		Solid	The solid geology is given as the Pennine Middle Coal Measures Formation (mudstone, siltstone and sandstone) of the Westphalian Epoch. An inferred coal seam outcrops under the site.
	Radon		The property is in a Radon Affected Area, as between 10% and 30% of properties are above the Action Level. Full radon protective measures are necessary.
	Hydrology		The Sankey Canal is approximately 56m E of the site, which is a very low sensitivity water body. There are a further 3 water bodies within 250m all of which are very low sensitivity water bodies.
	Hydrogeology	Drift	The drift is regarded as a very low sensitivity aquifer
		Solid	The solid is regarded as a very low sensitivity aquifer
	Previous Site Investigation		N/A
	Potential Sources of Contamination		Made Ground Made ground / in-filled land <250m Alluvium
	Potential Contaminants of Concern		Wide range of contaminants in the made ground (if present) Ground gases (CO2, CH4, H2S, CO)
	Potential Receptors		Human beings (construction workers) Human beings (future worker occupants) Human beings (trespassers / transient users) Property in the form of buildings (on site) Potable water mains (on site)
Proposed Phase II Works			See Table 15. Summarised overleaf.

Table 1 (continued): Executive Summary

PPL ID	AIM(S) / OBJECTIVES(S)	Proposed Further Investigation
N/A	Enabling works	Prior to any intrusive investigation the following will need to be undertaken in order to access the site; 1. Approval from the local authority on the scope of the proposed works; 2. Completion of demolition works; 3. Removal of any ACM's (asbestos contaminating materials) from the site; 4. Removal of tanks and infrastructure and subsequent validation of the removal;
N/A	Sequence of works	The works in sequence is given below.
2, 3, 4, 5	To determine if made ground is present on the site and if present, is it impacted by elevated levels of contamination:	DETAILED INVESTIGATION: Based on the size of the site (0.27Ha) it is proposed that an initial exploratory investigation based on a non-targeted regular herringbone sampling grid of 25m is proposed, which equates to approximately 5 positions (dynamic sampling boreholes). Additional positions will be incorporated into the exploratory investigation if additional information is required to delineate the areas of made ground. Selective spot samples will be taken where there is any visual or olfactory evidence of contamination. The first sample of natural soils will be taken as close as possible to the boundary with the anthropogenic ground (approximately 0.25m to 0.5m into natural ground). Disturbed spot samples will be taken in each layer and at fixed intervals of 0.5m as well as within ground to reflect any identifiable changes in appearance. Sampling depths will take into account any proposed changes in levels (if information is available). Where encountered spot samples of the made ground will be taken as well as spot samples of the natural soils form below the made ground natural soils interface. Additional samples will be taken where there is visual or olfactory evidence of contamination. Samples of made ground will be analysed to the suite in Table 14, initially a maximum of 5 samples will be analysed (targeted towards areas of gardens/landscaping), the remaining samples will be subject to chemical analysis if any exceedances are recorded (e.g., all made ground samples will be analysed for lead if exceedances of lead are recorded). Samples of the natural strata will be subject to chemical analysis at the locations where exceedances have been recorded. All work should be undertaken by a suitably experienced geoenvironmental engineer.
6, 7, 8	To determine if the site is impacted by ground gases	The gas generation potential of the in-filled land underlying the site and the alluvium can is regarded as very low. Using the guidance in CIRIA C665 (Table 5.5a and 5.5b), based on a low sensitivity land use and the highest gas generation potential the monitoring period/frequency should be 4 visits over 1 month. The nominal spacing of the monitoring should be 50m (based on the highest gas generation potential and sensitivity of the development – Table 4.2 of CIRIA C665), which for this equates to 3 monitoring installations. The response zones will be determined based on the recorded site geology at each location.

This sheet is intended as a summary of the report; it does not provide a definitive analysis and should not be treated as an independent document.

1.0 INTRODUCTION

1.1 Desk Study Terms of Reference

1.1.1 This report presents the results of a Phase I Desk Study carried out within the grounds of Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens,WA9 1HY, performed for JMBC Ltd. This report was written in October 2023 and should be read in the light of any subsequent changes in legislation, statutory requirements or industry practices.

1.1.2 The works were carried out in accordance with the standard terms of contract of Demeter Environmental Ltd.

1.1.3 The aim of the report is to support the planning application for the site.

1.1.4 This report has been prepared in accordance to the Demeter Environmental Limited Quality Management System.

1.2 Aims and Objectives of Desk Study

1.2.1 The objectives of the desk study are as follows:

- To provide information on past and current uses of the site and surrounding area and the nature of any hazards and physical constraints;
- To determine the risks associated with hazardous ground gas, including radon;
- To identify current and likely future receptors, potential sources of contamination and likely pathways and any features of immediate concern, including those that could be introduced in the future;
- To identify any aspect of the site requiring immediate attention (e.g., insecure fences, hazardous substances accessible to trespassers or likely to be dispersed by water or wind);
- To provide information on the geology, geochemistry, soil, hydrogeology and hydrology of the site;
- To identify potentially different sub-areas (zones) of a site, based on differing ground conditions; potential contamination; and past, present and future uses;
- To provide information for the preliminary risk assessment;

- To provide data to assist in the design of potential subsequent exploratory and detailed investigations and to give an early indication of possible remedial requirements;
- To provide information relevant to worker health and safety and to the protection of the environment during field investigations;
- To provide data to assist in the design of potential subsequent investigations and to give early indication of possible remedial requirements;
- To identify the need to involve regulatory bodies prior to intrusive investigation.

1.2.2 The primary objective of the desk study is to identify potential environmental issues that may represent a constraint to the proposed redevelopment of the site. The findings of this assessment can be used to determine, if required, the scope of a follow on Phase II intrusive site investigation.

1.2.3 The desk top study provides an initial view in respect of the status of the site with regard to:

- The potential impact on the site of interest from surrounding land uses and other environmental factors;
- Potential contamination of the site strata by historical and or current use;
- The potential impact on the wider environment by historical and or current use of the site of interest;
- Potential problems associated with geological features such as faulting, mineral extraction, mining and land instability;
- The location of above-surface features that may affect the proposed redevelopment.

1.2.4 This study includes a review of the available geological, historical and environmental information in order to establish the likely ground conditions at the site. The review is based on the following information:

- Align any report to the requirements of relevant guidance;
- To assess historical activities, referring to past Ordnance Survey maps, at the site with respect to their potential impact on the site environment;

- To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities;
- To assess historical and current surrounding land use, referring to past Ordnance Survey maps, in relation to known or potential off-site contamination issues that may impact the subject property;
- To identify likely ground conditions at the site and the potential geotechnical and environmental constraints to development;
- To establish development abnormals prior to site development;
- Assessment of the potential risks to both on and off site receptors;
- To develop a preliminary conceptual model.

1.2.5 The data collated in this study has been undertaken to allow the construction of a preliminary conceptual model, which represents the potential contaminant linkages that have been identified on the site. This is used as a basis to develop a strategy for an intrusive investigation where required.

1.3 Scope of Desk Study

1.3.1 The scope of work for this report comprises of the following:

- Procurement of Groundsure Enviro+Geo Insight Report;
- Procurement of Ordnance Survey maps;
- Review of published geology;
- Review of data available in the public domain (borehole section sheets etc.);
- Review of planning history and any associated documents using information in the public domain;
- Site walkover survey;
- Preparation of a preliminarily risk assessment.

1.4 Basis of Risk Assessment

1.4.1 This assessment has been undertaken with due regard to the Environmental Protection Act 1990, associated statutory guidance (NPPF, PAN 33 etc.), 'Guidance for the Safe

Development of Housing on Land Affected by Contamination', the Guidance on 'Land contamination risk management (LCRM)', the Contaminated Land Guidance Documents issued by the Environment Agency and the documents referred to in Appendix A. The methods used follow a risk based approach with the potential risk assessed using the 'Source – pathway – receptor contaminant linkage concept introduced by the Environmental Protection Act.

1.5 Limitations and Exceptions of this Report

1.5.1 This report was undertaken for JMBC Ltd at the request of Lynwoods Building Consultancy and as such should not be entrusted to any third party without written permission of Demeter Environmental Ltd.

1.5.2 No other third parties may rely upon, use or reproduce the contents of this report without the written permission of Demeter Environmental Ltd. If any unauthorised third party comes into possession of this report they rely on it at their own risk and the authors do not owe them any duty of care or skill.

1.5.3 Except as otherwise requested by JMBC Ltd, Demeter Environmental Ltd is not obliged and disclaims any obligation to update the report for events taking place after:

a) The date on which this assessment was undertaken;
b) The date on which the final report is delivered.

1.5.4 This report has been compiled from a number of sources, within the time constraints of the programme, which Demeter Environmental Ltd believes to be trustworthy. However Demeter Environmental Ltd is unable to guarantee the accuracy of information provided by third parties.

1.5.5 The findings and opinions provided in this document are made in good faith and are based on data provided by third parties (Groundsure, Environment Agency, The Coal Authority, and Regulatory Bodies) and the report should be read in conjunction with the limitations on the document control form. The accuracy of map extracts cannot be guaranteed and it should be recognised that different conditions on /adjacent to the site may have existed between and subsequent to the various map surveys.

1.5.6 This report is prepared and written in the context of the purposes stated above and should not be used in a different context. Furthermore, new information, improved practices and legislation may necessitate an alteration to this report in whole or in part after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of this Report, the report should be referred to Demeter Environmental Ltd for reappraisal.

1.5.7 The conclusions and recommendations of this report are based on the development described in Clause 2.2, for any other development the report may require revision.

1.5.8 Demeter Environmental Ltd makes no representation whatsoever concerning the legal significance of its findings or to other legal matters referred to in the following report.

1.5.9 All of the comments and opinions contained in this report, including any conclusions, are based on the information obtained by Demeter Environmental Ltd. The conclusions drawn by Demeter Environmental Ltd could therefore differ if the information obtained is found to be misrepresentative, inaccurate, or misleading. Demeter Environmental Ltd reserves the right to amend their conclusions and recommendations in the light of further information that may become available.

1.5.10 The report should be read in its entirety, including all associated drawings and appendices. Demeter Environmental Ltd cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

1.5.11 This report does not comprise a geotechnical assessment of the strata underlying the site.

1.5.12 Any borehole data from the British Geological Survey sources is included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation'.

1.5.13 The copyright in this report and other plans and documents prepared by Demeter Environmental Ltd is owned by them and no such report; plan or document may be reproduced, published or adapted without prior written consent.

1.5.14 Complete copies of this report may be made and distributed by the Client as an expedient way in dealing with matters related to its commission.

1.5.15 Any risks identified in a Phase I Desk Study Report are perceived risks. Actual risks can only be assessed following a physical investigation of the site. JMBC Ltd should be aware that this report is based on information available at the time. Where a site investigation has been undertaken, the ground conditions can only be defined precisely at the exploratory positions, whilst an intermediate positions they can only be inferred. It is possible that factors may vary due to seasonal effects or other climatic effects, and may at times differ from those measured during the investigation. While every attempt is made to assess the likelihood and extent of such variations, conditions may nevertheless exist which are undisclosed by this investigation.

1.5.16 The findings of this report are based on finite information obtained from research and consultations. Demeter Environmental Ltd cannot guarantee the reliability of all such information and the searches should not be considered exhaustive. The findings of the report may need to be reviewed as any future exploratory investigations progress and in the event that additional archive information becomes available.

1.5.17 Notwithstanding the findings of this study (and any subsequent investigations), if any indication of contaminated soil (visual or olfactory) is encountered at any stage of the development further investigation may be required.

1.5.18 Arboricultural Survey and advice on arboricultural issues are considered to be outside the scope of this report except for their effect on the foundations to the proposed buildings. Where identification of any species is made, especially invasive plants such as Japanese Knotweed, Himalayan Balsam or Giant Hogweed, this should only be considered as a preliminary assessment and subject to confirmation by a professional Arboriculturist. Demeter Environmental Ltd takes no responsibility for failing to identify, or the incorrect identification of, any tree or plant species on site.

1.5.19 Our investigations exclude surveys to identify the presence injurious and invasive weeds. Under the Weeds Act 1959, the Secretary of State may serve an enforcement notice on the occupier of land on which injurious weeds are growing, requiring the occupier to take action to prevent the spread of injurious weeds. The Weeds Act specifies five Injurious weeds: Common Ragwort, Spear Thistle, Creeping of Field Thistle, Broad-leaved Dock and Curled Dock. The Wildlife and Countryside act 1981 provides the primary controls on the release of non-native species into the wild in Great Britain. It is an offence under section 14(2) of the act to 'plant or otherwise cause to grow in the wild' any plants listed in schedule 9, part II. The only flowering plants currently listed are Japanese Knotweed and Giant Knotweed. The presence of such weeds on site may have considerable effects on the cost / timescale in developing the site.

1.5.20 Good guidance on injurious and invasive weeds is provided on DEFRA and Environment Agency web sites.

1.5.21 Our investigations exclude surveys to identify the presence or indeed absence of asbestos in buildings/infrastructure on site. If asbestos is suspected to be present, we recommend specialists in the identification and control / disposal of asbestos are appointed prior to commencement of any works on site or, if appropriate, purchase of the site. The presence of asbestos on site may have considerable effects on the cost / timescale in developing the site. There is good guidance in relation to Asbestos available on the Health and Safety Executive (HSE) web site.

1.5.22 The scope of this investigation does not include an assessment for the presence of asbestos containing materials within or below the buildings or in associated infrastructure in the ground at the site. Should there be a requirement under Regulation 4 of the Control of Asbestos at Work Regulations 2002 for any part of the site to be deemed 'non-domestic premises' the duty holders should prepare an asbestos risk management plan and this may require technical survey works as described in the HSE Guidance HSG264 (2nd edition).

1.5.23 The Health and Safety at Work Act requires that Employers provide safe places of work for their employees. The Control of Asbestos at Work Regulations (CAWR) place very heavy specific duties on those who commission and carry out work on asbestos containing materials. Construction work that is likely to involve exposure of workers to hazards associated with asbestos in existing buildings will be subject to the Construction (Design and Management) Regulations which impose duties upon Clients, Designers and the Contractors carrying out the work. Other health and safety and welfare regulations place duties on Employers to undertake risk assessments and prepare hazard management plans which, in the case of a building likely to contain asbestos, could involve the commissioning of surveys, hazardous materials location registers and proposals for remedial work.

1.5.24 Whilst a site walkover has been undertaken as part of this report, the survey does not constitute either an asbestos or structural survey and all areas of the site may not have been visited / inspected.

1.5.25 Consideration of occupational health and safety issues are beyond the scope of this report.

1.5.26 All assessments and recommendations should be forwarded to the relevant planning authorities for comment and approval prior to implementation.

1.6 Principal Sources of Information

1.6.1 Documents that were available or have been obtained for reference or obtaining data are given in Appendix A. Further information on data used in this report and dates the data was obtained/accessed is given below:

Table 2: Summary of Information Obtained

Source	Data Provided	Date Obtained
Groundsure	Ordnance Survey Maps Groundsure Enviro+Geo Report	12th October 2023
St Helens Metropolitan Borough Council	Planning history	12th October 2023
British Geological Survey	1:50,000 Geological Maps 1:10,000 Geological maps Borehole Section sheets	12th October 2023
Environment Agency	Historic Landfill Data Authorised Landfills	12th October 2023
MAGIC Database	Nitrate Vulnerable Zones Groundwater vulnerability Drinking Water Safeguard Zones Groundwater Source Protection Zone	12th October 2023
Coal Authority	Various	12th October 2023
Google Earth©	Aerial plates 3D Imagery	12th October 2023
Google Streetview©	Street level imagery	12th October 2023

2 SITE CONTEXT

2.1 Site Location

2.1.1 The site is located off Merton Bank Road, the approximate grid reference is 352285E 396197N, as shown on Drawing 1 and Plate 2 in Appendix D.

2.1.2 The site is located within the administrative jurisdiction of St Helens Metropolitan Borough Council.

2.2 Proposed Development

2.2.1 It is proposed that a number of commercial units are erected on the site. The proposed site development plan is shown on the Lynwoods drawings in Appendix D.

2.3 Site Description & Site Reconnaissance Visit

2.3.1 The aims of the walkover were to determine whether there were any obvious potential sources of contamination, pathways and receptors on or near the site and whether there were any obvious geotechnical difficulties with the site. In addition, access routes into the site were investigated in order to establish the feasibility of further site investigation.

2.3.2 A site walkover survey was undertaken in October 2023 by a consultant from Demeter Environmental Ltd, in general accordance with CLEA CLR 2, on completion of a review of relevant historical and environmental data. The observations of the walkover are presented hereunder:

Table 3: Summary of Walkover Survey

Topic		Discussion
Site Description / Use		The site extended to an area of approximately 0.27Ha and the site topography was approximately level. At the time of the survey the site had been cleared (apart of a building comprising of a toilet was present on the southern area of the site. The majority of the site comprised of concrete hard-standing with exposed soils on the north western corner of the site and an overgrown landscaped area on the southern boundary. At the time of the survey the majority of the site was covered by standing water. Evidence of made ground (rare inclusions of brick and glass) was noted on the north western area. No visual or olfactorily evidence of contamination was noted during the walkover survey.
Description of surrounding area		Commercial
Surrounding Land Uses	North	Commercial
	East	Commercial
	South	Commercial
	West	Commercial
Access		Via Merton Bank Road
Structures		A small single storey toilet building was present on the southern area of the site.
Surfacing		The majority of the site was converted by hard-standing, the site soils were exposed on the north western corner of the site.
Made Ground		Whilst made ground was not directly observed it is likely to be present on the site.
Storage Tanks		No evidence of either historical or current underground or aboveground storage tanks was noted at the site.
Raw Material and Chemical Use and Storage		No evidence of significant raw material or chemical use or storage was observed at the site.
Solid Wastes		No significant observations were made of solid waste storage at the site.
Hazardous and Industrial Wastes		No evidence of significant hazardous and industrial waste storage was observed at the site.
Air Emissions		No significant sources of air emissions were observed at the site.
Spills and Releases		No evidence of any spills or releases of substances which may contain potentially polluting materials was noted at the site.
Fly Tipping		Tyres were noted on the southern boundary of the site.

2.3.3 A plan of the site in its current configuration is presented on Drawing 3 in Appendix D.

2.3.4 Photographs of the site and a photograph key plan are presented in Appendix E.

3 SITE HISTORY

3.1 Historical O.S. Maps, Aerial Plates and Street View Images

3.1.1 The historical usage of both the site and the surrounds has been researched by reference to historical maps and aerial plates presented in Appendix F (O.S. maps, Old Maps Online, and National Library of Scotland), street plans, street directories, historical aerial photographs (Google Earth, Britain From Above, historical street level imagery and plates in the public domain.) are summarised hereunder in Table 4.

Table 4: Summary of Review of Historical Maps and Aerial Plates

Area	Summary of Historical Review
Site	Initially (1849) the site formed part of a reservoir with the southern area being open land, by 1892 the reservoir had been in-filled. Excavations were noted on the 1926 map and were identified up to the 1947 map. The site was developed between 1965 and 1970 when a building was present on the southern area of the site which was identified as a works on the 1990 map with two additional buildings present on the site. The 2001 aerial plate indicated the site was used to store vehicles. Street level imagery indicates the site was occupied by Suregrow Garden Centre from prior to the April 2009 image with the site becoming vacant between November 2021 and November 2022.
Area adjacent to the site	Initially the site boundaries were formed by a reservoir to the north and east with Merton Bank Road to the west, by 1892 the northern and eastern boundaries were formed by open land. By 1970 the northern and eastern boundary was formed by a works with a garage on the southern boundary. No further significant changes were discerned.
Area within 50m (including ponds)	A number of potentially contaminative land uses have been identified on the historical O.S. maps, which are discussed below by order of date. 1970: Numerous works to the west, south west and north of the site - identified on subsequent maps.
Potentially In-Filled Land Within 250m (excluding ponds)	Numerous areas of in-filled land are identified within 250m of the site on the O.S. maps.

3.2 Anecdotal Evidence

3.2.1 No additional information on the site history could be sourced.

3.3 Archaeological Considerations

3.3.1 No known archaeological considerations have currently been identified.

3.3.2 Archaeological information has not been sought as part of this desk study and has not been identified as an issue by the Client. Some Local Authorities require at least an initial archaeological appraisal for development sites.

3.3.3 Archaeological investigations occasionally reveal ground-related problems from ancient times (prior to the 1st Edition O.S. maps) and can occasionally cause foundation and contamination development hazards.

3.3.4 The Local Authority archaeological officer has not been contacted at this stage.

3.4 Planning Information

3.4.1 A search of on-line planning information held by St Helens Metropolitan Borough Council was undertaken, two applications were noted, discussed below:

Table 5: Summary of Application History for The Subject Site

Application Number	Development Description	Decision	Salient Information from Documents
P/2001/1032	Erection of canopy over existing retail space and replacement of existing nissan hut with manufacturing unit.	Unknown	No
P/2000/0878	ERECTION OF CANOPY STRUCTURE OVER GARDENING GOODS	Unknown	No

3.5 Previous Reports

3.5.1 Demeter Environmental Limited has no knowledge nor has received any reports relating to the site or the surrounding area.

4 ENVIRONMENTAL SETTING

4.1 Published Geology – 1:50,000 Geological Maps

4.1.1 The documented geology has been ascertained by the examination of British Geological Survey 1:50,000 Sheet 84 (Wigan) and the appropriate geological memoir is summarised hereunder:

4.1.2 Deposits of made ground are present under the site and the surrounds.

4.1.3 The drift geology is given as alluvium with Devensian Clay on the south western boundary.

4.1.4 The solid geology is given as the Pennine Middle Coal Measures Formation (mudstone, siltstone and sandstone) of the Westphalian Epoch.

4.1.5 An inferred coal seam outcrops under the site.

4.2 Data From The Coal Authority

4.2.1 The Coal Authority interactive map viewer was accessed, the map indicates the site is within a "Development High Risk Area".

4.2.2 However, the correspondence associated with the planning application for the adjoining land (P/2022/0779/FUL) indicates the site "does not fall within the defined Development High Risk Area and is located instead within the defined Development Low Risk Area".

4.2.3 In order to further assess the risk from coal mining a Consultants Coal Mining report was obtained, which is present in Appendix G. This confirms that a coal seam (Bottom Pig House) outcrops on the site and an unnamed coal seam has been worked at 48mbgl. The report also states that the site is not within an area of probable unrecorded coal seams.

4.2.4 Based on this and that the majority of the site is on reclaimed land the risk from coal mining is negligible.

4.3 Borehole Records

4.3.1 The BGS Borehole map indicates that there are no borehole records available within 50m of the site.

4.4 Geological Hazards

4.4.1 Potential natural geological hazards which may represent a risk to the proposed development on the site could include the following:

Table 6: Summary of Potential Natural Geological Hazards Identified in the Groundsure© Reports

Potential Hazard	Assessed Risk on the Site			
Radon	The property is in a Radon Affected Area, as between 10% and 30% of properties are above the Action Level. Full radon protective measures are necessary.			
Background Soil Chemistry	Element	Estimated Geometric Mean (mg/kg)	Residential Threshold(mg/kg)	Industrial / Commercial Threshold (mg/kg)
	Arsenic	15-25	37 (S4UL)	640 (S4UL)
	Bioaccessible Arsenic	No data		
	Lead	100	200 (C4SL)	750 (C4SL)
	Bioaccessible Lead	60		
	Cadmium	1.8	10 (S4UL)	230 (S4UL)
	Chromium	60-90	620 (S4UL)	30,400 (S4UL)
	Nickel	15-30	130 (S4UL)	1,700 (S4UL)
BGS Estimated Urban Soil Chemistry	No data			
BGS Measured Urban Soil Chemistry	No data			

4.5 Review of Data Obtained from Geology and Ground Stability Groundsure Report

4.5.1 A geology and ground stability report has been procured from Groundsure©, which is presented in Appendix G, and is summarised hereunder.

Table 7: Summary of Data within Groundsure© Geology and Ground Stability Report

Data	Distance (m)	Comments	Significance
Faults	<50m	Inferred coal seam on site	Potential source
Natural cavities	<250m	No data	-
BritPits	<250m	No data	-
Surface ground workings	<250m	Numerous workings / ponds On site and within 250m	Potential sources
Underground workings	<250m	No data	-

5 HYDROLOGY AND HYDROGEOLOGY

5.1.1 The geological succession underlying the site may be regarded as a series of discrete units in terms of their hydrogeological significance, as illustrated hereunder:

Table 8: Hydrogeological Interpretation

UNIT	PROPERTIES	AQUIFER TYPE	FLOW TYPE	PERMEABILITY
Made Ground	Likely to be generally granular and permeable and will permit vertical and lateral transmission of groundwater. Where underlain by an aquiclude perched groundwater may be present in depressions at the interface.	N/A	N/A	N/A
Alluvium	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.	Secondary A	Intergranular	Very low to high
Coal Measures	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.	Secondary A	Fractured	Low to moderate

5.2 Assessment of Vulnerability of Surface Water Receptors

5.2.1 The sensitivity of both the surface water receptors and the underlying groundwater in both the drift deposits and bedrock has been assessed in line with the methodology in Appendix C based on the information presented below. Where the risk is regarded as low or very low the receptor will not be regarded as a credible receptor and will not be assessed further.

Table 9: Assessment of Vulnerability of Surface Water Receptors

INFORMATION	Surface Water	Superficial Soils	Bedrock
Aquifer Status of Geology:	N/A	Secondary A	Secondary A
Likely Geology (based on closest BGS Borehole Section Sheets / Previous Site investigations)	No data		
Groundwater Vulnerability	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
Groundwater Vulnerability Summary:	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer		
Groundwater Vulnerability (soluble rock risk):	N/A	No data	No data
Groundwater Vulnerability-Local Information:	N/A	No data	No data
Groundwater Abstractions (<1,000m) (Only Current Abstractions Are Listed):	N/A	None	
Surface Water Abstractions (<500m) (Only Current Abstractions Are Listed):	None	N/A	
Potable Abstractions (<2,000m) (Only Current Abstractions Are Listed):	N/A	None	
Source Protection Zones:	N/A	No – none within 500m	
Source Protection Zones (Confined Aquifer):	No data	No data	No data
Surface Water Bodies (<100m):	56m E – Sankey Canal	N/A	
Surface Water Features (<250m):	nr 3	N/A	
Sensitivity of Surface Water / Groundwater:	L2 – very low	L2 – very low	L2 – very low

6 DATA OBTAINED FROM REGULATORY BODIES AND OTHERS

6.1 Data From Groundsure

6.1.1 An Environmental Data Report was procured from Groundsure©. Groundsure© reports contain a broad spectrum of environmental data collated from many sources, including the Environment Agency and the relevant local authority. The report is contained in Appendix G.

6.1.2 Relevant data on potentially contaminative land uses within the report, covering an area within a radius of 50m (250m for landfill and other waste sites) from the site is summarised hereunder:

Table 10: Summary of Groundsure© Environmental Data Report

Data	Distance (m)	Comments	Significance
Historical industrial land uses	<50m	On site - works	Potential source
Historical tanks	<50m	38m SW	-
Historical energy features	<50m	50m SW – electricity substation	Potential source
Historical petrol stations	<50m	No data	-
Historical garages	<50m	8m to 11m S - garage	Potential source
Historical military land	<50m	No data	-
Waste and landfill	<250m	144m NW – Pilkington Brothers	Potential source
Current industrial land use	<50m	Numerous within 50m	Potential sources

7 PRELIMINARY CONCEPTUAL MODEL AND PRELIMINARILY RISK ASSESSMENT

7.1 Introduction

7.1.1 The findings of the desk study have been used to develop a preliminary conceptual model of the site, which identifies potential contaminant linkages. The scope of the model is intended primarily to identify potential impacts to human health and environmental receptors from potential on site and off-site contamination sources. More generalised comments may be included with respect to potential impacts to the wider ecosystem if relevant.

7.1.2 Contaminated land is defined under Section 78A(2) of the Environmental Protection Act 1990 IIA, as "Any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:

- Significant harm is being caused, or there is significant possibility of such harm being caused, or
- Pollution of controlled waters is being or is likely to be caused"

7.1.3 Thus land can be defined as contaminated if it is causing significant harm; or where substances in, on or under the land are polluting a controlled water, or there is a significant risk of this happening.

7.1.4 Current approaches (Guidance on 'Land contamination risk management (LCRM), Part IIA of the Environmental Protection Act 1990 and the National Planning Policy Framework) to risk assessment of contaminated land suggest the construction of a Preliminary Conceptual Model. The purpose of this model is to define all possible complete contaminant linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant comes into contact with, or otherwise affects, the receptor

- a receptor (target) is an entity (human being, aquatic environment, flora and fauna etc.) that is vulnerable to the adverse effects of the contaminant

7.1.5 This relationship is termed a "contaminant linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

7.1.6 The information collated in the desk study was assessed hereunder to determine the potential contaminant linkage(s) existing on this site, and the likelihood of the linkage being present, allowing the construction of a preliminary conceptual model, as discussed hereunder.

7.2 Assessment of Potential Sources of Contamination

7.2.1 The potential sources of contamination identified in the desk study summarised hereunder:

Table 11: Potential Sources of Contamination

Potential Source of Contamination	Distance to Site	Dates Identified on Historical Maps	Discussion	Probability	Consequence	Risk	Does source warrant further assessment?
Made ground	On site	N/A	Site History: Given that the site has been previously developed it is likely that deposits of made ground will be present on the site.	Likely	Medium – chronic effect on human health	Moderate	Yes
Made ground	On site	N/A	As there is evidence the made ground on the site will be in excess of 1m there is a possibility of gas generation from the made ground underlying the site. The gas generation potential is regarded as very low, the risk of lateral migration as negligible and the risk for development on site is regarded as low.	Low	Severe – acute risk to human health	Moderate	Yes
Site buildings / land uses within 50m	On site	>1965 – 2023	The past uses of the site and the surrounds have the potential to impact site soils.	Likely	Medium – chronic effect on human health	Moderate	Yes
Use / storage of chemicals and/or fuel on the site	On site and within 15m of the site	N/A	Based on the site history there is the possibility that chemicals / fuels have been used and/or stored either on the site or within 15m of the site.	Likely	Medium – ingress of contaminants through plastic potable water pipes	Moderate	Yes
Potential for mobile contamination (VOC's, fuels etc.)	On site	N/A	Given the history of the site it is possible that mobile contamination may be present on the site (i.e. the natural soils may have been impacted).	Likely	Medium – chronic effect on human health	Moderate	Yes
Alluvial soils	Underlying site	N/A	Alluvial soils and buried peat can quite often give high concentrations of methane and carbon dioxide in monitoring wells, often methane concentrations can reach up to 90%. This is because the gas has been generated historically and is trapped in the pores due to limited transport (at low diffusion rates). The methane accumulates at increasing depth in peat columns, but this does not indicate high rates of production (Clymo and Bryant, 2008; Fritz et al., 2011). There is no, or very little, current gas generation and the carbon dioxide has dissolved out of the gas trapped in the soil pores which causes a higher percentage of methane to be recorded. The gas generation potential is regarded as very, the risk of lateral migration as negligible and the level of risk for on site development is very low. Alluvial soils do not generate sufficient hazardous gas flows to exceed Characteristic Situation 2 as defined in BS 8485:2015+A1:2019 (this has been demonstrated by monitoring under floor venting systems - Wilson and Card, 1999). Therefore if gas monitoring is not undertaken it is acceptable to simply install Characteristic Situation 2 protection on sites where Alluvial/peat soils are present.	Unlikely	Severe – acute risk to human health	Moderate / low	Yes
Shallow worked coal seams	Underlying site	N/A	Based on the Consultants Coal Mining Report in Appendix G and the discussion in Clause 4.2 the probability of risk occurring is regarded as negligible.	Negligible	Severe – acute risk to human health	Low	No
In-filled land	<250m	>1850	As the in-filled land is not identified as a landfill by the Environment Agency or identified as a landfill on the O.S maps, the land is likely to have been in-filled with `typical made ground with a low organic content. It is unlikely that the in-filling is greater than 5m (or an average depth of 3m), gas protection measures, therefore if gas monitoring is not undertaken it is acceptable to simply install Characteristic Situation 2 protection on sites where Alluvial soils are present. The gas generation potential is regarded as very low, the risk of lateral migration as negligible and the level of risk for on site development is very low.	Unlikely	Severe – acute risk to human health	Moderate / low	Yes
Garage	8m south	>1965 – 2023	The garage has the potential to impact site soils.	Likely	Medium – chronic effect on human health	Moderate	Yes
Landfill	144m NW	N/A	The landfill accepted Inert, Industrial, Liquid sludge and operated from 1914. The gas generation potential is regarded as low to moderate, the risk of lateral migration is unknown and the level of risk for on site development is low to moderate, however the presence of a brook between the landfill and the site will act as a barrier to the migration of ground gases.	Unlikely	Severe – acute risk to human health	Moderate / low	Yes

7.3 Identification of Potential Receptors

7.3.1 Potential receptors of contamination on this site may be represented as tabulated hereunder:

Table 12: Potential Receptors

ID	POTENTIAL RECEPTOR	IS THE RECEPTOR PRESENT?	JUSTIFICATION FOR INCLUSION / EXCLUSION
A	Human beings (construction workers)	Yes	Will be on site during the construction phase
B	Human beings (future residents)	Yes	The proposed development is commercial
C	Human beings (future worker occupants)	No	
D	Human beings (trespassers / transient users)	Yes	May be present on the proposed development
E	Human beings (worker occupants of adjacent properties)	No	Commercial buildings do not adjoin the site
F	Human beings (residents of adjacent properties)	No	Dwellings do not adjoin the site
G	Designated ecological systems	No	None have been identified
H	On site flora and fauna	No	No sensitive species have been identified
I	Property in the form of buildings (on site)	Yes	The development includes the erection of dwellings/buildings
J	Property in the form of buildings (adjacent)	No	No buildings form the site boundaries
K	Property in the form of crops/livestock (on site)	No	Will not form part of the development
L	Property in the form of crops/livestock (adjacent)	No	None have been identified
M	Potable water mains (on site)	Yes	The site will be served by potable water mains
N	Potable water mains (off site)	No	It is unlikely that water mains for nearby sites will run through the subject site.
O	Groundwater (underlying aquifer)	No	The site is underlain by low sensitivity aquifers
P	Surface water bodies	No	No high/moderate sensitivity water bodies within 250m

7.4 Potential Pathways

7.4.1 Taking account of the intended use of the site, the pathways by which the above sources and receptors may be linked may be summarised as follows:

Table 13: Potential Pathways

ID	POTENTIAL RECEPTOR	ASSOCIATED POTENTIAL PATHWAYS	JUSTIFICATION FOR EXCLUSION
A	Human beings (construction workers)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust Migration of ground gases through permeable strata / preferential pathways	
B	Human beings (future worker occupants)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust Dermal contact with soil / soil dust outdoors Dermal contact with soil dust indoors Ingestion of home-grown produce Ingestion of soil attached to home-grown produce Inhalation of soil dust indoors Inhalation of soil dust outdoors Inhalation of soil vapours indoors Inhalation of soil vapours outdoors Migration of ground gases through permeable strata / preferential pathways	
D	Human beings (trespassers / transient users)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust	
I	Property in the form of buildings (on site)	Direct contact with aggressive ground conditions Migration of ground gases through permeable strata / preferential pathways	
M	Potable water mains (on site)	Direct contact with aggressive ground conditions Direct contact with organic contamination	

7.5 Preliminarily Qualitative Risk Assessment

7.5.1 In accordance with the current UK Government of 'suitable for use' approach to the assessment of contaminated land, a preliminarily qualitative risk assessment has been undertaken on the potential contaminant linkages identified above, which considers the magnitude of the potential consequence of the risk occurring, the magnitude of the probability of the risk occurring and provides an overall risk classification.

7.5.2 The following sections discuss all the identified potential on and off site sources which warrant further consideration (see Clause 7.2), pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.

7.5.3 The purpose of the PQRA is to:

- Refine and update the conceptual model;
- Confirm the presence of actual pollutant linkages;
- Evaluate potentially unacceptable risks; and
- Provide the basis for the options appraisal when unacceptable risks are identified at the site.

7.5.4 The methodology used in the 2001 CIRIA report C552 – "Contaminated Land Risk Assessment. A Guide to Good Practice' and 'Guidance for the Safe Development of Housing on Land Affected by Contamination' is used here and is discussed in Appendix C.

7.5.5 Based on the above a Preliminarily Conceptual Model (PCM) has been created and is presented in hereunder.

Table 14: Preliminary Conceptual Model

PPL ID	Source	Pollutant(s)	Receptor(s)	Pathways to Receptor	Probability	Consequence	Risk
1	Made Ground	Arsenic, asbestos, barium, beryllium, cadmium, chromium (III and VI), copper, cyanide, lead, mercury, molybdenum, nickel, PAH's (USEPA 16) selenium, sulphur, thallium, hydrocarbons (TPHCWG), vanadium, zinc	Human beings (construction workers)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust	Likely	Minor – can be prevented by the use of PPE	Low
2			Human beings (future worker occupants)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust Dermal contact with soil / soil dust outdoors Dermal contact with soil dust indoors Ingestion of home-grown produce Ingestion of soil attached to home-grown produce Inhalation of soil dust indoors Inhalation of soil dust outdoors Inhalation of soil vapours indoors Inhalation of soil vapours outdoors		Medium – there is a potential for chronic effects to humans	Moderate
3			Human beings (trespassers / transient users)	Ingestion of soil / soil dust Dermal contact with soil / soil dust Inhalation of soil dust		Medium – there is a potential for chronic effects to humans	Moderate
4			Property in the form of buildings (on site)	Direct contact with aggressive ground conditions		Mild – significant damage to buildings	Moderate / low
5			Potable water mains (on site)	Direct contact with aggressive ground conditions Direct contact with organic contamination		Medium – ingress of contaminants through plastic potable water pipes	Moderate
6	Made ground / in-filled land <250m Alluvium	Ground gases (CO_2, CH_4, H_2S, CO)	Human beings (construction workers)	Migration of ground gases through permeable strata / preferential pathways	Unknown – assumed to be unlikely based on the potential sources identified.	Severe – acute risk to human health	Moderate / low
7			Human beings (future worker occupants)			Severe – acute risk to human health	Moderate / low
8			Human beings (trespassers / transient users)			Severe – acute risk to human health	Moderate / low
9			Property in the form of buildings (on site)			Medium – affect on building fabric	Low

7.5.6 The potential significant linkages listed above are based on the available data listed in the sections above and the features noted during the site walkover. Therefore, the linkages identified are tentative and subject to the following uncertainties(s):

- Presence of made ground under the site;
- The in-filled land on site and within 250m of the site is generating ground gases which are migrating to the site;

7.5.7 The precautionary principle as discussed in PPS23 (withdrawn) has been applied in the assessment of potential sources, pathways and receptors.

7.5.8 It can be seen that contaminant linkages 2 to 8 require further investigation.

8 RECOMMENDATIONS FOR FURTHER WORKS AND SAMPLING STRATEGY

8.1 Introduction

8.1.1 In accordance with the National Policy Planning Framework, Demeter Environmental consider that sufficient information on the potential for contamination is available in this report to allow the validation of any future planning application by St Helens Metropolitan Borough Council and for conditional planning approval to be granted as it is unlikely that the site is capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990. Where the report has proposed further intrusive works and/or remediation such a conditional approval will likely include the conditions requiring a site investigation, risk assessment and implementation plan are undertaken to the satisfaction of St Helens Metropolitan Borough Council prior to commencement of any development.

8.2 Options Appraisal for Further Works

8.2.1 The potential options to investigate / break the potential contaminant linkages identified above in the PCM are discussed hereunder (in order of risk).

Table 15: Options Appraisal – Intrusive Works

PPL ID	AIM(S) / OBJECTIVES(S)	Proposed Further Investigation
N/A	Enabling works	Prior to any intrusive investigation the following will need to be undertaken in order to access the site; 1. Approval from the local authority on the scope of the proposed works; 2. Completion of demolition works; 3. Removal of any ACM's (asbestos contaminating materials) from the site; 4. Removal of tanks and infrastructure and subsequent validation of the removal;
N/A	Sequence of works	The works in sequence is given below.
2, 3, 4, 5	To determine if made ground is present on the site and if present, is it impacted by elevated levels of contamination:	DETAILED INVESTIGATION: Based on the size of the site (0.27Ha) it is proposed that an initial exploratory investigation based on a non-targeted regular herringbone sampling grid of 25m is proposed, which equates to approximately 5 positions (dynamic sampling boreholes). Additional positions will be incorporated into the exploratory investigation if additional information is required to delineate the areas of made ground. Selective spot samples will be taken where there is any visual or olfactory evidence of contamination. The first sample of natural soils will be taken as close as possible to the boundary with the anthropogenic ground (approximately 0.25m to 0.5m into natural ground). Disturbed spot samples will be taken in each layer and at fixed intervals of 0.5m as well as within ground to reflect any identifiable changes in appearance. Sampling depths will take into account any proposed changes in levels (if information is available). Where encountered spot samples of the made ground will be taken as well as spot samples of the natural soils form below the made ground natural soils interface. Additional samples will be taken where there is visual or olfactory evidence of contamination. Samples of made ground will be analysed to the suite in Table 14, initially a maximum of 5 samples will be analysed, the remaining samples will be subject to chemical analysis if any exceedances are recorded (e.g., all made ground samples will be analysed for lead if exceedances of lead are recorded). Samples of the natural strata will be subject to chemical analysis at the locations where exceedances have been recorded. All work should be undertaken by a suitably experienced geoenvironmental engineer.
6, 7, 8	To determine if the site is impacted by ground gases	The gas generation potential of the in-filled land underlying the site and the alluvium can is regarded as very low. Using the guidance in CIRIA C665 (Table 5.5a and 5.5b), based on a low sensitivity land use and the highest gas generation potential the monitoring period/frequency should be 4 visits over 1 month. The nominal spacing of the monitoring should be 50m (based on the highest gas generation potential and sensitivity of the development – Table 4.2 of CIRIA C665), which for this equates to 3 monitoring installations. The response zones will be determined based on the recorded site geology at each location.

8.2.2 The proposed sampling strategy and site investigation has been created in line with the guidance in BS5930:2015, BS10175:2011, CLR4 and the EA publication 'Secondary model for the development of appropriate soil sampling strategies for contaminated land'.

8.2.3 The proposed site investigation is presented on Drawing 4 in Appendix D.

8.2.4 If any demolition is to be undertaken on site, consideration of BS 6187 should pre-empt any demolition carried out on site. Care should be taken not to spread any potential contamination to other areas during such an exercise with due consideration to CIRIA paper SP102 Remedial Treatment for Contaminated Land, Decommissioning, Decontamination and Demolition.

8.3 Responsibility of Developer / Landowner

8.3.1 In line with the National Policy Planning Framework, where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

8.4 Management of Unexpected Contamination

8.4.1 It is possible that further contamination may be found at any time during the development. Should such contamination be identified or suspected during the site clearance or ground works, these should be dealt with accordingly.

8.4.2 A number of options are available for handling this material, which include:

- The removal from site and disposal to a suitably licensed tip of all material suspected of being contaminated. The material would need to be classified prior to disposal.

- Short-term storage of the suspected material while undertaking verification testing for potential contamination. The storage area should be a contained area to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area.

- Having a suitably experienced environmental engineer either on-call or with a watching brief for the visual and olfactory assessment of the material, and sampling for verification purposes.

8.5 Liaison with the Local Planning Authority

8.5.1 Prior to the commencement of any site works it is recommended that a copy of this report is forwarded to St Helens Metropolitan Borough Council, and their approval of the

conclusions/recommendations contained in this report is obtained prior to the commencement of any works on the site.

8.5.2 Where this report has recommended remedial measures, the methodology on the validation of the remedial measures should be agreed with St Helens Metropolitan Borough Council, prior to commencement of site works (Phase IIIa Implementation Plan). On completion of the remediation a Phase IIIb completion report will need to be submitted to St Helens Metropolitan Borough Council, in order to demonstrate the site has been suitably remediated.

APPENDIX A: REFERENCES

The following documents were available or have been obtained for reference or obtaining data:

Groundsure Report			
BGS Borehole Record Viewer			
Land contamination risk management (LCRM)	Environment Agency	LCRM	2020
The Environmental Protection Act	1990		
The Contaminated Land (Wales) Regulations	2006		
The Contaminated Land (Scotland) Regulations	2000		
The Environment Act	1995		
The Radioactive Contaminated Land (Modifications of Enactments) (England) Regulations	2006		
The Radioactive Contaminated Land (Modifications of Enactments) (Wales) Regulations	2006		
The Radioactive Contaminated Land (Scotland) Regulations	2007		
The Water Resources Act	1991		
The Water Act	2003		
The Water Environment and Water Services (Scotland) Act	2003		
The Water (Northern Ireland) Order	1999		
The Wildlife and Country Act	1981		
The Conservation (Natural Habitats, etc.) Regulations	1994		
The Town and Country Planning Act	1990		
The Town and Country Planning (Scotland) Act	1997		
The Building Control Act	1990		
The Construction Design and Maintenance (CDM) Regulations	2007		
The Control of Substances Hazardous to Health (COSHH) Regulations	2002		
The Factories Act	1961		
The Offices, Shops and Railway Premises Act	1963		
The Health and Safety at Work, etc. Act	1974		
The Pollution Prevention and Control Act	1999		
The Control of Pollution Act 1994 as amended	1994		
The Environmental Damage (Prevention and Remediation) Regulations	2009		
The Environmental Damage (Prevention and Remediation) (Wales) Regulations	2009		
The Environmental Liability (Scotland)	2009		
The Environmental Protection (Duty of Care) Regulations	1991		
The Environmental Permitting (England and Wales) Regulations	2007		
The Pollution Prevention and Control (Scotland) regulations	2000		
Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs)	2013	BS 8576:2013	2013
Good practice on the testing and verification of protection systems for buildings against hazardous ground gases	CIRIA	C735	August 2014
Investigation of Potentially Contaminated Sites	BSI	BS10175:2011+A2:2017	2017
Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance	DEFRA	-	April 2012
Environmental Protection Act 1990: Part 2A – Contaminated Land	DEFRA	Circular 1/2006	September 2006 (withdrawn April 2012)
National Planning Policy Framework	Communities and Local Government	-	19th February 2019
Guiding Principles for Land Contamination	Environment Agency	GPLC1 / GPLC2 / GPLC3	March 2010
Planning and Pollution Control	ODPM	PPS23	November 2004 (withdrawn March 2012)
Circular 22/87: Development of Contaminated Land	Welsh Government	22/87	August 1987
Planning Advice Note PAN 33	Scottish Government	PAN 33	October 2000
Contaminated Land Statutory Guidance for Wales	Welsh Government	WG15450	2012
Explanatory Memorandum to the Contaminated Land	Welsh Government	-	February

(Wales) (Amendment) Regulations 2012 and the draft Contaminated Land Statutory Guidance 2012			2012
NHBC Standards	NHBC	-	2014
Code of Practice for Ground Investigations	BSI	BS5930:2015+A1:2020	June 2020
Technical aspects of site investigations in relation to land contamination	Environment Agency	EA P5-065/TR:2000	2000
Contaminated Land Risk Assessment: A Guide to Good Practice	CIRIA	C552	2001
Secondary model for the development of appropriate soil sampling strategies for contaminated land	Environment Agency	EA P5-066/TR:2000	2000
Remedial Targets Methodology - Hydrogeological Risk assessment for Land Contamination	Environment Agency		2006
The physical properties of the minor aquifers in England and Wales	BGS		2000
A framework for assessing the impact of contaminated land on groundwater and surface water	Department of the Environment	DOE CLR 1	1994
Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the Environmental Protection Act 1990.	Environment Agency		May 2002
Guidance on Preliminary site inspection of contaminated land	Department of the Environment	DOE CLR 2	1994
Documentary search on industrial sites	Department of the Environment	DOE CLR 3	1994
Sampling strategies for contaminated land	Department of the Environment	DOE CLR 4	1994
Information systems for land contamination	Department of the Environment	DOE CLR 5	1994
Prioritisation + categorisation procedure for sites which may be contaminated	Department of the Environment	DOE CLR 6	1995
Model Procedures for the Management of Land Contamination	Environment Agency	CLEA CLR 11	September 2004 (withdrawn)
A quality approach for contaminated land consultancy	Department of the Environment	DOE CLR 12	1997
Human health toxicological assessment of contaminants in soil	Environment Agency	Science Report SC050021/SR2	January 2009
Updated technical background to the CLEA model	Environment Agency	Science Report SC050021/SR3	January 2009
A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA)	Environment Agency	SC050021/ Technical Review 1	2009
Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values	Environment Agency	Science Report SC050021/SR7	2008
The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soil	Environment Agency	Report P5-080/TR3	2005
Review of the Fate and Transport of Selected Contaminants in the Soil Environment	Environment Agency	Draft Technical Report P5-079/TR1	2003
Guidance on Comparing Soil Contamination Data with a Critical Concentration	CL:AIRE/ CIEH		May 2008
Industry Profiles	DEFRA		Various dates
Radon: guidance on protective measures for new developments	BRE	BRE 211	November 2007
Contaminated Land management manual	LQM	LQM2000	2000
Assessing risks posed by hazardous ground gases to buildings (revised)	CIRIA	CIRIA C665	December 2007
Code of practice for the design of protective measures for methane and carbon dioxide ground gas for new buildings	BSI	BS 8485:2015	2015
Using Soil Guideline Values		Science Report SC050021/SGV Introduction	March 2009
Soil guideline values for inorganic arsenic	Environment Agency	SC050021/ arsenic SGV	May 2009
Soil guideline values for mercury	Environment Agency	SC050021/ mercury SGV	April 2009
Soil guideline values for selenium	Environment Agency	SC050021/ selenium SGV	April 2009
Soil guideline values for benzene	Environment Agency	SC050021/ benzene SGV	April 2009
Soil guideline values for toluene	Environment Agency	SC050021/ toluene SGV	April 2009
Soil guideline values for ethylbenzene	Environment Agency	SC050021/	April 2009

		ethylbenzene SGV	
Soil guideline values for xylenes	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for inorganic arsenic	Environment Agency	SC050021	May 2009
Supplementary information for the derivation of for mercury	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for selenium	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for benzene	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for toluene	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for ethylbenzene	Environment Agency	SC050021	April 2009
Supplementary information for the derivation of for xylenes	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Inorganic Arsenic	Environment Agency	SC050021/Tox 1	May 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Mercury	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Selenium	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Benzene	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Toluene	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Ethylbenzene	Environment Agency	SC050021	April 2009
Contaminants in soil: updated collation of toxicological data and intake values for humans : Xylenes	Environment Agency	SC050021	April 2009
Reclamation of Contaminated Land	Wiley		2004
Policy and Practice For The Protection of Groundwater	Environment Agency		1999
CIRIA Special Publication 102 - Remedial Treatment for Contaminated Land - Volume II: Decommissioning, Decontamination and Demolition	CIRIA	SP102	January 1995
Guidance on the Safe Development of Housing on Land affected by Contamination	Environment Agency	R&D Publication 66	2008
ProUCL User Guide and Technical Guide	USEPA	-	
Guidance on the assessment of and monitoring of natural attenuation of contaminants in groundwater	Environment Agency	R&D Publication 95	2000
The standard penetration test in insensitive clays and soft rocks	Proceedings of the European Symposium on Penetration Testing in the UK	-	1988
Trenching practice. 2nd edition	CIRIA	R97	2001
Desiccation in clay soils	BRE	412	February 1996
Methods of test for soils for civil engineering purposes	BSI	BS1377 (Parts 1 to 9)	1990
Eurocode 7: Geotechnical Design − Part 1: General Rules British	BSI	BS EN 1997-1	2004
Eurocode 7: Geotechnical Design − Part 2: Ground Investigation and Testing	BSI	BS EN 1997-2	2007
Geotechnical investigation and testing. Field testing. Electrical cone and piezocone penetration test	BSI	BS EN ISO 22476-1	2012
Geotechnical Investigation and Testing − Field Testing Part 2: Dynamic Probing	BSI	BS EN ISO 22476-2+A1	2011
Geotechnical Investigation and Testing − Field Testing Part 3: Standard Penetration Test	BSI	BS EN ISO 22476-3+A1	2011
Geotechnical investigation and testing. Field testing- Ménard pressuremeter test	BSI	BS EN ISO 22476-4	2012
Geotechnical investigation and testing. Field testing - Flexible dilatometer test	BSI	BS EN ISO 22476-5	2012
Geotechnical investigation and testing. Field testing - Borehole jack test	BSI	BS EN ISO 22476-7	2012
Geotechnical investigation and testing. Field testing − Flat dilatometer test	BSI	BS EN ISO 22476-11	2006
Geotechnical investigation and testing. Field testing - Mechanical cone penetration test (CPTM)	BSI	BS EN ISO 22476-12	2009

The standard penetration test (SPT): methods and use	CIRIA	R143	1995
Low-rise Buildings on Shrinkable Clay	BRE	BRE Digest 240 and 241	1993
Settlement of structures on clay soils	CIRIA	SP27	1983
Piled foundations in weak rock	CIRIA	R181	1999
Theoretical soil mechanics	Terazaghi	-	1943
Soils for civil engineering purposes	BSI	BS 1337	1990
Groundwater Control − Design and Practice	CIRIA	C515	2000
Trees in relation to design, demolition and construction. Recommendations	BSI	BS 5837	2012
Workmanship on Building Sites	BSI	BS 8000	Various
ICRCL 61/84 Notes on the fire hazards of contaminated land	ICRCL	61/84	1986
Soakaway Design	BRE	Digest 365	1991
Design guidance for road pavement foundations (draft HD 25) (Revision 1)	Highways Agency	Draft HD25	2006
Building Regulations Approved Documents	HM Government	Various	2013

APPENDIX B: LEGISLATIVE CONTEXT

LEGISLATION OVERVIEW

This report includes hazard identification and environmental risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach". When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land.

Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

Significant harm is being caused or there is a significant possibility of such harm being caused; or Pollution of controlled waters is being, or is likely to be, caused."

Harm is defined under section 78A of the Environmental Protection Act as meaning 'harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property'. Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as "the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter".

Types of harm are related to specific receptors in order to determine whether they can be regarded as "significant harm" or "significant possibility of significant harm', as defined in Clause 4 of the DEFRA publication 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance', which is presented hereunder:

Table 1: Categories Of Significant Harm and Significant Possibility of Significant Harm for Each Receptor

	Type of Receptor	Description of harm to that type of receptor that is to be regarded as:"	
		Significant Harm	Significant Possibility of Significant Harm
1	Human beings	Death; life threatening diseases (e.g. cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions Physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. For these purposes, disease is to be taken to mean an unhealthy condition of the body or a part of it and can include, for example, cancer, liver dysfunction or extensive skin ailments. Mental dysfunction is included only insofar as it is attributable to the effects of a pollutant on the body of the person concerned.	-
2	Any ecological system, or living organism forming part of such a system, within a location which is: • a site of special scientific interest (under section 28 of the Wildlife and Countryside Act 1981) • a national nature reserve (under s.35 of the 1981 Act) • a marine nature reserve (under s.36 of the 1981 Act) • an area of special protection for birds (under s.3 of the 1981 Act) • a "European site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010 • any habitat or site afforded policy protection under paragraph 6 of Planning Policy Statement (PPS 9) on nature conservation (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or • any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949. and Access to the Countryside Act 1949.	The following types of harm should be considered to be significant harm: • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010.	Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that: • significant harm of that description is more likely than not to result from the contaminant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration.
3	Property in the form of: • crops, including timber; • produce grown domestically, or on allotments, for consumption; • livestock; • other owned or domesticated animals; • wild animals which are the subject of shooting or fishing rights.	For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage. The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a contaminant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss.	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.
4	Property in the form of buildings. For this purpose, "building" means any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.	Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should also be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.

For human beings and controlled waters there are four categories of harm, given hereunder:

Table 2: Categories Of Harm for Human Beings and Controlled Waters

Category	Description of harm to that type of receptor that is to be regarded as:"	
	Human Beings	Controlled Waters
1	The local authority should assume that a significant possibility of significant harm exists in any case where it considers there is an unacceptably high probability, supported by robust science based evidence, that significant harm would occur if no action is taken to stop it. For the purposes of this Guidance, these are referred to as "Category 1: Human Health" cases. Land should be deemed to be a Category 1: Human Health case where: (a) the authority is aware that similar land or situations are known, or are strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; or (b) the authority is aware that similar degrees of exposure (via any medium) to the contaminant(s) in question are known, or strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; (c) the authority considers that significant harm may already have been caused by contaminants in, on or under the land, and that there is an unacceptable risk that it might continue or occur again if no action is taken. Among other things, the authority may decide to determine the land on these grounds if it considers that it is likely that significant harm is being caused, but it considers either: (i) that there is insufficient evidence to be sure of meeting the "balance of probability" test for demonstrating that significant harm is being caused; or (ii) that the time needed to demonstrate such a level of probability would cause unreasonable delay, cost, or disruption and stress to affected people particularly in cases involving residential properties.	This covers land where the authority considers that there is a strong and compelling case for considering that a significant possibility of significant pollution of controlled waters exists. In particular this would include cases where there is robust science-based evidence for considering that it is likely that high impact pollution (such as the pollution described in paragraph 4.38) would occur if nothing were done to stop it.
2	For land that cannot be placed into Categories 1 or 4, the local authority should decide whether the land should be placed into either: (a) Category 2: Human Health, in which case the land would be capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health; or (b) Category 3: Human Health, in which case the land would not be capable of being determined on such grounds. The local authority should consider this decision in the context of the broad objectives of the regime and of the Government's policy as set out in Section 1. It should also be mindful of the fact that the decision is a positive legal test, meaning that the starting assumption should be that land does not pose a significant possibility of significant harm unless there is reason to consider otherwise. The authority should then, in accordance with paragraphs 4.26 to 4.29 below, decide which of the following two categories the land falls into:	This covers land where: (i) the authority considers that the strength of evidence to put the land into Category 1 does not exist; but (ii) nonetheless, on the basis of the available scientific evidence and expert opinion, the authority considers that the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant pollution of controlled waters on a precautionary basis, with all that this might involve (e.g. likely remediation requirements, and the benefits, costs and other impacts of regulatory intervention). Among other things, this category might include land where there is a relatively low likelihood that the most serious types of significant pollution might occur.
3	(a) Category 2: Human Health. Land should be placed into Category 2 if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm, with all that this might involve and having regard to Section 1. Category 2 may include land where there is little or no direct evidence that similar land, situations or levels of exposure have caused harm before, but nonetheless the authority considers on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part 2A on a precautionary basis. (b) Category 3: Human Health. Land should be placed into Category 3 if the authority concludes that the strong case described in 4.25(a) does not exist, and therefore the legal test for significant possibility of significant harm is not met. Category 3 may include land where the risks are not low, but nonetheless the authority considers that regulatory intervention under Part 2A is not warranted. This recognises that placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose. The authority should consider making available the results of its inspection and risk assessment to the owners/occupiers of Category 3 land.	This covers land where the authority concludes that the risks are such that (whilst the authority and others might prefer they did not exist) the tests set out in Categories 1 and 2 above are not met, and therefore regulatory intervention under Part 2A is not warranted. This category should include land where the authority considers that it is very unlikely that serious pollution would occur; or where there is a low likelihood that less serious types of significant pollution might occur.
4	The local authority should not assume that land poses a significant possibility of significant harm if it considers that there is no risk or that the level of risk posed is low. For the purposes of this Guidance, such land is referred to as a "Category 4: Human Health" case. The authority may decide that the land is a Category 4: Human Health case as soon as it considers it has evidence to this effect, and this may happen at any stage during risk assessment including the early stages. The local authority should consider that the following types of land should be placed into Category 4: Human Health: (a) Land where no relevant contaminant linkage has been established. (b) Land where there are only normal levels of contaminants in soil. (c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria. (d) Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives). The local authority may consider that land other than the types described above should be placed into Category 4: Human Health if following a detailed quantitative risk assessment it is satisfied that the level of risk posed is sufficiently low. Local authorities may decide that particular land apparently matching the descriptions above immediately above poses sufficient risk to human health to fall into Categories other than Category 4. However, such cases are likely to be very unusual and the authority should take particular care to explain why the decision has been taken, and to ensure that it is supported by robust evidence.	This covers land where the authority concludes that there is no risk, or that the level of risk posed is low. In particular, the authority should consider that this is the case where: (a) no contaminant linkage has been established in which controlled waters are the receptor in the linkage; or (b) the possibility only relates to types of pollution described in paragraph 4.40 above (i.e. types of pollution that should not be considered to be significant pollution); or (c) the possibility of water pollution similar to that which might be caused by "background" contamination.

Category 1 or 2 encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health.

The guidance defines what 'normal' levels of contamination is and that a site should not be classified as 'contaminated land'.

'Normal' levels of contamination is defined as:

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

The UK regulatory authorities have adopted the widely recognised pollutant linkage concept for assessing risks from land contamination. However, the scenarios under which significant harm may occur are often largely defined by the site conditions and the receptor sensitivity. The concept of suitability for use is adopted to ensure that the risk management process addresses the site-specific conditions and that any remediation undertaken reduces risks to an acceptable level. To meet requirements under Part IIA the site should be suitable for its current use, including use for which a planning permission is already held.

Part IIA of The Environmental Protection Act 1990 is supported by the DEFRA publication of April 2012 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance' (this replaces DETR Circular 06/2006), which defines the duties of Local Authorities in dealing with it. Part IIA places contaminated land responsibility as a part of planning and redevelopment process rather than Local Authority direct action except in situations of very high pollution risk. In the planning process guidance is provided by the National Planning Policy Framework which requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA.

The criteria for assessing levels of pollutants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

(a) To identify and remove unacceptable risks to human health and the environment;

(b) To seek to ensure that contaminated land is made suitable for its current use;

(c) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach comprises of three elements:

(a) ensuring that land is suitable for its current use

(b) ensuring that land is made suitable for any new use, as planning permission is given for that new use

(c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought

The mere presence of pollutants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the use that the site has, and will have in the future.

Legislation in Scotland, Northern Ireland and Wales

Northern Ireland

The Northern Ireland Assembly was established as part of the Belfast Agreement and it is the prime source of authority for all devolved/transferred matters (including environment and planning) and has full legislative and executive authority. Devolution powers became the responsibility of the Northern Ireland Assembly on the 2nd December 1999. The Executive was subsequently suspended and Direct Rule restored on the 11th February 2000. Restoration of devolution subsequently took place on 30th May 2000. Twenty-four hour suspensions also took place in August and September 2001.

On the 14th October 2002 the Assembly was again suspended and then formally dissolved on the 28th April 2003. Subsequently the Assembly was restored to a state of suspension following elections in November 2003 with the Assembly finally being restored on 8th May 2007.

The Environment and Heritage Service (EHS) is the largest Agency within the Department of the Environment (DOE NI), one of the eleven Northern Ireland Departments created in 1999. The EHS takes the lead in advising on, and in implementing, the Government's environmental policy and strategy in Northern Ireland.

The Planning Service, another Agency which comes under the umbrella of the DOE NI, is responsible for developing and implementing Government planning policies and development plans in Northern Ireland.

Part 3 of the Waste and Contaminated Land (Northern Ireland) Order 1997 contains the main legal provisions for the introduction of a contaminated land regime in Northern Ireland. The Order was enacted in 1997 but the regime is not yet in operation. The provisions within Part 3 are virtually identical to those provided by part 2A and would establish a regime whereby local authorities are under a duty to investigate and identify contaminated land and identify those responsible for its remediation.

In terms of provision of technical guidance for regulators to assist them in the determination of contaminated land the DOE NI references the DEFRA SGV Task Force and CLEA publications.

The primary legislation governing planning in Northern Ireland is the Planning (Northern Ireland) Order 1991 (as amended). This is backed up by secondary legislation and planning policy, including planning policy statements (PPSs) and area plans. However there is currently no specific PPS addressing development on potentially contaminated land.

Planning applications are determined by the Planning Service with local councils, along with other government departments, acting as consultees to the approval process. Despite the lack of guidance the Planning Service, in considering planning applications for brownfield sites, will impose conditions for site investigation and remediation that broadly mirror the requirements of part 3/Part 2A.

Wales

Both the Environment Protection Act 1990 and the Environment Act 1995 were issued on a UK wide basis, so the same principles of Part 2A legislation are applicable. In July 1997 the UK Government published a white paper outlining proposals for devolution. In Wales a referendum was held in September 1997 and the result led to the Government of Wales Act 1998 being issued thus establishing the National Assembly for Wales (NAW) with powers being transferred on 1st July 1999.

Since this time subordinate legislation has been introduced in Wales that details how the provisions of an Act of Parliament will apply, hence the reason for different effects in Wales to that of England.

The elected Assembly Members effectively delegated their powers for implementation of policies and legislation to the Welsh Assembly Government (WAG). One of the subject areas within WAG is Environment Planning & Countryside, which covers the policies and subordinate legislation relevant to land contamination. The preliminary legislation was The Contaminated Land (Wales) Regulations 2001 Welsh Statutory Instrument 2001 No. 2197 (W.157) which came into force on 1st July 2001. This has now been revoked and replaced by The Contaminated Land (Wales) Regulations 2006 Welsh Statutory Instrument 2006 No. 2989 (W.278) which came into force on 10th December 2006. These include the changes for appeals on Remediation Notices, which are required to be made to NAW. The Radioactive Contaminated Land (Modification of Enactments) (Wales) Regulations 2006 were implemented at the same time.

Current Statutory Guidance relevant to Wales is the 'Contaminated Land Statutory Guidance – 2012' (2012) issued by the Welsh Government. This comprises Guidance previously issued in November 2001 and further guidance to accompany other modifications such as the introduction of radioactivity. The principle regulators of the Part 2A process are Environment Agency Wales and as appropriate the local authority responsible for the site in question. As in England the use of the CLEA v1.06 model and the relevant SGV and TOX reports are applicable in Wales.

In respect of Planning the circular 022/87 (WO) prepared by DETR (Department of Environment, Transport and the Regions) on Development of Contaminated Land remains applicable for outlining the requirements associated with new developments, including change of use. The document states that contamination is a material planning consideration, but is ambiguous in a number of areas. It does however indicate that an investigation will normally be required where the previous history of the site suggests contamination.

Planning Policy Wales (2002) outlines that the physical constraints on the land are to be taken into account at all stages of the planning process and this is in the context of land instability and land contamination. It also explains that LPA's (Local Planning Authorities) should be aware of the requirements of Part 2A and ensure that their policies and decisions are consistent with it. This implies that the methods used in assessing land for Part 2A purposes should be applied within the planning regime. Accordingly the concept of risk assessment as a tool to help direct development on a suitable for use basis is appropriate as in England.

NPPF does not apply in Wales, however it may be referred to as good practice, though this may be open to challenge. In Wales Technical Advice Notes (TAN) are used as Planning Policy Statements and currently there is no TAN applicable to land contamination in Wales. WAG is considering the preparation of a TAN and it is understood that this will look at the suitability of PPS23 for Wales, though no timetable for delivering this has been made.

Land Contamination: A Guide for Developers prepared on behalf of the Welsh Local Government Association, Environment Agency Wales & WAG was issued in July 2006. Whilst this is not statutory guidance, it helps confirm good practice and broadly details the risk assessment process in line with the Guidance on 'Land contamination risk management (LCRM)'

Scotland

Since the passing of the Scotland Act and the official convening of the Scottish Parliament and the Scottish Executive on the 1st July 1999 devolved matters, including the environment and planning, have been the responsibility of Scottish Ministers.

There are two regulatory enforcement bodies in Scotland with duties and powers in terms of identification and remediation of contaminated land and development of brownfield sites; Local Authorities and the Scottish Environment Protection Agency (SEPA) which was established in 1996.

The current structure of local government in Scotland was established by the Local Government (Scotland) Act 1994. Since the passing of the Act Scotland has been divided into 29 unitary authorities and 3 island authorities. It is the responsibility of the Scottish Executive to implement Part 2A of the Environmental Protection Act, 1990. Scottish Ministers therefore implemented.

The Contaminated Land (Scotland) Regulations 2000 (SI2000/178) (the 2000 Regulations) with accompanying statutory guidance on the 14th July 2000. The 2000 Regulations were replaced on the 1st April 2006 by the Contaminated Land (Scotland) 2005 Regulations (the 2005 Regulations). The 2005 Regulations amended Part 2A of the Environmental Protection Act 1990 and the 2000 Regulations in the light of the Water Environment and Water Services (Scotland) Act 2003. Guidance on the 2005 Regulations was published in June 2006 in the form of Paper SE/2006/44 (Statutory Guidance; Edition 2) by the Scottish Executive. The document replaces in its entirety the guidance issued July 2000.

Contaminated land was defined in the 2000 Regulations where pollution of controlled waters is being, or is likely to be caused. This meant that any degree of pollution of controlled waters could have resulted in the land being designated as contaminated. The 2005 Regulations addressed the anomaly whereby trivial amounts of pollution resulted in land being designated as contaminated by introducing a requirement that pollution be "significant" or likely to be "significant" in relation to the water environment.

Unlike England and Wales the 2005 Regulations do not include radioactive contamination. The Radioactive Contaminated Land (Scotland) Regulations 2007 came into force in Scotland on the 30th October 2007. The Regulations make provision for Part 2A to have effect with modifications for the purpose of the identification and remediation of radioactive contaminated land.

When brownfield or contaminated sites are being developed, Local Authorities require that the need for remediation is determined using guidance provided by Planning Advice Note (PAN) 33. PAN 33 uses the Suitable for Use Approach. The approach focuses on the risks caused by land contamination and recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors such as the underlying geology.

The Suitable for Use Approach comprises three elements:

- Ensuring that land is suitable for its current use;
- Ensuring that land is made suitable for any new use as planning permission is given for that use; and
- Limiting the requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use for which planning permission is being sought.

APPENDIX C: RISK ASSESSMENT METHODOLOGIES

RISK ASSESSMENT METHODOLOGY

The methods applied by DEMETER ENVIRONMENTAL Ltd in the assessment of risks to receptors from soil, water and gas data, are presented hereunder:

LEGISLATION OVERVIEW:

The legislative background to risk assessment is discussed in the legislative Appendix B.

RISK ASSESSMENT METHODOLOGY

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

(a) The probability, or frequency, or occurrence of a defined hazard; and
(b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection." This established an iterative, systematic staged process which comprises:

(a) Hazard identification
(b) Hazard assessment
(c) Risk estimation
(d) Risk evaluation
(e) Risk Assessment

At each stage during the investigation process the above steps are repeated as more detailed information becomes available for the site.

The Guidance on 'Land contamination risk management (LCRM), guidance published by the the Environment Agency (EA) outlines a tiered approach to the assessment of risks posed by contaminated land, as summarised hereunder:

Tier 1: Preliminary Risk Assessment

A Preliminary Risk Assessment is usually undertaken as part of a desk study, outlines potential risks posed by potential contamination to all receptors by defining plausible "pollution linkages" and developing a preliminary conceptual model (PCM). The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant comes into contact with, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a "pollution linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

The absence of one or more of each component (source, pathway, receptor) would prevent a pollutant linkage being established and there would be no significant environmental risk.

Potential contaminants of concern are identified with the aide of the Environment Agency and NHBC publication 'Guidance for the Safe Development of Housing on Land Affected by Contamination', the Department of Environment Industry Profiles and the now withdrawn CLEA CLR 8, which consolidated the information Industry Profiles into a tabular format.

The PCM is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a PCM is formed. Based on the PCM, potential pollutant linkages can be assessed. If the PCM and hazard assessment indicate that a pollution linkage is not of significance then no further assessment or action is required due to this linkage. For each significant and possible linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is usually termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the PCM and assess the level of risk from each pollutant linkage. The risk assessment will usually include a Tier 2 Generic Quantitative Risk Assessment and / or, if necessary, a Tier 3 Detailed Quantitative Risk Assessment.

The criteria used for a Tier 1 risk assessment are broadly based on those presented in Section 6.3 of the CIRIA Report 'Contaminated Land Risk Assessment: A Guide to Good Practice' (CIRIA Report C552) and Section 1.7 of Guidance on the Safe Development of Housing on Land affected by Contamination. The consequence of the risk is classified according to the criteria in Table A below:

Assessment of Sensitivity of Water Resources

The criteria used to determine the sensitivity of a water resource is given hereunder:

Groundwater

Sensitivity Assessment	Standard Response	Implications/need for further work (subject to nature of source and pathway)
H1 (Very high)	Highly vulnerable aquifer, actively used in vicinity of site with short travel times to sources of supply or sensitive watercourses. Likely to be within an inner or outer groundwater protection zone (Zones I or II under EA protection policy). All contaminant releases to the ground environment of concern.	Extensive groundwater and soil clean-up or removal is likely to be needed if a source and pathway exist. Potential for major on-site and off-site liabilities. Further, detailed risk assessment essential and is likely to be required by the Regulators. Could be long-term residual liabilities with major cost implications and potential high risk of prosecution.
H2 (High)	Major or minor vulnerable aquifer with probable use nearby (either direct abstraction or baseflow to sensitive watercourses and springs). Likely to be within Outer or Source Catchment protection zones (Zones II or III). Most contaminant releases to the ground environment of concern.	Significant groundwater remediation measures may be required, after detailed risk assessment, which is likely to be required by the Regulators. Soil decontamination or isolation probably necessary. Potential for significant on-site and off-site liabilities, including treatment and/or replacement of local potable water supplies. Substantial cost implications and potential moderate/high risk of prosecution.
M1 (Moderately high)	Recognised major or minor aquifer, moderately vulnerable, with probable use (either direct or via baseflow to a sensitive watercourse). Within formal protection zone or catchment of authorised abstractions for potable or other high quality uses. Minor, short-term releases of contaminants may be tolerable.	Following risk assessment, soil decontamination or isolation may be required. Localised groundwater clean-up may be needed but large scale clean-up unlikely unless source is substantial and toxic. Possible off-site liabilities such as replacement/treatment of local potable water supplies. Moderate cost implications and potential moderate risk of prosecution.
M2 (Moderate)	Minor aquifer, low to moderately vulnerable, but with possible uses in general area, particularly for domestic supplies. May provide pathway to surface water.	Risk assessment may indicate need for localised clean up/isolation of soil and groundwater only, but may be some off-site liabilities e.g. local potable water supplies. Moderate to low cost implications. Potential prosecution less likely.
L1 (Low)	Permeable strata/minor aquifer near surface, but no apparent use and low vulnerability (may also be a significant aquifer but downgraded by long-term/ permanent degradation of water quality). May provide pathway to surface watercourse at distance.	Localised clean-up/isolation of soil and groundwater only. Unlikely to be significant off-site liabilities or action by statutory authorities with respect to groundwater. Low cost implications.
L2 (Very low)	Not a recognised aquifer, but strata beneath site may retain a small amount of contaminated liquid but there is likely to be limited vertical penetration. High potential for surface runoff or ponding.	Clean-up/isolation of soil and contained groundwater only, in immediate vicinity of release. Unlikely to be off-site liabilities or action by statutory authorities with respect to groundwater. Low cost implications.

Surface Water (exc coastal waters)

Sensitivity Assessment	Standard Response	Implications/need for further work (subject to nature of source and pathway and no short circuiting by artificial drainage systems)
H1 (Very high)	High quality watercourse (GQA A or B) within close proximity (less than 250m) of site or with potential for rapid transmission of pollutants to that watercourse via a fissured aquifer. Or interconnected unclassified drain or stream.	Potential for major pollution incident with fish kills, risk to river users etc. Major cost implications for remediation measures and with respect to penalties on prosecution. Potential for major adverse publicity.
H2 (High)	Site within catchment and reasonable proximity (less than 500m) of high quality watercourse (GQA A/B) or with potential transmission of pollutants via baseflow from an aquifer with little subsurface attenuation or via an interconnected unclassified drain or stream.	Potential for significant pollution incident that requires remedial measures and likely to involve a prosecution and adverse publicity. Substantial cost implications.
M1 (Moderately high)	Site within catchment and reasonable proximity (less than 500m) of a moderate quality watercourse (GQA C/D) or 500-1000m of a high quality watercourse (GQA A/B). Also where there is potential transmission of pollutants via baseflow with little subsurface attenuation or via an interconnected unclassified drain or stream.	Potential for significant pollution incident that requires remediation measures. Possible prosecution, particularly if contamination is likely to be visible or result in public complaints.
M2 (Moderate)	Site within catchment of and relatively close (less than 1000m) to moderate or poor quality (GQA C to F) watercourse that may be subject to planned improvement by attainment of surface water quality objectives. May be potential for transmission of pollutants via baseflow from a highly permeable formation.	Minor incidents are unlikely to attract third party liabilities, but action by statutory authorities likely if contamination is visible or repeated.
L1 (Low)	Within catchment of and over 250m from generally poor quality watercourse (GQA E or F) that is unlikely to improved by current or foreseeable surface water quality objectives or at distance (over 1000m) from a good quality watercourse with no interconnecting drains or baseflow from fissured strata.	Unlikely to be third party liabilities or action from statutory authorities from surface water viewpoint.
L2 (Very low)	No surface water within general area of the site (at least 250m) or closed drainage within site. Little or no potential for significant transmission via baseflow and no interconnecting drains.	Liabilities restricted to site itself (localised soil contamination or ponding) or associated with groundwater.

Coastal Waters

Sensitivity Assessment	Standard Response	Implications/need for further work (subject to nature of source and pathway and no short circuiting by artificial drainage systems)
H1 (Very high)	Within 100m of a sensitive coastal water, that is, a recognised bathing water, a "more sensitive area" (as defined under the Urban Wastewater Treatment Directive) or a marine SSSI or at a greater distance but with a direct connection via a stream or a highly fissured aquifer to such a coastal water with the potential for rapid flow to that water.	Potential for major environmental health risks and ecological damage. Probability of high remedial costs, prosecution and adverse publicity.
H2 (High)	As above, within 250m or with a relatively rapid route of transmission or within 100m of a "less sensitive area".	
M1 (Moderately high)	Within 500m of a bathing water or a defined sensitive area (see above); with possibility of diffuse flow via groundwater seepages at coastline or with connection via nearby watercourses.	LESS DATA AVAILABLE FOR COASTAL SITES TO GIVE GENERALISED ASSESSMENTS OF POTENTIAL LIABILITIES.
M2 (Moderate)	Within 500m of a coastal water (undefined), with possibility of diffuse flow via groundwater seepages at coastline or with connection via nearby watercourses.	
L1 (Low)	No coastline nearby (within 1km), but with possibility of diffuse groundwater seepages at coastline or connection via nearby watercourses.	Liabilities initially associated with watercourses or groundwaters.
L2 (Very low)	No coastline nearby (within 1km) and/or no direct connection via surface or ground water.	No liabilities likely.

Artificial Drainage System

Sensitivity Assessment	Standard Response	Implications/need for further work (subject to nature of source and pathway and no short circuiting by artificial drainage systems)
H1 (Very high)	Extensive land use/industrial history, successive building development. Steep surface slopes (rapid travel times with little opportunity for dilution/ interception facilities) or close proximity (within 250m) to surface watercourses or high sensitivity groundwater. Former mining areas where subsurface mine drains are present or suspected. Detailed drainage records absent.	Probability of interconnection of artificial and natural drainage systems, with consequent risks to sewers, surface and ground water. Potential unconsented connections and discharges on and off-site with third party pipes/structures, risk of third party action and additional effluent treatment costs. Potential damage to site fabric and structures due to leakages and collapse. Major cost implications for investigation and implementation of remedial measures. Drainage investigation and risk assessment essential.
H2 (High)	As above, but shallower slopes (longer retention times in drains) or more distant (over 250m) to surface watercourses or with detailed records of drainage systems.	As above, but potentially lower investigatory and remedial costs. Drainage investigation and risk assessment essential.
M1 (Moderately high)	More than one phase of site development with limited historic records of drainage systems (sewers, surface water, pipelines). Over 250m from surface watercourse.	As above, but less extensive drainage investigation and reduced investigation and remedial costs.
M2 (Moderate)	More than one phase of site development with detailed historic records of drainage systems (sewers, surface water, pipelines).	As above, costs likely to be dependent on-site processes and degree of maintenance of existing drainage systems.
L1 (Low)	Recent (greenfield) development, with recorded and low intensity drainage systems or older sites with thoroughly investigated and recorded drainage systems, drainage risk assessment and implementation of remedial measures. Within 250m of surface watercourses or on low permeability strata. No mine drains.	Leakages from drains may contaminate soil locally and eventually reach a watercourse. Low risk of third party action.
L2 (Very low)	Recent (greenfield) development, with recorded and low intensity drainage systems, or older sites with thoroughly investigated/recorded drainage systems, drainage risk assessment and implementation of remedial measures. Remote from surface watercourses, all drainage to adopted sewers and with no permeable strata within 10m of the site surface. No mine drains.	Leakages from drains may contaminate soil locally.

Table A – Consequence of Risk

CLASSIFICATION	DEFINITION	EXAMPLES
Severe	Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs. Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. Short term risk of pollution of sensitive (H1/H2) water resource. Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. A short term risk to a particular ecosystem, or organism forming part of such ecosystem. Catastrophic damage to crops, buildings or property.	Significant harm to humans is defined in circular 01/2006 as death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Major fish kill in surface water from large spillage of contaminants from site. Highly elevated concentrations of List I and II substances present in groundwater close to small potable abstraction (high sensitivity). Explosion, causing building collapse (can also equate to immediate human health risk if buildings are occupied).
Medium	Elevated concentrations which could result in "significant harm" or "significant possibility of significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs. Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce. Pollution of a highly sensitive (H1/H2) water resource. Significant damage/change to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to crops, buildings or property.	Significant harm to humans is defined in circular 01/2006 as death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Damage to building rendering it unsafe to occupy e.g. foundation damage resulting in instability. Ingress of contaminants through plastic potable water pipes.
Mild	Exposure to human health unlikely to lead to "significant harm". Equivalent to EA Category 3 pollution incident including minimal or short lived effect on water quality; marginal effect on amenity value, agriculture or commerce. Pollution of moderately sensitive (M1/M2) water resources. Minor or short lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population. Significant damage to crops, buildings, structures and services ("significant harm" as defined in Circular 1/2006).	Exposure could lead to slight short-term effects (e.g. mild skin rash). Surface spalling of concrete.
Minor	No measurable effect on humans. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects of damage to buildings, structures and services. Pollution of low sensitive (L1/L2) water resource. Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.	The loss of plants in a landscaping scheme. Discoloration of concrete.

The probability of the risk occurring is classified according to criteria given in Table B below:

Table B – Probability of Risk Occurring

CLASSIFICATION	DEFINITION	EXAMPLES
High likelihood	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.	a) Elevated concentrations of toxic contaminants are present in soils in the top 0.5m in a residential garden. b) Ground/groundwater contamination could be present from chemical works, containing a number of USTs, having been in operation on the same site for over 50 years.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	a) Elevated concentrations of toxic contaminants are present in soils at depths of 0.5-1.0m in a residential garden, or the top 0.5m in public open space. b) Ground/groundwater contamination could be present from an industrial site containing a UST present between 1970 and 1990. The tank is known to be single skin. There is no evidence of leakage although there are no records of integrity tests.
Low likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.	a) Elevated concentrations of toxic contaminants are present in soils at depths >1m in a residential garden, or 0.5-1.0m in public open space. b) Ground/groundwater contamination could be present on a light industrial unit constructed in the 1990s containing a UST in operation over the last 10 years – the tank is double skinned but there is no integrity testing or evidence of leakage.
Unlikely	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.	a) Elevated concentrations of toxic contaminants are present below hardstanding. b) Light industrial unit <10 yrs old containing a doubleskinned UST with annual integrity testing results available.
Negligible	There is pollutant linkage but circumstances are such that it is risk cannot be differentiated from nil (so rare that the risk is regarded a nil)	a) in-filled pond off site' b) electricity substation 50m from the site

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table C below:

Table C – Calculation of Risk

		CONSEQUENCE			
		Severe	Medium	Mild	Minor
PROBABILITY	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very low Risk	Very low Risk
	Negligible	Low Risk	Very low Risk	Very low Risk	Very low Risk

The above evaluated risk terms are described hereunder in Table D:

Table D – Description of the Evaluated Risks from Table 3

EVALUATED RISK	DESCRIPTION
Very High Risk	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 to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	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 (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild.
Very Low Risk	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.
No Potential Risk	There is no potential risk if no pollution linkage has been established.

The likely action required for each of the above evaluated risks is as follows:

Action in the form of site investigation and risk assessment, mitigation of risk or remediation of contamination is required at sites evaluated as Very High Risk or High Risk.

Site investigation is required at sites evaluated as Moderate Risk.

No action is required at sites evaluated as No Potential Risk, Low Risk or Very Low Risk.

Tier 2: Generic Quantitative Risk Assessment (GQRA)

GQRA requires an intrusive investigation in order to characterise the site assisting in the re-assessment of the source-pathway receptor linkage. The conceptual model should be refined accordingly.

If GQRA reveals that unacceptable risks are not present then no further action is required. If GQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable / not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope / nature of further risk assessment must be decided – it is possible that a Tier 3 DQRA will be undertaken in this scenario.

Tier 3: Detailed Quantitative Risk Assessment (DQRA)

DQRA is used when pollutant linkages require further assessment. DQRA is often undertaken for pollutant linkages where GAC are unavailable or inappropriate for or more conservative than the actual circumstances of the site. Site specific data is used to create Site Specific Assessment Criteria (SSAC) and enable a more accurate assessment of the risks. Further investigation may or may not be required to formulate SSAC depending on the site specific conditions and information already obtained.

If DQRA reveals that unacceptable risks are not present then no further action is required. If DQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable / not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope nature of further risk assessment must be decided.

NOTE: A Tier 1 Preliminary Risk Assessment is undertaken as part of a Desk Study Report and a Preliminary Conceptual Model is developed for all pollutant linkages including risks ground gas and controlled waters. The methodologies for assessing the risks to human health, risks to controlled waters and risk posed by ground gas using quantitative techniques vary considerably, therefore GQRA and DQRA for human health, controlled waters and ground gas must be undertaken separately. The risk assessment methodologies where quantitative assessment is used for risks to human health, risks to controlled waters and risks posed by ground gas, if relevant, are described hereunder.

HUMAN HEALTH RISK ASSESSMENT METHODOLOGY – SOIL AND WATER

Background

In January 2009, the EA published the revised Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports together with associated "TOX" and "SGV" documents are continually being published and will be used in any assessment.

Guidance on statistical assessment is given in CL:AIRE :2008 "Guidance on Comparing Data With a Critical Concentration"

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to determine whether the site is suitable for new development in according with planning guidance. This is discussed further in CL:AIRE :2008 "Guidance on Comparing Data With a Critical Concentration".

COLLATION OF SOIL TOXICOLOGICAL DATA

The toxicological data collated by Demeter Environmental Ltd is presented as a separate document, available to regulatory bodies on request. The data gathered is generally in accordance with the hierarchy given in the EA Science Report SC050021/SR21 "Human health toxicological assessment of contaminants in soil". The hierarchy may be circumvented where more up to date authoritative data from a toxicological study has been published from sources lower down the hierarchy.

DERIVATION OF SOIL ASSESSMENT CRITERIA

GAC's derived by Demeter Environmental Ltd are based on a Soil Organic Matter (SOM) content of 1%. Whilst this approach differed from the Environment Agency (who have published SGV's based on a 6% SOM) it provides a more conservative GQRA. Where SSAC's are required, site specific SOM will be used in the DQRA. Where available, other parameters such as building size, receptor and soil characteristics will be used in the DQRA.

Assessment criteria are available from a number of sources, namely (and in order of use):

1. Land Quality Management Suitable for Use Levels (S4UL's) (Copyright Land Quality Management Limited reproduced with permission; Publication number S4UL3093. All rights reserved);
2. C4SL for lead;
3. EIC/AGS/CL:AIRE Generic Assessment Criteria;
4. In-house derived GAC's / S4UL's.

STATISTICAL ASSESSMENT OF SOIL CONTAMINATION DATA

In any site investigation only a small fraction of the soil on the site is analysed. Therefore the mean derived from the contamination data for a contaminant may not be the same as the true mean for the contaminant distribution on the site. To improve the reliability of any assessment a statistical analyses is if the dataset is undertaken.

The statistical assessment is undertaken using ProUCL, which is published by the USEPA, which provides a statistical assessment that exceeds the guidance given in the CL:AIRE document "Guidance on Comparing Soil Contamination Data with a Critical Concentration".

Where the number of results in a dataset is less than four, a statistical assessment cannot be undertaken, and the assessment is performed by comparison of the maximum value(s) with the assessment criteria. Dependant on the distribution of the data, a statistical analysis may not be feasible and in those cases the results will be assessed directly to their respective assessment criteria.

If the screening levels are exceeded then more sophisticated quantitative risk assessment can be undertaken or remedial action may be taken to break the pollutant linkages. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

ASSESSMENT OF RISK TO HUMAN HEALTH

ASSESSMENT VALUES

Assessment criteria are available from a number of sources, namely:

1. Land Quality Management Suitable for Use Levels (S4UL's) (Copyright Land Quality Management Limited reproduced with permission; Publication number S4UL3093. All rights reserved);
2. C4SL for lead (the C4SL is used in lieu of the in house derived GAC as it provides a more conservative assessment);
3. EIC/AGS/CL:AIRE Generic Assessment Criteria;
4. In-house derived GAC's / S4UL's

TIER 2 GENERIC ASSESSMENT CRITERIA FOR SOILS

Generic Assessment Criteria (GAC's) have been derived by Demeter Environmental Ltd to aid in the assessment of the risk to human health. These are derived using CLEA v1.06. Details of the derivation of the GAC's are provided within the Report. GAC's are based on generic assumptions on the land use, building and soil parameters.

SITE SPECIFIC ASSESSMENT CRITERIA FOR SOILS

Where there are exceedances of the Tier 2 GAC, Site Specific Assessment Criteria (SSAC) are derived, using site specific data for the Soil Organic Matter (SOM), building parameters, land use etc. An SSAC, like SGV's, S4UL's and GAC's is a threshold below which the risk is minimal.

Whilst CLEA v1.06 is normally used to derive SSAC's, other risk assessment packages may be used if they are more suitable for the subject site.

ASSESSMENT OF RISK TO HUMAN HEALTH FROM SOIL WATER

Where exposure to contamination in soil water is significant this will be assessed using BP RISC (amended to be as close to UK compliant as possible).

CONTROLLED WATER RISK ASSESSMENT METHODOLOGY

Background

Definition of Controlled Waters

The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

"Territorial Waters…which extend seawards for three miles…, coastal waters…, inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. From the 1st October 2004, the definition of groundwater in relation to Part IIA was amended, by the Second Water Act Commencement Order SI 2004 No 2528. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

INTRODUCTION

Demeter Environmental Ltd utilises the methodology for the assessment of groundwater as discussed in the Environment Agency publication 'Remedial Targets Methodology and Policy and Protection of Groundwater.

The procedure for determining site-specific remedial targets is summarised below:

1) Determine a target concentration at the receptor or compliance point in relation to its use.

2) Undertake the tier assessment to determine whether the contaminant source would result in the target concentration being exceeded at the receptor or compliance point. At each tier, a remedial target is determined.

3) If the contaminant concentrations on-site exceed the remedial target, then the decision whether it is appropriate to upgrade the tier analysis is based on:

   timescale – the decision to proceed to the next tier analysis should only be made if any risk involved in delaying the decision to implement the remedial action is acceptable;
   what additional information is required and can be obtained;
   cost-benefit analysis, i.e. the cost of tier upgrade in relation to the potential reduction in the cost of the remedial solution.

Four assessment tiers are proposed for the assessment of contaminated soil to protect water resources:

Level 1 considers whether contaminant concentrations in "pore water" in contaminated soil are sufficient to impact on the receptor, ignoring dilution, dispersion and attenuation along the pathway. The "pore water" concentration is determined from:

i) measured "pore water" concentrations or perched water quality;
ii) soil leaching tests;
iii) theoretical calculations based on soil/water partitioning equations.

Level 2 considers dilution by the receiving groundwater or surface water body and whether this is sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as the target concentration multiplied by a dilution factor (DF).

Levels 3 and 4 consider whether natural attenuation (including dispersion, retardation and degradation) of the contaminant as it moves through the unsaturated and saturated zones to the receptor are sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as target concentration multiplied by a dilution factor (DF) and attenuation factor (AF). In Level 3 simple analytical models are used to calculate the significance of attenuation, whereas in Level 4 more sophisticated numerical models are used.

For each level, the "pore water" concentration determined for the soil zone is compared to the remedial target to determine the need for remedial action.

The assessment in relation to contaminated groundwater commences at Level 2 as the contaminants have already moved through the soil zone, so that the only processes of significance are attenuation, dispersion and further dilution of this groundwater as it moves from the source towards the receptor. Thus the assessment levels for contaminated groundwater are:

Level 2 − the observed contaminant concentration in groundwater below the site is compared directly to the target concentration.

Levels 3 and 4 − the observed groundwater concentration below the site is compared directly to the target concentration multiplied by an attenuation factor (AF); as with the soil levelled assessment, Levels 3 and 4 are distinguished by the sophistication of the modelling and prediction processes.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED BY GROUND GAS

Background

Origin of Ground and Landfill Gases

When carrying out a ground gas risk assessment, the origin or source of the gases is important as potential risks will vary depending on the source. This Appendix relates to the risk of the two main ground gases of concern; methane and carbon dioxide, and does not apply to other ground gases (e.g. radon or vapours from hydrocarbon spills). Methane and carbon dioxide are major constituents of ground gas but can also occur from a variety of anthropogenic and natural sources, as summarised in Table E below. The generation potential of each source is given below.

Table E- Sources and Origins of Ground Gases

Source	Origin		Typical Range of Concentrations			Generation Potential
			Methane	Carbon Dioxide	Others	
Anthropogenic						
Landfill sites (include shallow and old landfill)	Microbial decay of organic materials derived from the disposal of putrescible materials	Landfill gas is a product of the biodegradation of organic materials contained in wastes deposited in landfill sites. Age and composition of landfill affect the gas regime. The gas regime will also be influenced by physical parameters such as volume/depth of waste and the groundwater regime, as well as environmental factors such as temperature, moisture content and pH value. These factors are considered in some detail in earlier CIRIA guidance (Barry et al, 2001). The Environment Agency Guidance on the management of landfill gas provides useful information on the mechanisms by which landfill gas is generated, its composition and physical and chemical characteristics and behaviour (Environment Agency, 2004a). Leachate from landfill sites may also contain dissolved gases or may degrade during migration to produce methane with carbon dioxide and associated gases.	20-65%	15-40%	Several hundred trace organic gases (maybe odorous or toxic) (generally makes up <1% of total volume, eg H_2S	Very high if the landfill has recently closed (post 1960) Moderate (pre 1960 landfills) Very low (inert landfills)
Made ground	Microbial decay of organic materials contained in reworked natural ground containing demolition and other wastes	Made ground will often contain degradable material such as wood, rags, paper and vegetation. However, the proportion of such carbon-rich materials is typically low, with major components often comprising re-worked clays, silts, sands and gravels together with anthropogenic inclusions such as ash, clinker, brick, concrete etc. Many brownfield sites contain made ground and on these sites the methane concentrations are usually not highly elevated, although there are exceptions, while concentrations of carbon dioxide can typically range to higher values. The rate of gas generation also tends to be low, resulting in small but sustained volumes of gas. There often tends to be a lack of driving force within made ground (see Section 2.6.1). The low rate of gas generation, the limited driving force and the fact that the gas is denser than air result in little upward migration of carbon dioxide.	0-20%	0-10%		Very low (inert made ground) Low (made ground with high levels of organic/ putrescible matter)
Foundry sands	Microbial decay of waste materials from the foundry process (phenolic binders, dextrin, coal dust, wood rags, paper)	In foundry sands, organic materials resulting from the foundry process such as phenolic binders, detrin and coal dust, and other foundry wastes such as wood, lignin and paper can provide a substrate for methanogenic bacteria (Hooker et al, 1993)	Up to 50%	15-40%	Trace organic gases (generally <1% of total volume) (maybe odorous and/or toxic)	Very low to low depending on presence of organic/ putrescible matter

Table E (continued)- Sources and Origins of Ground Gases

Source	Origin		Typical Range of Concentrations			Generation Potential
			Methane	Carbon Dioxide	Others	
Anthropogenic						
Sewage sludge, dung, cess pits/heaps	Microbial decay of organic materials	Methane and carbon dioxide are the main components associated with the anaerobic decomposition of organic components of sewage (Hooker et al, 1993). Hydrogen sulphide is also often present resulting from the degradation of organic matter and sulphur containing compounds (including mercaptans) in the sewage. Nitrogen oxide and ammonia gases are also associated with sewage. These gases can be a problem in sewer systems with confined spaces such as pipework, manholes and service chambers which can lead to potentially explosive, asphyxiating or chemically harmful atmospheres. Additionally the formation of sulphuric acid from the oxidation of hydrogen sulphide can corrode pipes, resulting in migration into the surrounding soils.	60-75%	18-40%	Trace organic gases (generally <1% of total volume) (maybe odorous and/or toxic)	Moderate
Burial Grounds (including cemeteries)	Microbial decay of organic materials contained within human/animal remains.	The generation of gases from the decomposition of corpses is well documented (Polson et al, 1975). The gases generated are predominantly carbon dioxide and methane with trace amounts of odorous sulphur-containing gases. Diphosphane may be generated by anaerobic decomposition of phosphorus in skeletal material (generally in waterlogged areas). Other gaseous emissions may include formaldehyde, associated with the preparation of cadavers and present in medium density fibreboard (MDF), widely used to make coffins.	20-65%	15-40%		Moderate
Industrial/chemical/petroleum sites/manufacturing	Organic vapours derived from leaks or spills from storage, processing and disposal areas		3-100%	2-8%	Trace organic gases (generally <1% of total volume) (maybe odorous and/or toxic), cyanide	Low
Natural gas (supply pipes)	Leakage from bulk pipeline transportation of natural gas	Mains gas is derived from the same geological source as methane in coal mines. Leaks into surrounding soils can occur from damaged or poorly maintained underground pipes. In the UK, a combination of mercaphens and sulphide are added as odourants which can often be detected. Ethane additives will also indicate the presence of distributed main gases.	90-95%	0-9.5%	1 – 27% C2-C4 alkanes, 4.7% CO	Low

Table E (continued)- Sources and Origins of Ground Gases

Natural						
Soils	Physical, chemical and biological transformations of rock during weathering		<2ppm	350ppm		Very low (none if no organic material is present)
Coal measures strata	Burial of vegetation under high temperatures and pressures, liberating gases as a by-product as a result of mining activities	Methane is associated with coal bearing carboniferous strata, produced by the anaerobic decomposition of ancient vegetation trapped within the rock. Associated gases include higher alkanes (for example ethane), hydrogen and helium. Former shafts and/or fractured rock can provide a migration pathway to the surface and rising groundwater or flooding of mine workings can release trapped methane and carbon dioxide.	<1-90%	0-6%	4–13% C_2-C_4 alkanes, 0 – 10% CO production of H_2S possible but rarely occurs in hazardous concentrations	High (active mine working) Moderate (abandoned mine working) Very low (flooded mine workings)
Peat/bog areas	Gas formed by the microbial decay of accumulated plant debris under anaerobic conditions	Methane from these sources is produced by the microbial decay of organic material under anaerobic conditions, usually waterlogged vegetation. Carbon dioxide is usually produced by acid reaction on carbonate fraction in any alluvial soil, and also generated by methane oxidation. Trace gases include hydrogen sulphide and light hydrocarbons. Methane can migrate large distances through soils. The source of the methane which caused the explosion at Abbeystead in 1985 was naturally occurring oil shales at more than 1 km depth.	10-90%	0-5%		Moderate
Alluvium (organic rich sediments)			0-5%	0-10%		Low (may be very low depending on levels of organic matter)
Radon emitting rocks	Decay of naturally occurring uranium within soils and rocks	Radon is a radioactive gas that occurs naturally and has no taste, smell or colour. It is formed from the decay of uranium, which is found in small quantities in all soil and rocks, in particular granite. Radionuclides (the decay products of radon) can damage lung tissues and ultimately lead to lung cancer. An action level of 200 Bq/m³ was set by the former National Radiological Protection Board	Variable	Variable	0-1000 Bq/m³ radon gas. Higher concentrations of gas up to 4,000,000 Bq/m³ have been recorded in the southwest	N/A
Carbonate rich strata	Dissolution of calcium carbonate by acidic water	Acidic waters such as rainwater can react with calcium carbonate (e.g. chalk and limestones etc) to form carbon dioxide. Elevated concentrations of carbon dioxide (>five per cent) have been detected in confined spaces particularly those associated with groundwater abstraction infrastructure such as pump houses, located in chalk areas.	Variable	1-9%		Very low to low depending on water content

This does not provide guidance for the assessment of risk when other gases are present due to 'Other Sources' from the above table (particularly volatile organic compounds or for the risk from radon or hydrogen sulphide).

To determine the origin of the gas a range of factors must be considered together, including;

1. Proximity of likely sources
2. Ground conditions (geology, hydrogeology, anthropogenic pathways etc)
3. Properties of gases present including:
    - Chemical composition
    - Physical properties
    - Ratios of components e.g. methane: carbon dioxide
4. Timeframe of activities such as infilling periods, capping works, installation of gas control systems etc

Identification of the originating source may be problematic given that there may be more than one source present and trace gas analysis may be required. Identification of the sources of the gases encountered during monitoring is usually carried out through a process of eliminating the most unlikely potential sources (given the site setting) and selecting those which are most likely.

Hazards Associated with Presence of Methane

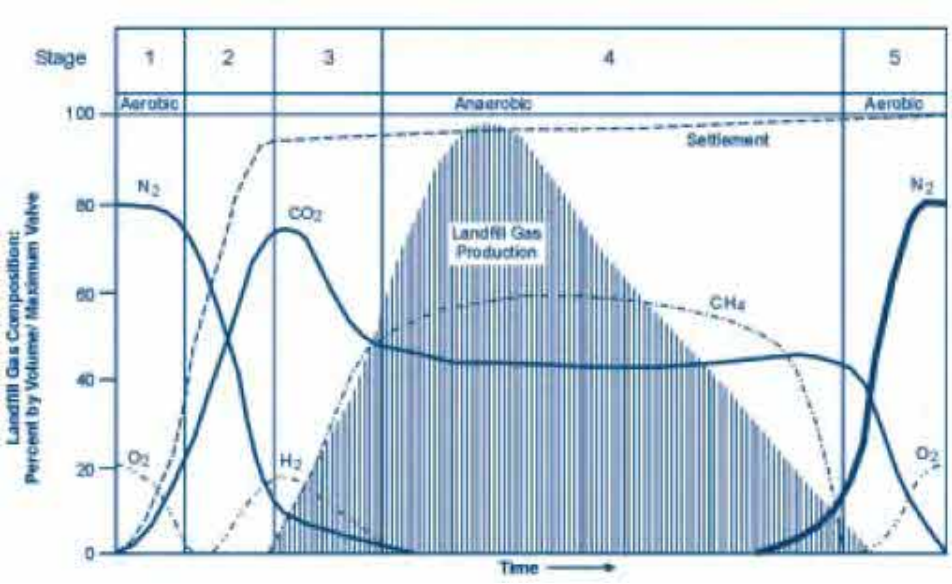
Methane gas is combustible and potentially explosive. When the concentration of methane in air is between the limits of 5.0%v/v and 15.0%v/v an explosive mixture is formed. The Lower Explosive Limit (LEL) of methane is 5.0%v/v, which is equivalent to 100% LEL. The 15.0%v/v limit is known as the Upper Explosive Limit (UEL), but concentrations above this level cannot be assumed to represent safe concentrations. Further, the LEL and UEL will vary (up and down) depending upon the proportion of other gases (including oxygen). However, the fact that methane is a colourless, odourless gas means that there is no simple indicator of the presence of the gas until such a time as explosive limits are reached and an incident occurs. Methane is lighter than air and has a low toxicity. However, at high concentrations it can result in asphyxiation due to oxygen displacement.

Hazards Associated with Presence of Carbon Dioxide

Carbon dioxide is a colourless, odourless gas, which, although non-flammable, is both toxic and an asphyxiant. As carbon dioxide is denser than air, it will collect in low points and depressions. The UK Health & Safety Executive (HSE) has published information relating to concentrations of carbon dioxide that humans may be exposed to, which uses concentrations contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended). These are the Long Term Occupational Exposure Limit (LTOEL, 8 hour period) and the Short Term Occupational Exposure Limit (STOEL, 15 minute period), which are 0.5% and 1.5% carbon dioxide, respectively.

Parameters Influencing the Rate of Ground Gas Production

The figure below is taken from EA guidance document LFTGN 03 illustrates typical ground gas generation curves from biodegradable materials:



The production of methane and carbon dioxide at a landfill site may be expected to be considerable and ongoing. Concentrations of methane will eventually decrease, followed by concentrations of carbon dioxide, but the duration and rate of gas production can vary markedly between sites. Five distinct phases of gas production occur during the process which are, in order of event as marked above, as follows:

1. An aerobic phase involving oxygen depletion and temperature increase through aerobic respiration;
2. The establishment of anaerobic conditions and the evolution of carbon dioxide and hydrogen through acidogenic activity;
3. Commencement of methanogenic activity; the establishment of populations of methanogenic bacteria;
4. A phase of stable methanogenic activity, which may go on for many tens of years;
5. A phase of decreasing methanogenic activity, representing depletion of the organic material and a return to aerobic conditions.

The time scale for the return to the normal ground gas concentrations will be highly variable, depending upon the types and quantities of materials present. In addition, the optimum parameters influencing the rate of decomposition and ground gas production within the ground at a site are as follows:

High water content with adequate rainfall and water infiltration to provide moisture content between approximately 20 to 26%;
Conditions that either are or are very close to anaerobic;
High proportion of biodegradable materials;
A pH between 6.5 and 8.5, ideally verging slightly on the acidic between pH 6 to 7;
Temperature between 25°C and 55°C;
The ratio of the biochemical and chemical oxygen demands (BOD:COD);
High permeability;
Small particle size, as finer subsurface materials possess a greater surface area to provide a growing 'face' for the micro-organisms but high fines levels reduces permeability and reduces decomposition rate.

For this reason, it is vital that sources of methane and carbon dioxide are identified prior to the commencement of any work on a construction site, and that the ground gas regime is characterised at the worst temporal conditions a site may experience. From this, a risk assessment is carried out to identify the risk at the site from ground gases so that suitable protection measures can be designed and incorporated into a development to prevent a dangerous build-up of gas occurring.

Factors Influencing the Migration and Behaviour of Ground Gases

There are many factors that influence the migration of ground gases which can affect the risk from a gassing source:

driving force – pressure differential along a pathway, diffusion and dissolved in solution;
meteorological conditions – short term and seasonal conditions including atmospheric pressure changes (e.g. rapidly falling pressure causes gas to expand increasing emission rates), rainfall, frozen ground and thawing, temperature;
geological and groundwater conditions – these can have the over riding influence on the direction/pathways and quantity of migrating gas;
anthropogenic influences – man-made pathways include mine shafts, service runs/drains, foundation piles, underground voids/pits/basements, foundation/building design/construction

Ground Gas Risk Assessment Methodology

Assessment of risk posed by ground gas is undertaken using the methodology as outlined previously, and summarised hereunder:

Tier 1 Preliminary Risk Assessment
Tier 2 Generic Quantitative Risk Assessment
Tier 3 Detailed Quantitative Risk Assessment

The methodology used in each of the above assessments with concern to ground gas is discussed hereunder.

Tier 1 Preliminary Risk Assessment

All potential sources of methane and carbon dioxide are identified in the Preliminary Conceptual Model and the generation potential determined. The background information discussed earlier is referred to in order to determine the potential for a source to generate ground gas.

CIRIA C665 provides idealised monitoring frequency / period dependent upon generation potential of gas source and sensitivity of the proposed land use as below:

Idealised Frequency and Period of Monitoring (after Table 5.5a and 5.5b, CIRIA C665)

		Generation Potential of Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4/1	6/2	6/3	12/6	12/12
	Moderate (Flats)	6/2	6/3	9/6	12/12	24/24
	High (Residential with Gardens)	6/3	9/6	12/6	24/12	24/24

Notes

1. First number is the number of readings and the second is the minimum period in months (e.g. 6/2 – six sets of readings over two months).

2. At least two sets of readings must be at low (preferably under 1,000 mb) and falling pressure.

The monitoring programme is decided using the above table prior to the intrusive site investigation. However, if the intrusive investigation reveals that a potential source is better or worse than anticipated the monitoring programme should be modified accordingly. For example, if the made ground contains no evidence of organic material and comprises entirely granular brick fill, the potential for that made ground to generate ground gas is reduced considerably.

Tier 2 Generic Quantitative Risk Assessment

Generic Quantitative Risk Assessment is undertaken upon completion of the required gas monitoring period.

All three current guidance documents propose that both ground gas concentrations and flow rates are used to calculate the limiting gas well gas volume flow rates for methane and carbon dioxide, based on the ground gas conditions monitored for during the worse-case temporal conditions. This limiting gas well volume flow rate is termed the Gas Screening Value (GSV, note that this was termed borehole gas volume flow), and is calculated as follows:

$$GSV\ (l/hr) = \frac{[\text{gas well gas concentration (\%v/v)}] \times [\text{gas well flow rate (l/hr)}]}{100}$$

GSV's are compared to typical max concentrations and limiting gas screening values derived for either Situation A - All development except low rise housing with gardens, or Situation B low rise housing with gardens (NHBC Traffic Light System). Table 8.5 from CIRIA C665 is used for comparison of gas screening values for "Situation A Developments" and is presented hereunder:

Characteristic Situation (CIRIA R149)	Comparable Partners in Technology gas Regime (see Box 8.2)	Risk Classification	Gas Screening Value (CH_4 or CO_2) (l/hr)[1]	Additional Factors	Typical Source of Generation
1	A	Very low risk	<0.07	Typically methane ≤ 1% and/or carbon dioxide ≤ 5%. Otherwise consider increase to Situation 2	Natural soils with low organic content "Typical" made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/organic content. "Typical" made ground
3	C	Moderate risk	<3.5		Old landfill, inert waste, mine working flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mine working susceptible to flooding, completed landfill (WMP 26B criteria)
5	E	High risk	<70		Mine working unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Table 8.5 from CIRIA C665 Modified Wilson and Card Classification

Table 8.7 is used for comparison of gas screening values for "Situation B Developments" and is presented hereunder:

Traffic light	Methane [1]		Carbon dioxide [2]	
	Typical max concentration [3] (% by volume)	Gas screening value [2,4] (litres /hour)	Typical max concentration [3] (% by volume)	Gas screening value [2,4] (litres /hour)
Green	1	0.13	5	0.78
Amber 1	5	0.63	10	1.60
Amber 2	20	1.60	30	3.10
Red				

Notes:
1. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter will be the decider as to what Traffic Light is allocated;
2. Borehole Gas Volume Flow Rate, in litres per hour as defined in Wilson and Card (1999), is the borehole flow rate multiplied by the concentration in the air stream of the particular gas being considered;
3. The Typical Maximum Concentrations can be exceeded in certain circumstances should the Conceptual Site Model indicate it is safe to do so;
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

CIRIA C665 Table 8.7 NHBC Traffic light system for 150 mm void

Dependant on the outcome of the assessment of risk posed by ground gas it is determined whether gas protection measures are required for the proposed development, and or whether a detailed quantitative risk assessment is required for the site.

Selection & Design of Protective Measures

Table 8.6 and Box 8.4 of CIRIA C665 contain information on the detailed design of protection measures and were initially intended for the purposes of determining then level of protection measures a development requires. These tables and related text include some useful information on the design of gas protection measures, however BS8485:2015 which supersedes the guidance included within CIRIA C665, is used for selection of gas protection measures. BS8485:2015 uses a scoring system dependant on the Characteristic Situation / NHBC Traffic Light and proposed end use of the site. The scoring system is summarised in BS8485:2015 Table 4 as presented hereunder:

Characteristic gas situation, CS	NHBC traffic light	Required gas protection			
		Type A Building (private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises)	Type B Building (private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels)	Type C Building (commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).	Type D Building (industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses.
1	Green	0	0	0	0
2	Amber 1	3.5	3.5	2.5	1.5
3	Amber 2	4.5	4.0	3.0	2.5
4	Red	6.5 (a)	5.5 (a)	4.5	3.5
5		(b)	6.5 (a)	5.5	4.5
6		(b)	(b)	7.5	6.5
NOTE Traffic light indications are taken from NHBC Report no.:10627-RO1 (04) and are mainly applicable to low-rise residential housing[1]. These are for comparative purposes but the boundaries between the traffic light indications and CS values do not coincide.					
a) Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations. b) The gas hazard is too high for this empirical method to be used to define the gas protection measures					

The NHBC guidance and CIRIA C665 guidance refers to low rise housing (which is up to three storeys without lifts) that is constructed with a 150mm ventilated sub-floor void.

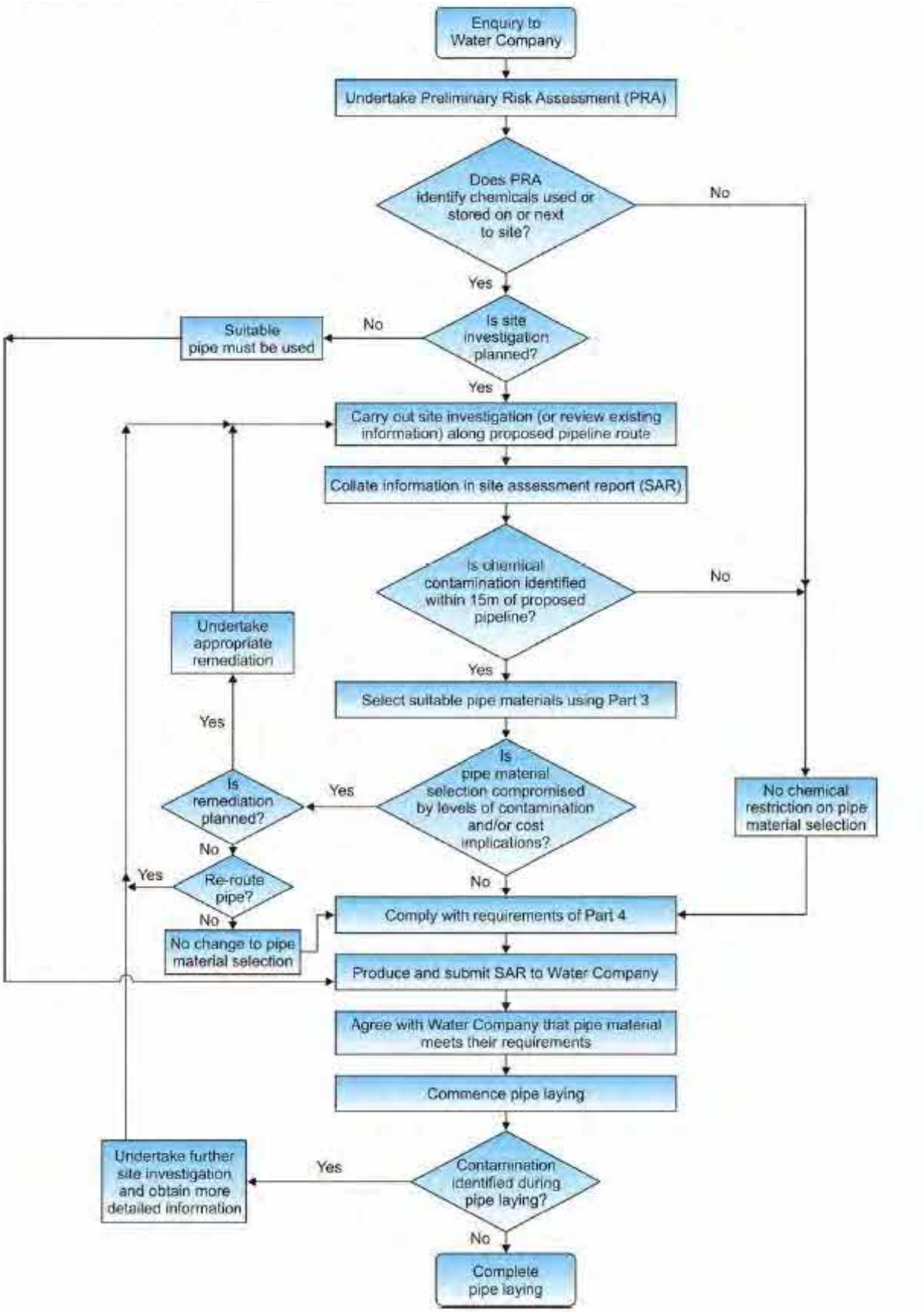
BS8485:2015 Table 2 Required gas protection by characteristic gas situation and type of building

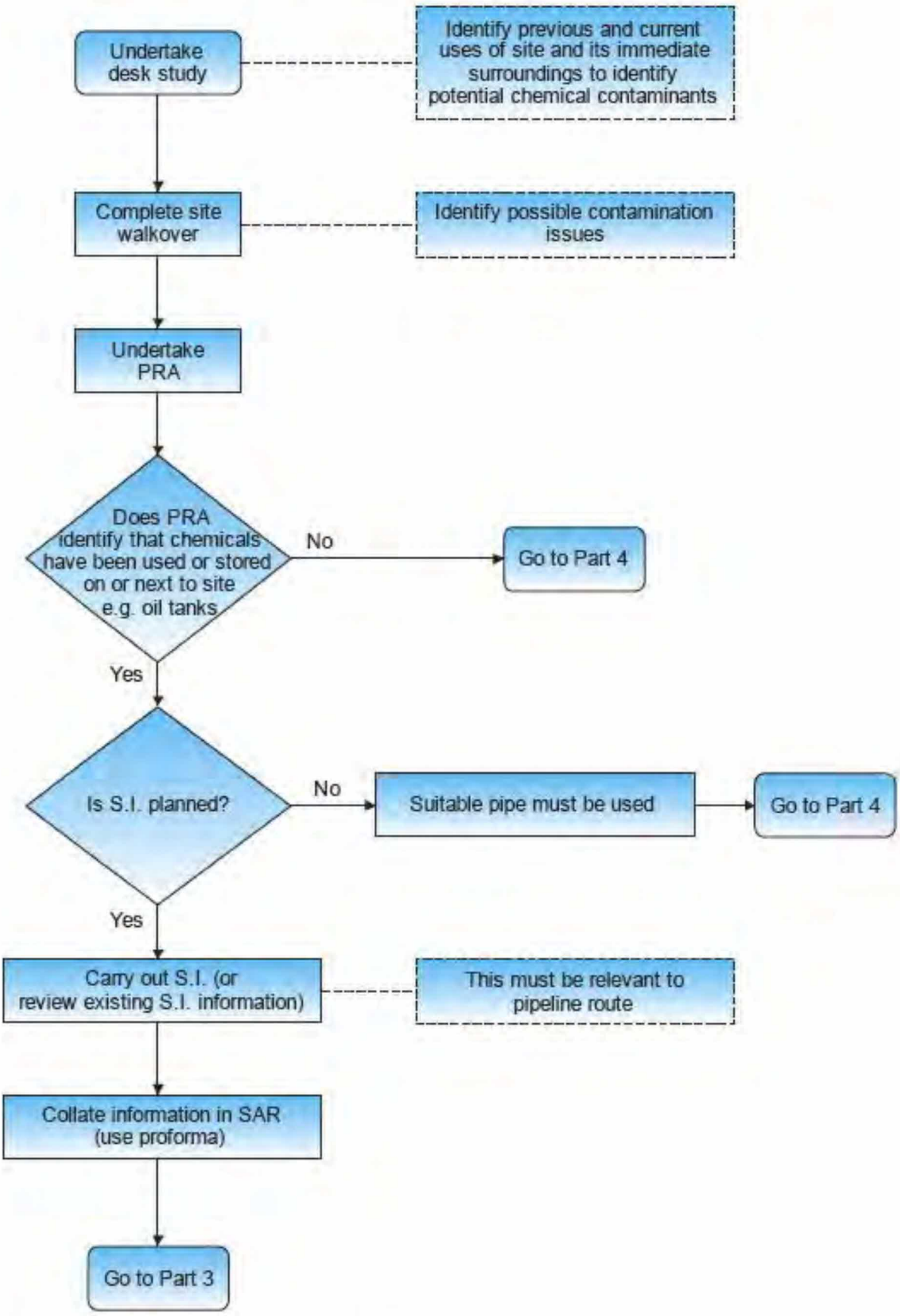
Once a score is assigned, a combination of protection systems / elements is chosen from BS8485:2015 Table 3 shown below:

PROTECTION ELEMENT/SYSTEM	SCORE	COMMENTS
Gas Protection Scores for Ventilation Protection Measures		
Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building)	0.5	Whenever possible a pressure relief pathway (as a minimum) should be installed in all gas protection measures systems. If the layer has a low permeability and/or is not terminated in a venting trench (or similar), then the score is zero.
Passive sub floor dispersal layer: Very good performance Media used to provide the dispersal layer are: • Clear void, Polystyrene void former blanket, Geocomposite void former blanket, No-fines gravel layer with gas drains, No-fines gravel layer Good performance	2.5 1.5	The ventilation effectiveness of different media depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing and type and the thickness of the layer. The selected score should be assigned taking into account the recommendations in BS8485:2015. Passive ventilation should be designed to meet at least "good performance".
Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may comprise a clear void or be formed of geocomposite or polystyrene void formers	1.5 to 2.5	This system relies on continued serviceability of the pumps, therefore alarm and response systems should be in place. There should be robust management systems in place to ensure the continued maintenance of the system, including pumps and vents. Active ventilation should always be designed to meet at least "good performance", as described in BS8485:2015.
Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket	1.5 to 2.5	This system relies on continued operation of the pumps, therefore alarm and response systems should be in place. The score assigned should be based on the efficient "coverage" of the building footprint and the redundancy of the system. Active ventilation should always be designed to meet at least "good performance".
Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park)	4.0	Assumes that the car park is vented to deal with car exhaust fumes, designed to Buildings Regulations 2000, Approved Document F
Gas Protection Scores for the Structural Barrier		
Floor and Substructure Design Precast suspended segmental subfloor (i.e. Block and beam floor slab) Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement) Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations Basement floor and walls conforming to BS 8102:2009, Grade 2 waterproofing (c) Basement floor and walls conforming to BS 8102:2009, Grade 3 waterproofing (c)	 0 (a) 0.5 (a) 1.0 or 1.5 (a), (b) 2.0 2.5	 a) The scores are conditional on breaches of floor slabs, etc. being effectively sealed; b) to achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast in; c) the score is conditional on the waterproofing not being based on the se of a geosynthetic clay liner waterproofing product
Membranes		
Gas resistant membrane meeting all of the following criteria: • sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/m2/atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method); • sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; • sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floor slab); • sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); • capable, after installation, of providing a complete barrier to the entry of the relevant gas; and • verified in accordance with CIRIA C735	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints. For example, a minimum 0.4 mm thickness (equivalent to 370 g/m2 for polyethelene) reinforced membrane (virgin polymer) meets the performance criteria in BS8485:2015 If a membrane is installed that does not meet all the criteria in column 1 then the score is zero.

WATER MAINS RISK ASSESSMENT

Risks to water supply pipes are assessed using the document 'Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites' published by the UK Water Industry Research (UKWIR). The methodology for the selection of water pipes in brownfield sites is below:




Undertake desk study
Identify previous and current uses of site and its immediate surroundings to identify potential chemical contaminants
Complete site walkover
Identify possible contamination issues
Undertake PRA
Does PRA identify that chemicals have been used or stored on or next to site e.g. oil tanks
No
Go to Part 4
Yes
Is S.I. planned?
No
Suitable pipe must be used
Go to Part 4
Yes
Carry out S.I. (or review existing S.I. information)
This must be relevant to pipeline route
Collate information in SAR (use proforma)
Go to Part 3

For sites where the preliminarily conceptual site model (PCSM) does not identify the potential for chemical storage either on or next to the site, there are no chemical restrictions on the selection of pipe selection material.

The guidance recommends that if known, samples should be taken along the route of the water mains. At the time of any intrusive investigation the route of the water mains is generally unknown, hence the guidance recommends that samples are taken across the site.

Table 1: Pipe Selection Table

	Pipe Material					
	All thresholds are in mg/kg					
Contaminant	PE	PVC	Barrier Pipe (PE-AL-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper
Extended VOC suite by purge and trap or head space and GC-MS with TIC	0.5	0.125	Pass	Pass	Pass	Pass
Total BTEX and MTBE	0.1	0.03	Pass	Pass	Pass	Pass
SVOC's TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic EC5-EC10)	2.0	1.4	Pass	Pass	Pass	Pass
Phenols	2	0.4	Pass	Pass	Pass	Pass
Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass
Mineral oil C11-C20 (aromatic/aliphatic EC10-EC16, aromatic EC16-EC21 and aliphatic EC16-35)	10	Pass	Pass	Pass	Pass	Pass
Mineral oil C21-C40 (aliphatic EC16-EC35 and aromatic EC21-EC35)	500	Pass	Pass	Pass	Pass	Pass
pH	Pass	Pass	Pass	Corrosive if pH<7 and conductivity >400uS/cm	Corrosive if pH<5, Eh not neutral and conductivity >400uS/cm	Corrosive if 5<pH>8 and Eh positive
Conductivity						
Redox						
SPECIFIC SUITE IDENTIFIED AS RELEVANT FOLLOWING SITE INVESTIGATION						
Ethers	0.5	1.0	Pass	Pass	Pass	Pass
Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass
Ketones	0.5	0.02	Pass	Pass	Pass	Pass
Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass
Amines	Fail	Pass	Pass	Pass	Pass	Pass

It can be seen that barrier pipe is suitable on all sites. Where metallic (steel, ductile iron or copper) pipes are to be used, information on the pH, conductivity and redox of the soils will be required to determine suitability. Where PE or PVC pipes are to be laid, information on the presence of organic contaminants identified in the PSCM will be required.

Stage 1 - Assessment Methodology Before Water Mains Alignment is Known

At the time of a Phase II site investigation the alignment of the water mains is generally unknown, and as part of the investigation the entirety of the site will be investigated. The contaminants subject to analysis will be guided by the preliminarily conceptual model, and only contaminants identified in the preliminary conceptual model will be subject to assessment, which will provide a preliminarily specification of water mains.

The site investigation data will be assessed against Table 1 above and a preliminarily assessment of the suitability of water pipe material will be made.

Stage 2 – Assessment Methodology Once Alignment of the Water Mains is Known

Once the alignment of the water mains is known, if cost effective, additional analysis can be undertaken along the alignment to determine if metallic, PE or PVC pipes would be suitable.

RISK TO CONCRETE IN THE GROUND

The risk to buried concrete is assessed in accordance with the BRE Special Digest 1:2005 – 'Concrete in Aggressive Ground'. Recommendations for the composition of concrete and supplementary protective measures (if required) are given on the basis of the assessment.

CURRENT GUIDANCE ON REMEDIATION

When risk assessment of the site has been completed and it indicates that remedial works are required, the main guidance in managing this process is set out in the EA Guidance on 'Land contamination risk management (LCRM) The stages of managing remediation are as follows:

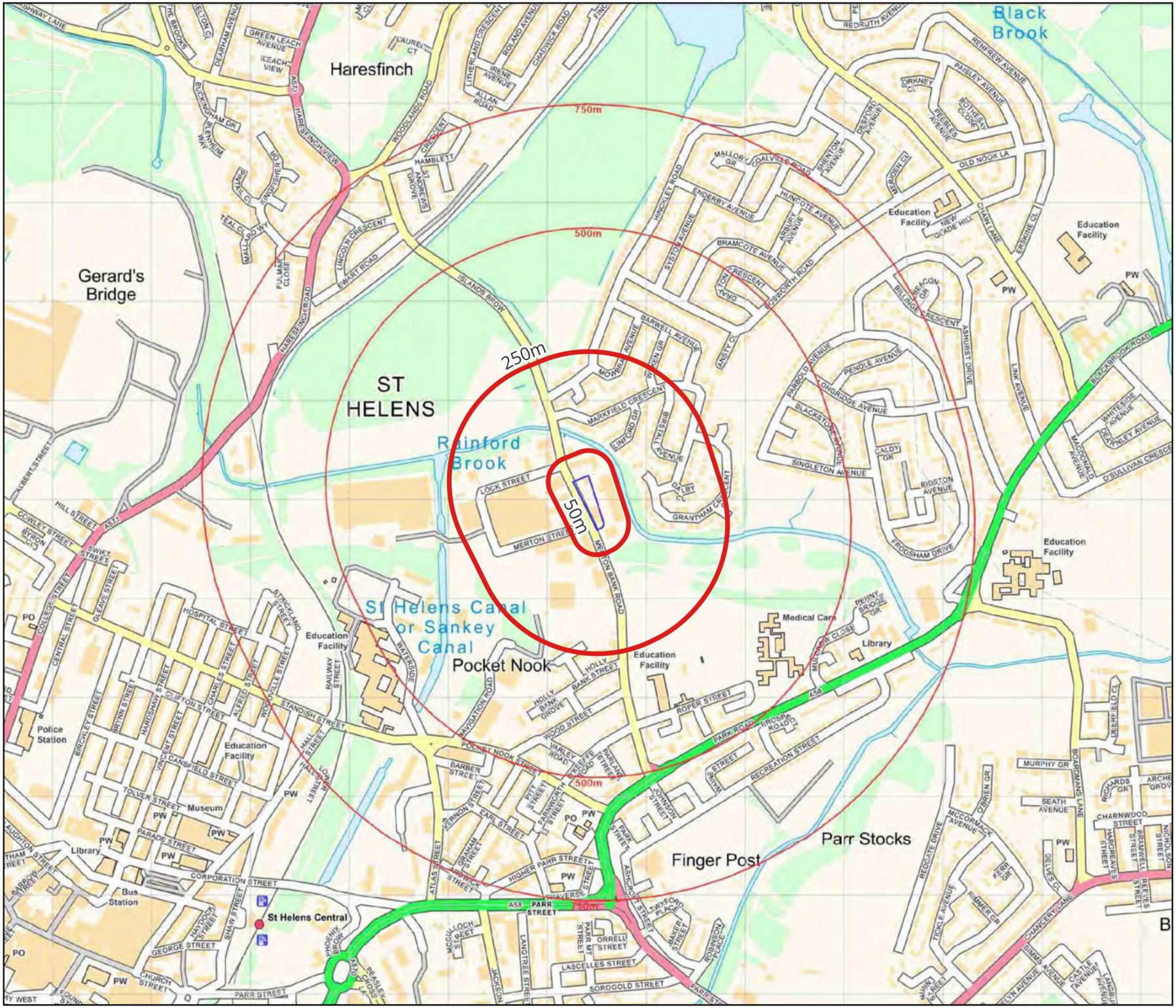
(a) Options Appraisal and develop Remediation Strategy;
(b) Develop Implementation Plan and Verification Plan;
(c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

APPENDIX D: DRAWINGS



DEMETER ENVIRONMENTAL LTD

Demeter Environmental Ltd
Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Drawing 1

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Site Location

Scale: 1:10,000at A4

DEMETER ENVIRONMENTAL LTD

Demeter Environmental Ltd
Liverpool Office:
Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Drawing: 2

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Aerial Plate

Scale: 1:1,250 at A4

DEMETER ENVIRONMENTAL LTD

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Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

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Drawing 3

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Site Layout

Scale: 1:750 at A4

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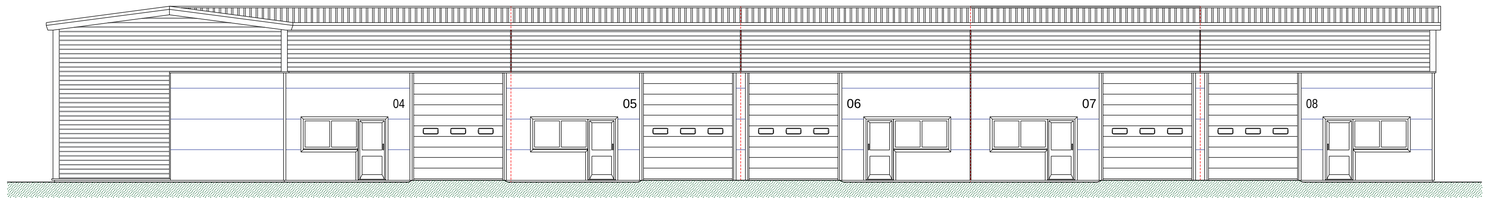
Drawing 4

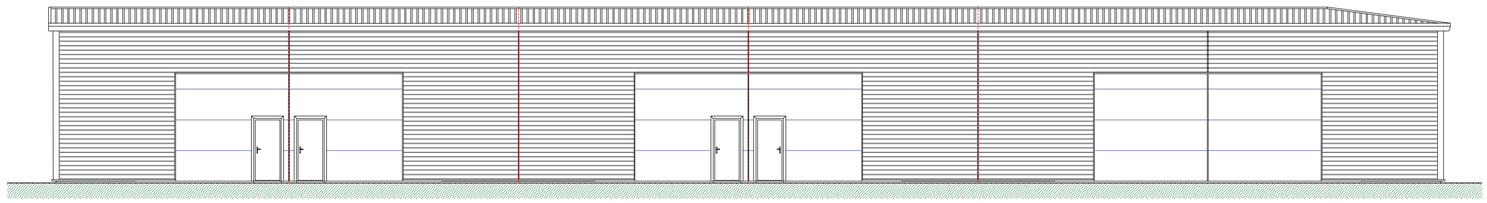
Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Proposed Site Investigation Layout

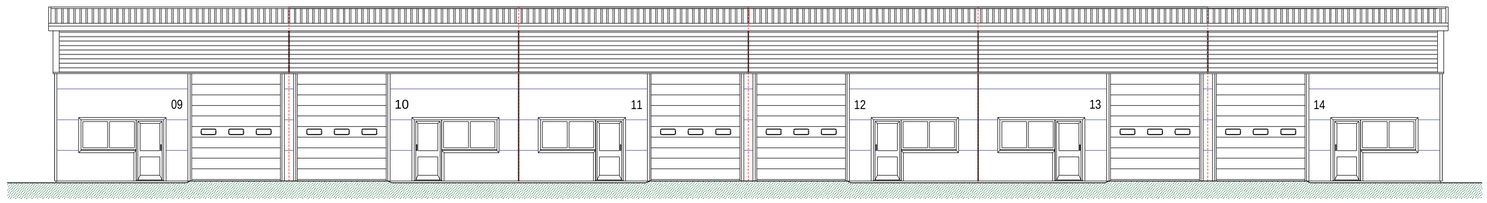
Scale: 1:750 at A4



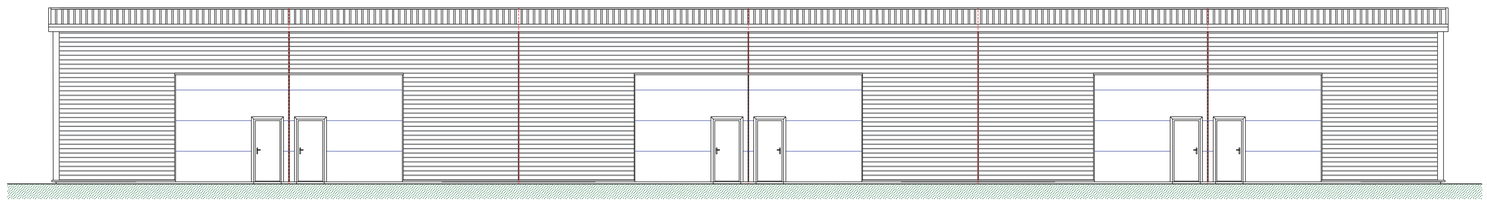
PROPOSED FRONT (SOUTH WEST)
ELEVATION OF UNITS 1-8 (NORTH BLOCK)



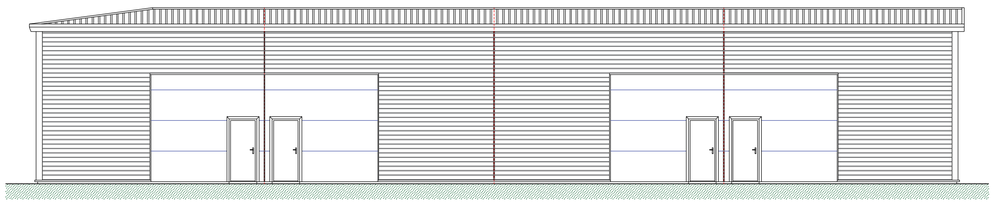
PROPOSED REAR (NORTH EAST)
ELEVATION OF UNITS 1-8 (NORTH BLOCK)



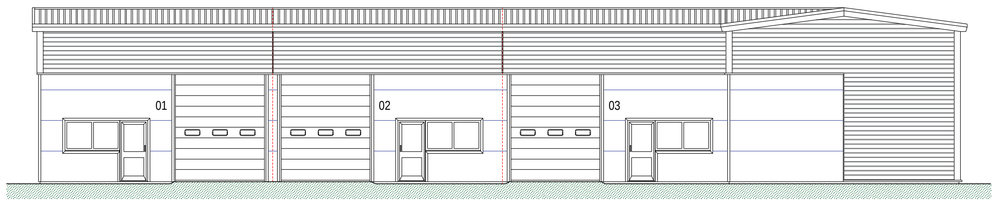
PROPOSED FRONT (SOUTH WEST)
ELEVATION OF UNITS 9-14 (SOUTH BLOCK



PROPOSED REAR (NORTH EAST)
ELEVATION OF UNITS 9-14 (SOUTH BLOCK)

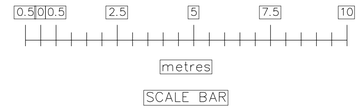


PROPOSED SIDE (NORTH WEST)
ELEVATION OF UNITS 1-4 (NORTH BLOCK)



PROPOSED SIDE (SOUTH EAST)
ELEVATION OF UNITS 1-4 (NORTH BLOCK)

NOTES:



CLIENT:

MR. J. MARTLEW (JMBC LTD)
Unit 1, Collins Industrial Estate, St. Helens, WA9 1HY

PROJECT:

PROPOSED REDEVELOPMENT
Suregrow, Collins Industrial Estate, St. Helens, WA9 1HY

TITLE:

PROPOSED
Elevations

SCALE: 1:100 @ A1 | DRAWN: CJC

DATE: August 2023 | CHECKED: -

DRAWING No.: 022-043-MRS-JM 005 | REV -

Web: www.lynwoods.com
Email: info@lynwoods.com
Tel: +44(0)7913 238 176

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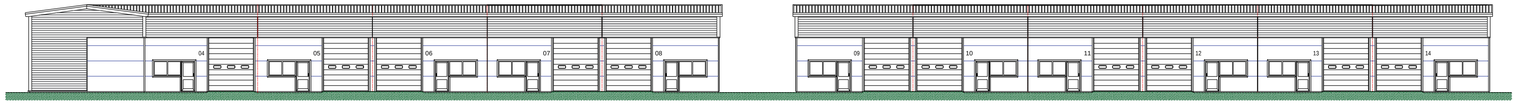
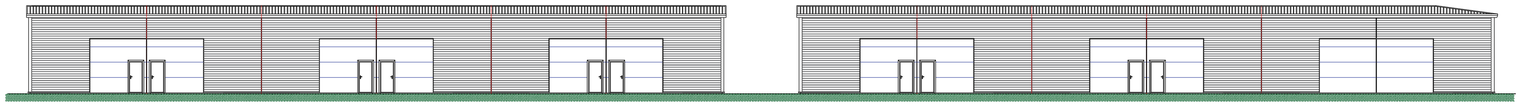
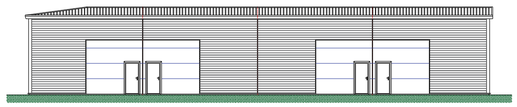


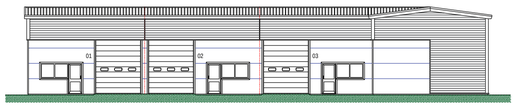
PROPOSED
FRONT (SOUTH WEST) ELEVATION (VIEW A)



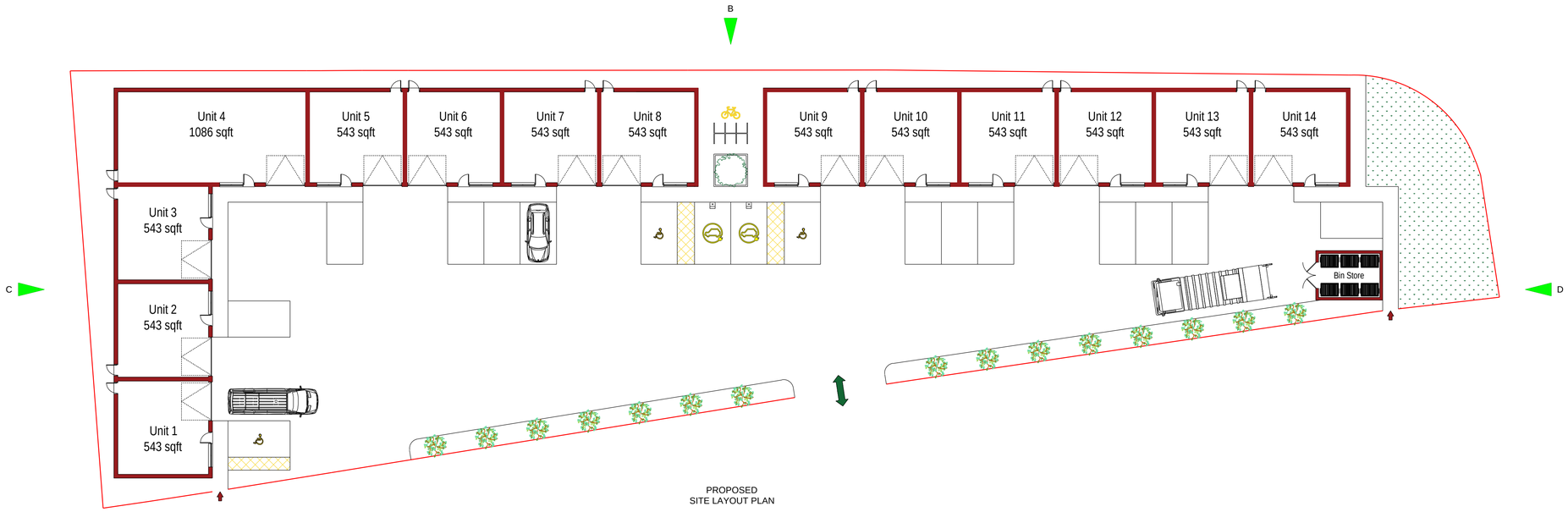
PROPOSED
REAR (NORTH EAST) ELEVATION (VIEW B)



PROPOSED
SIDE (NORTH WEST) ELEVATION (VIEW C)

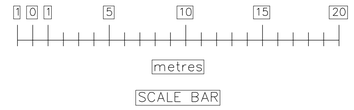


PROPOSED
SIDE (SOUTH EAST) ELEVATION (VIEW D)



PROPOSED
SITE LAYOUT PLAN

NOTES:



CLIENT:

MR. J. MARTLEW (JMBC LTD)
Unit 1, Collins Industrial Estate, St. Helens, WA9 1HY

PROJECT:

PROPOSED REDEVELOPMENT
Suregrow, Collins Industrial Estate, St. Helens, WA9 1HY

TITLE:

PROPOSED
Elevations & Site Layout Plan

SCALE: 1:200 @ A1	DRAWN: CJC
DATE: August 2023	CHECKED: -
DRAWING No.: 022-043-MRS-JM 004	REV -

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N

5 & 6

3 & 4

1

6

Unit 4
1086 sqft

Unit 5
543 sqft

Unit 6
543 sqft

Unit 7
543 sqft

Unit 8
543 sqft

Unit 9
543 sqft

Unit 10
543 sqft

Unit 11
543 sqft

Unit 12
543 sqft

Unit 13
543 sqft

Unit 14
543 sqft

Unit 3
543 sqft

Unit 2
543 sqft

Unit 1
543 sqft

Bin Store

The Barge
Business
Park

MERTON BANK ROAD

Garage

Works

NOTES:

1 0 1 5 10 15 20

metres

SCALE BAR

CLIENT:

MR. J. MARTLEW (JMBC LTD)
Unit 1, Collins Industrial Estate, St. Helens, WA9 1HY

PROJECT:

PROPOSED REDEVELOPMENT
Suregrow, Collins Industrial Estate, St. Helens, WA9 1HY

TITLE:

PROPOSED
Site Layout Plan

SCALE: 1:200 @ A1	DRAWN: CJC
DATE: August 2023	CHECKED: -
DRAWING No.: 022-043-MRS-JM 003	REV -

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APPENDIX E: SITE PHOTOGRAPHS AND PHOTOGRAPH KEY PLAN

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Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

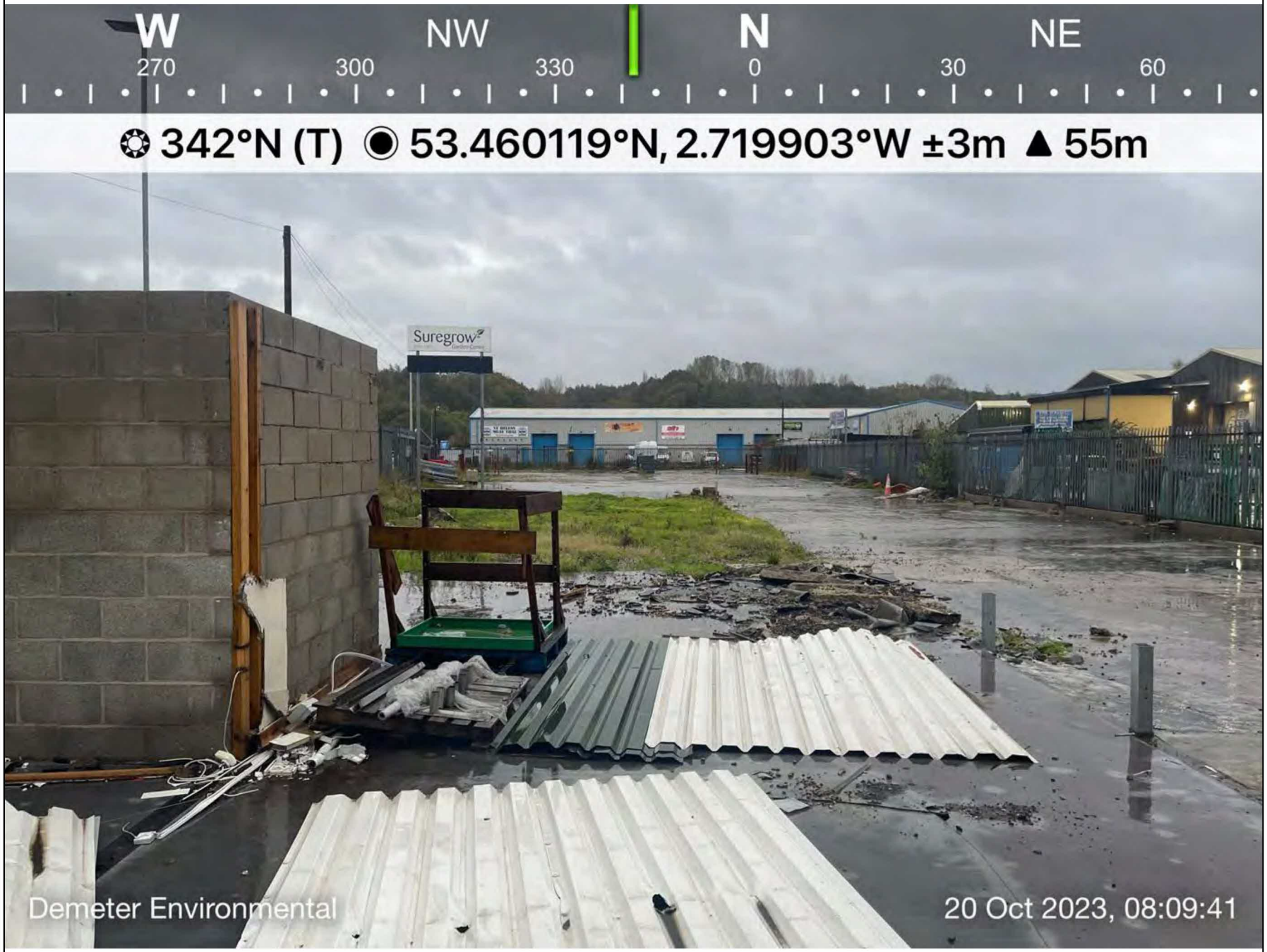
Email: enquiries@demeter-environmental.co.uk

Drawing 5

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Photograph Key Plan

Scale: 1:750 at A4



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Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

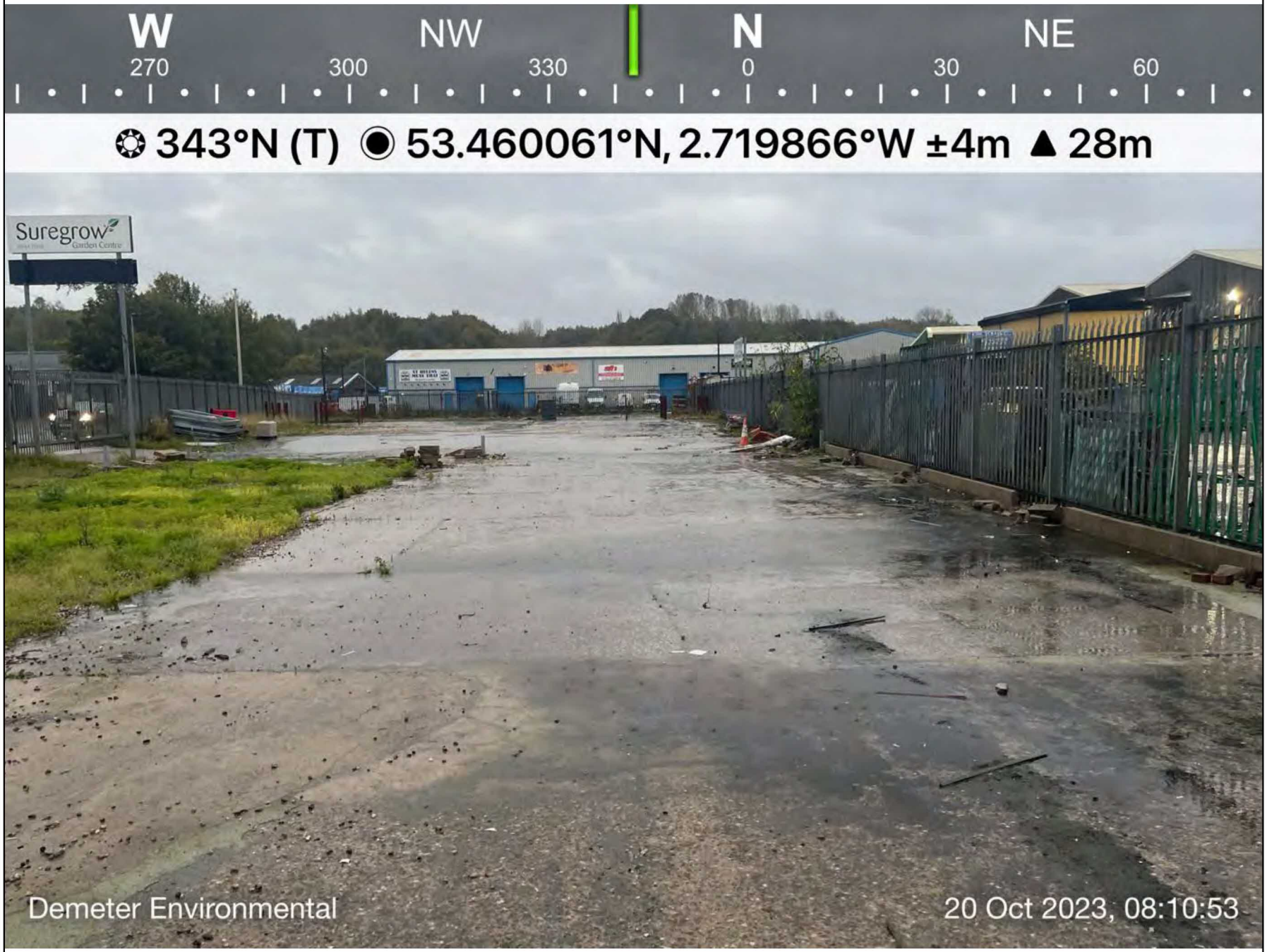
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Plate: 1

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of the site looking north, the toilet building is on the left



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Ropewalks
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St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Plate: 2

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of site looking north,the gravelled area is to the left

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Demeter Environmental Ltd
Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

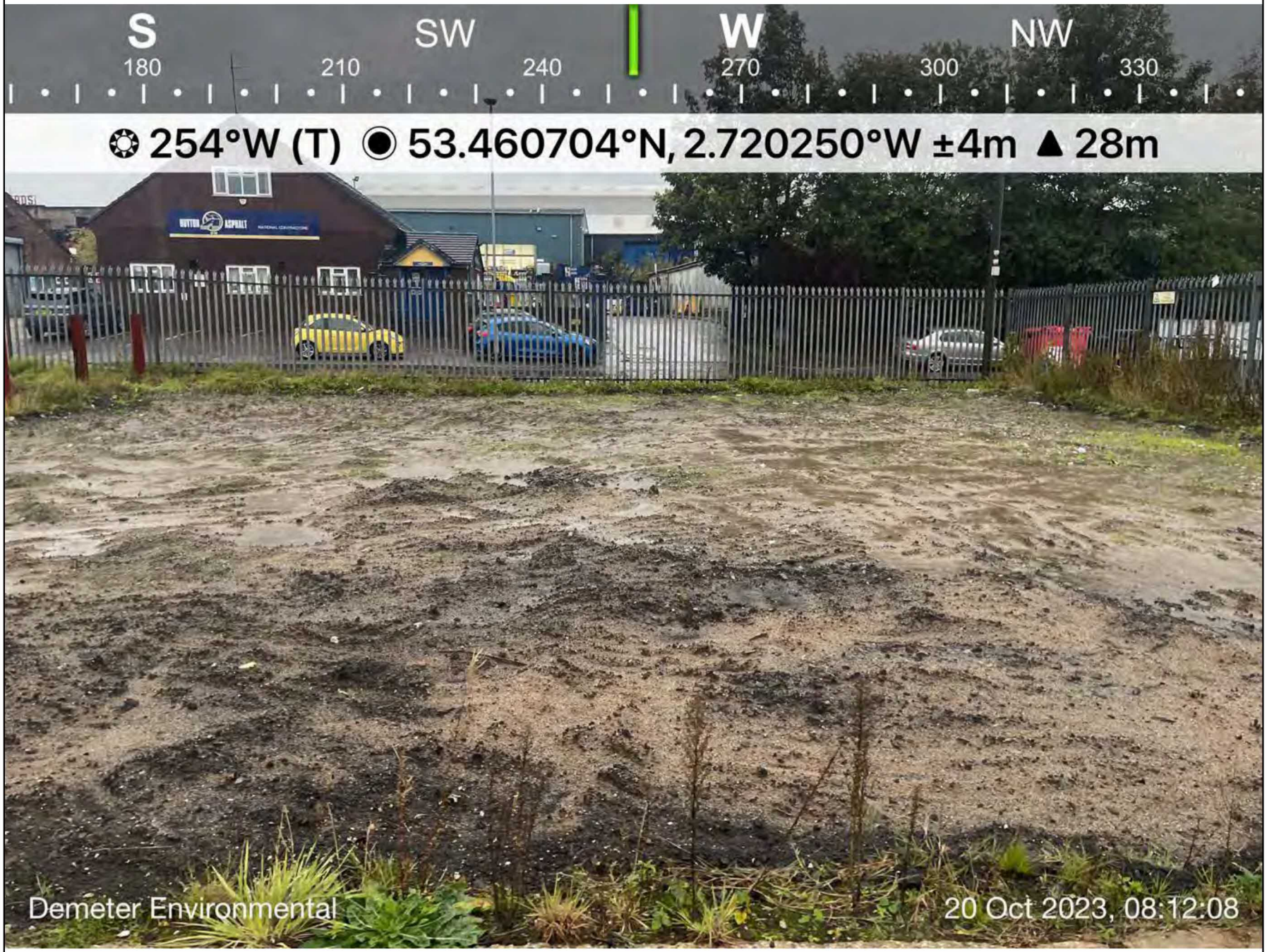
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Plate: 3

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of the northern area of the site



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St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

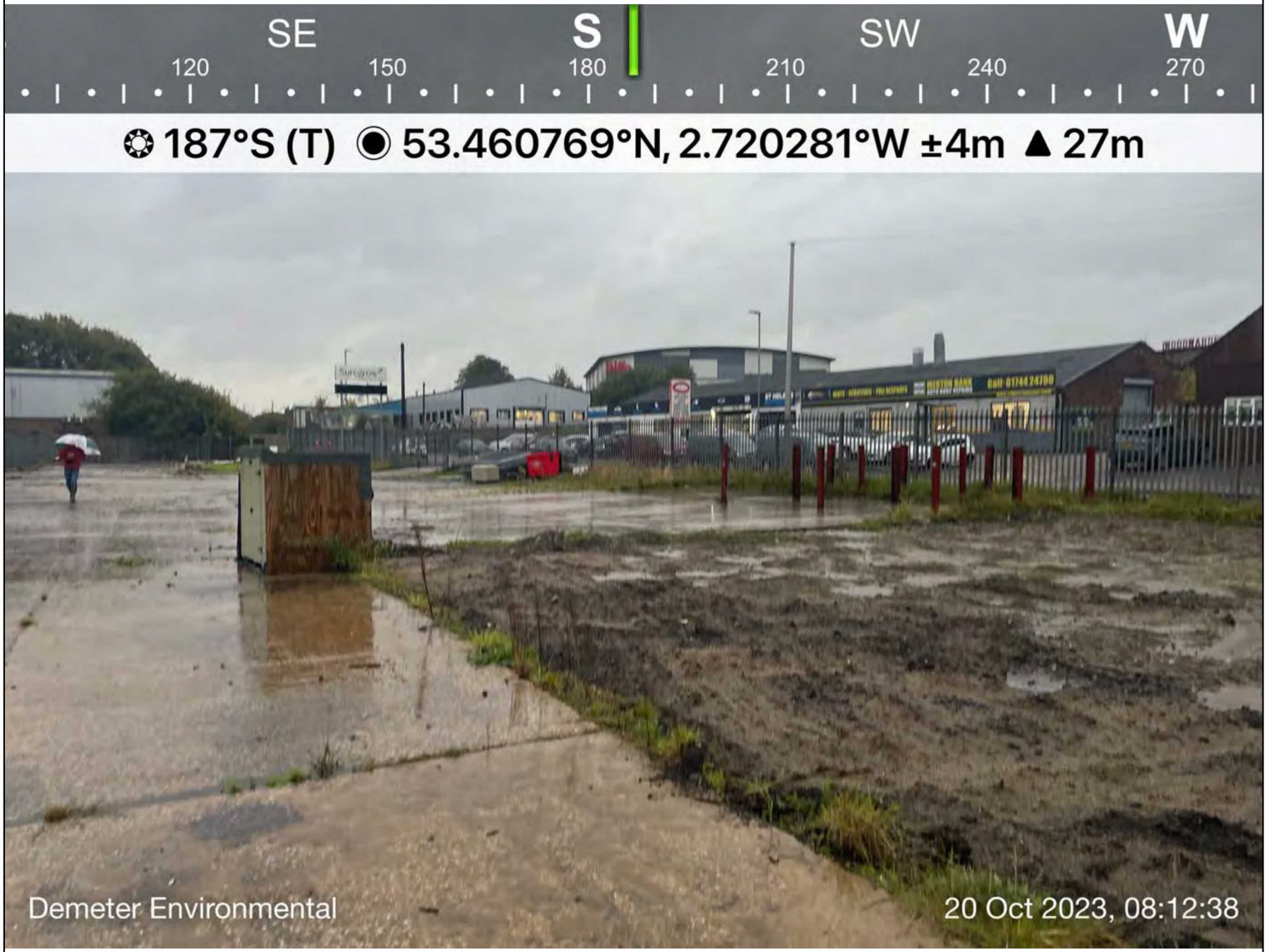
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Plate: 4

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: Exposed soils on the north western corner of the site



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St Peters Square
Fleet Street
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Fax: 0151 909 3661

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Gemini House
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BN3 7BD
Tel: 01273 741 727

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Plate: 5

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of the site looking south

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Liverpool, L1 4DQ

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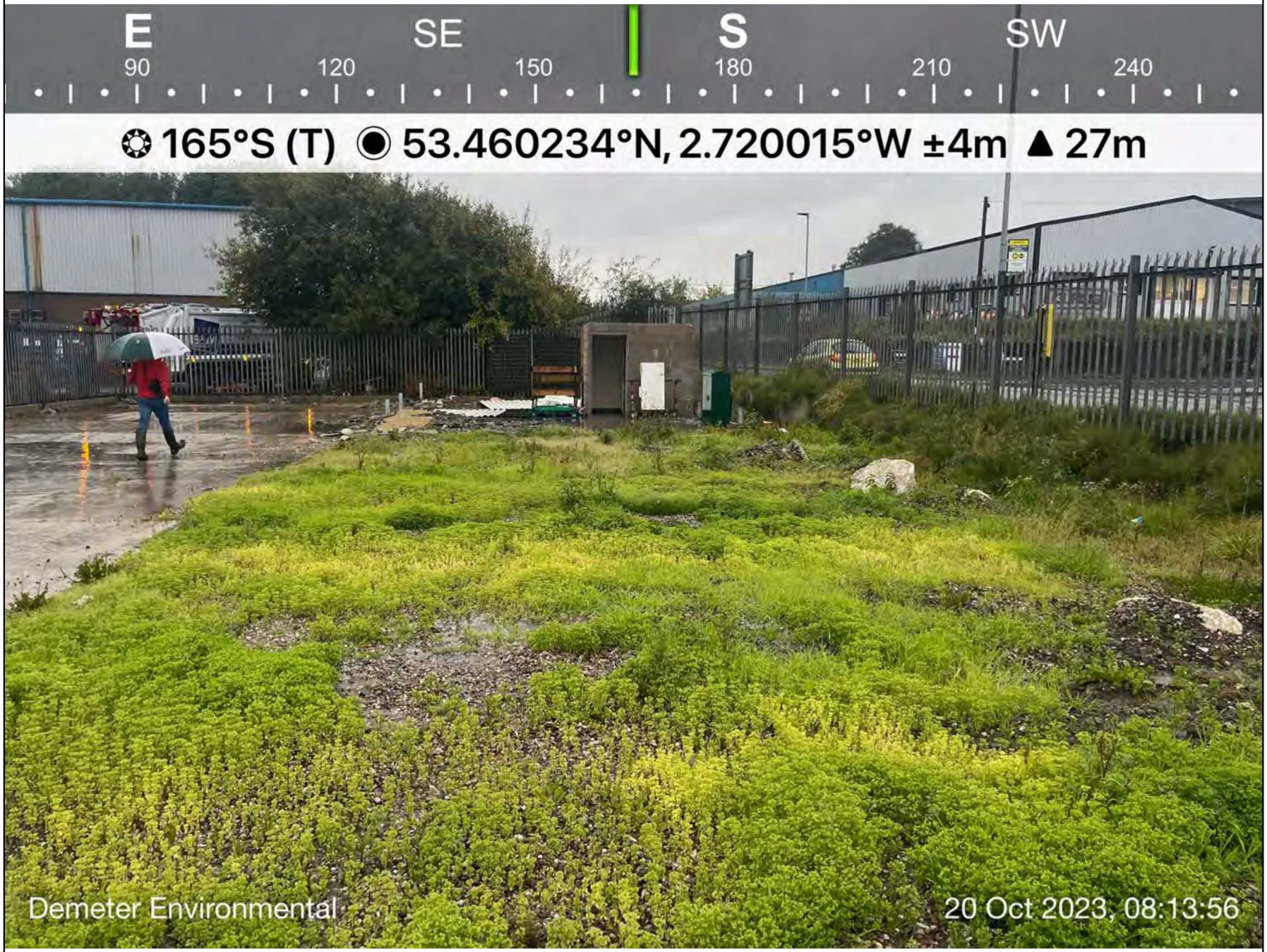
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Plate: 6

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of the site looking south, gravelled area can be seen



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Ropewalks
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St Peters Square
Fleet Street
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Fax: 0151 909 3661

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136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

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Plate: 7

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: Gravelled area on the south western area of the site

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Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

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Plate: 8

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: Tyres stored on the south western corner of the site

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Fax: 0151 909 3661

Brighton Office:
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136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

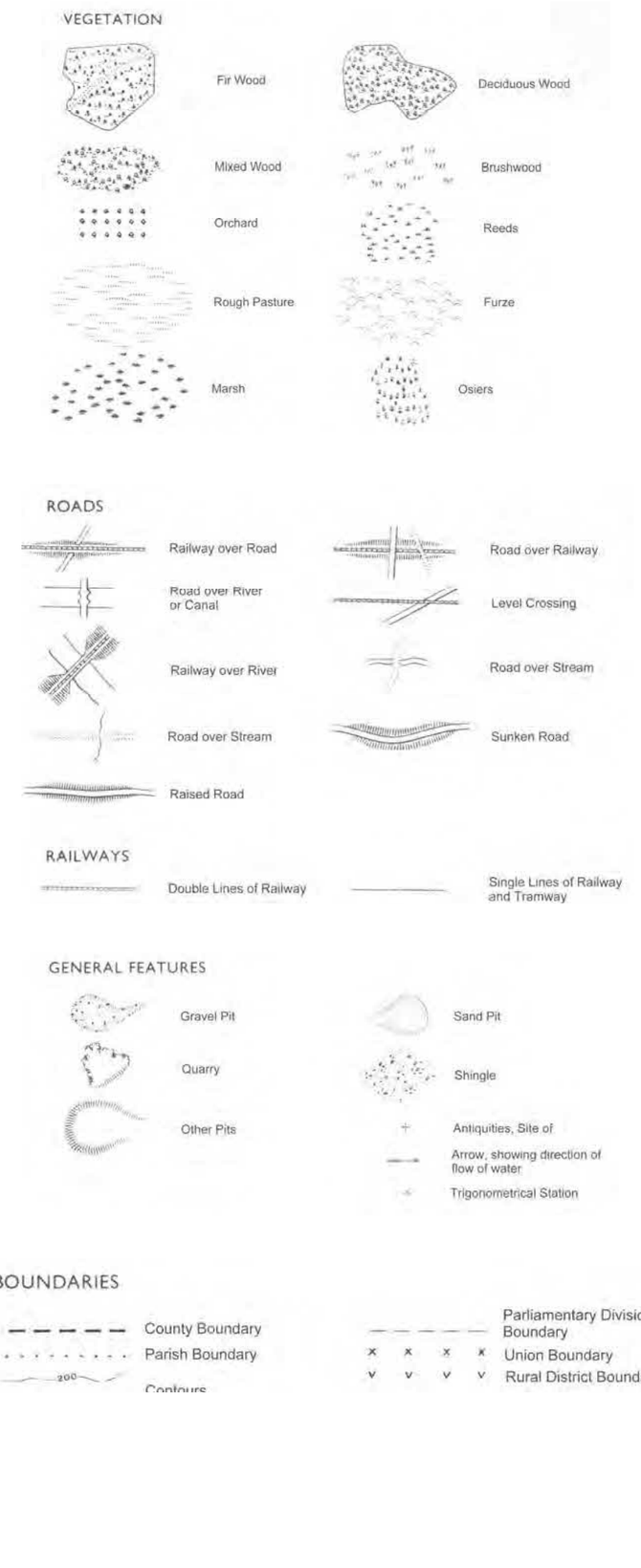
Plate: 9

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

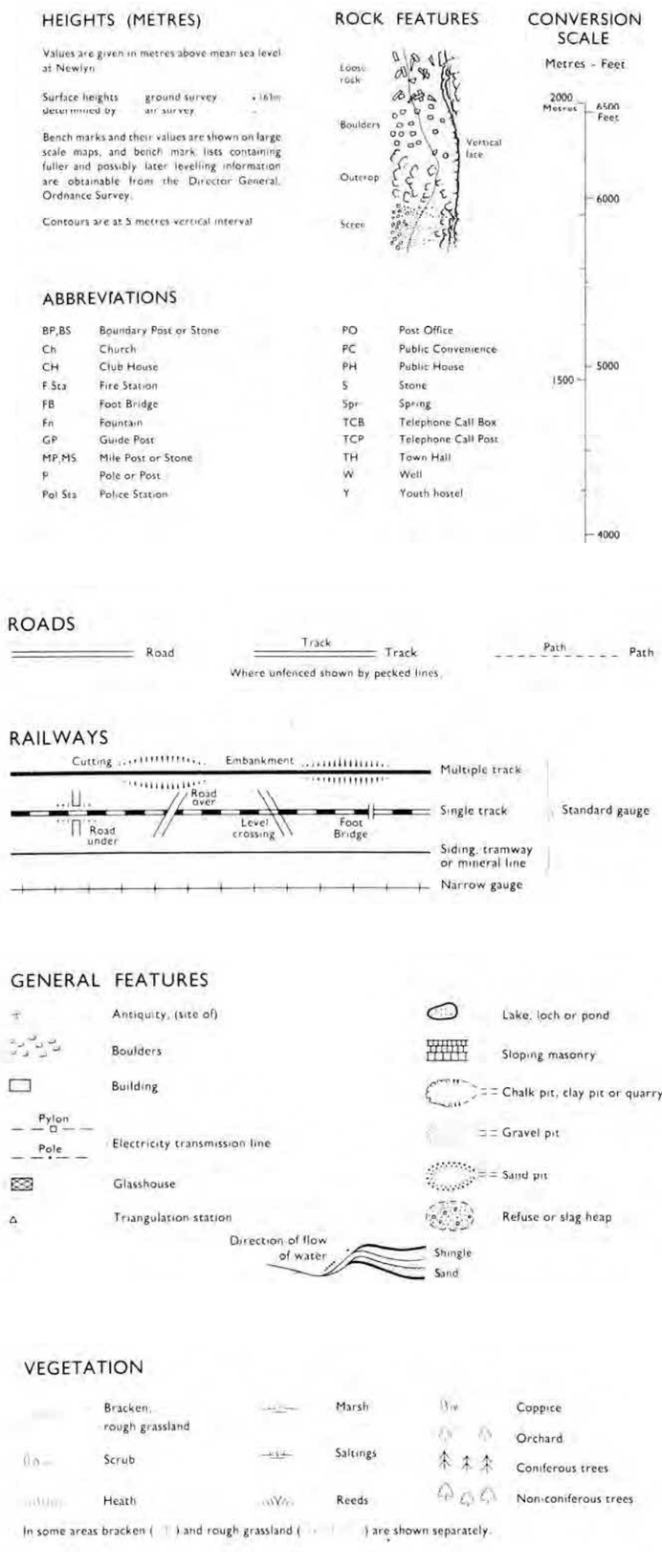
Description: Overgrown area on the southern boundary of the site

APPENDIX F: HISTORICAL O.S. MAPS

County Series 1:10,560 scale



National Grid 1:10,000 scale



GroundSure

Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

If you have a query regarding any of the maps provided please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

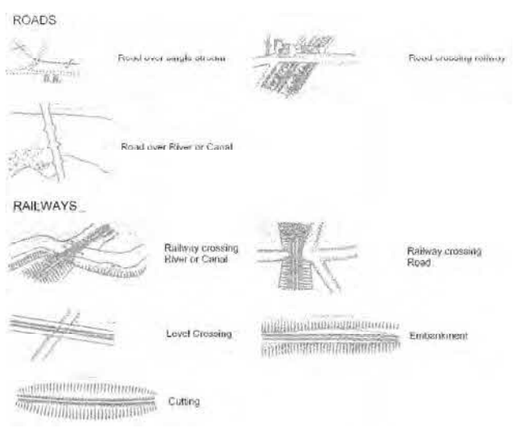
Technical Helpline

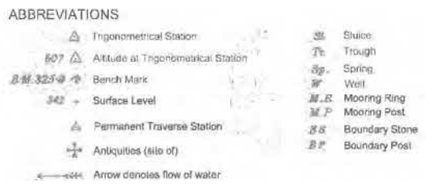
Tel 08444159000

groundsureinsight@groundsure.com

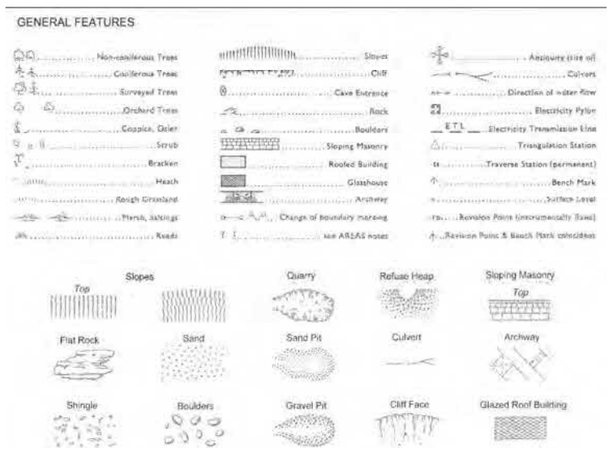
www.groundsure.com

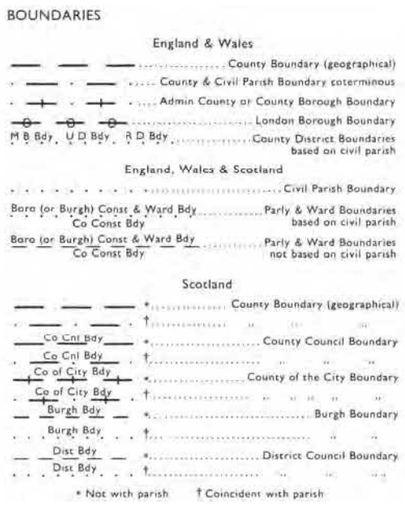
County Series 1:2,500 scale





National Grid 1:2,500 / 1:1,250 scale





Historical Map Pack Legend

County Series

1:1,250 scale

~

County Series & National Grid

1:2,500 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

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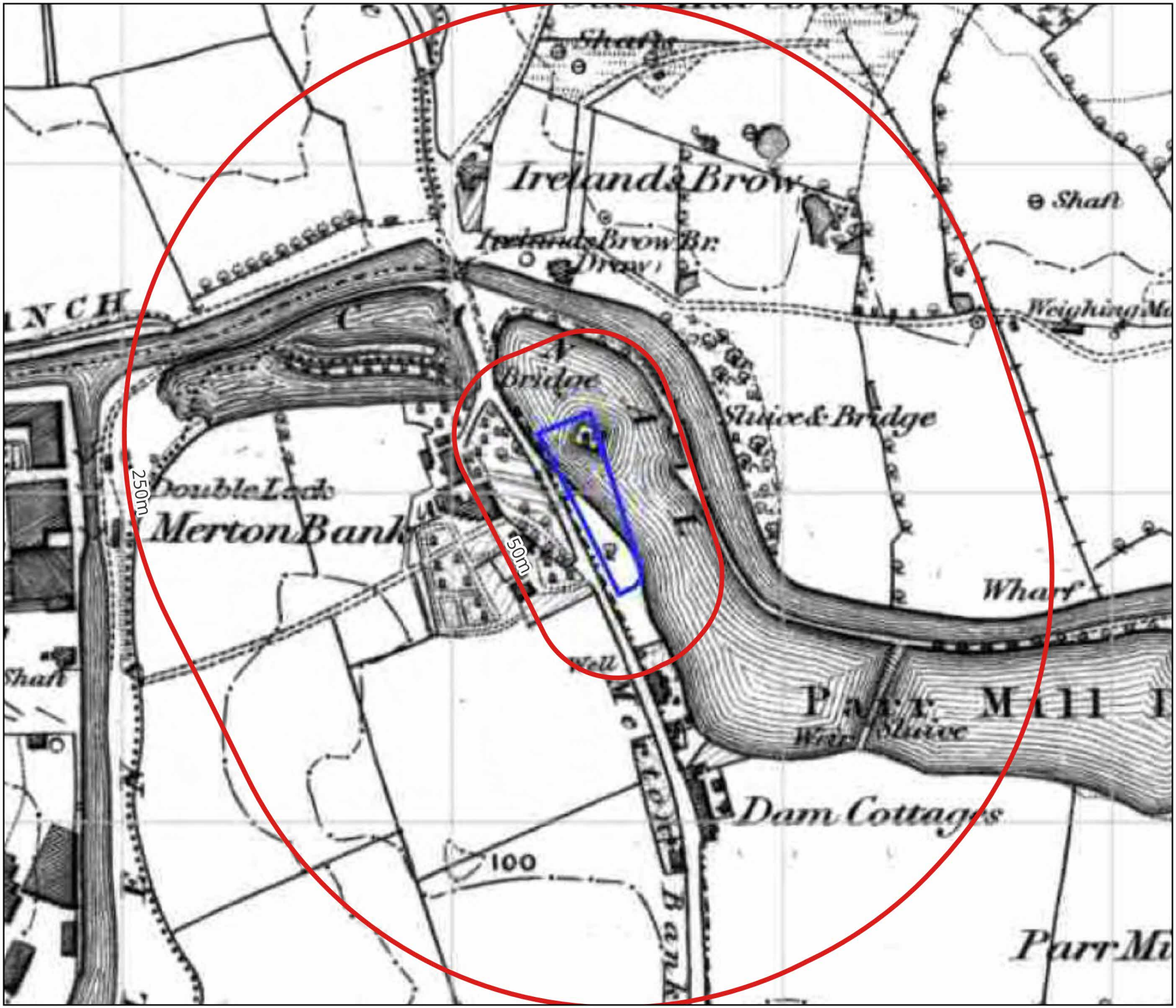
Technical Helpline:

Tel 08444159000

groundsureinsight@groundsure.com

www.groundsure.com



DEMETER ENVIRONMENTAL LTD

Demeter Environmental Ltd
Liverpool Office:
Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1849

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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Demeter Environmental Ltd
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136-140 Old Shoreham Road
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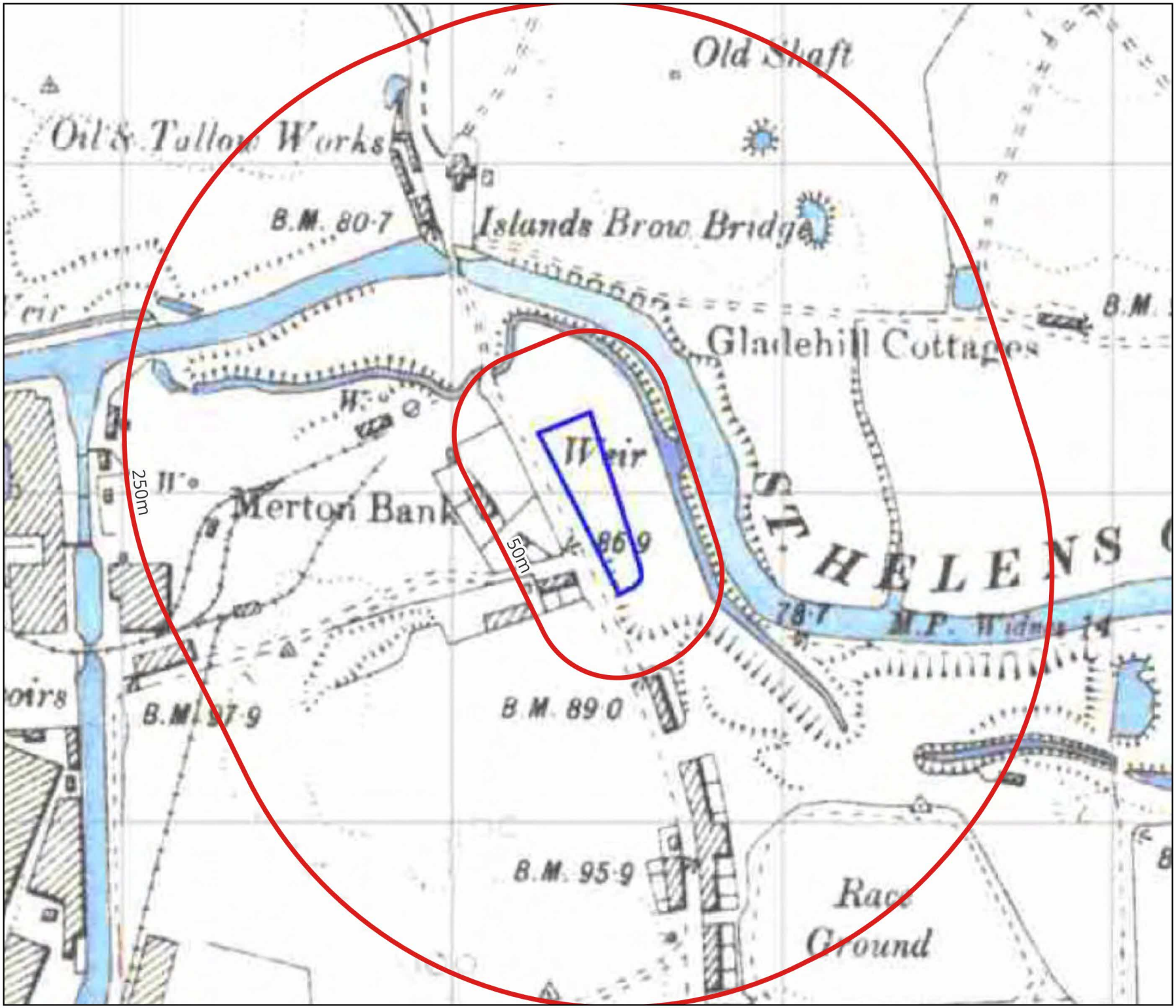
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1851

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



DEMETER ENVIRONMENTAL LTD

Demeter Environmental Ltd
Liverpool Office:
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301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

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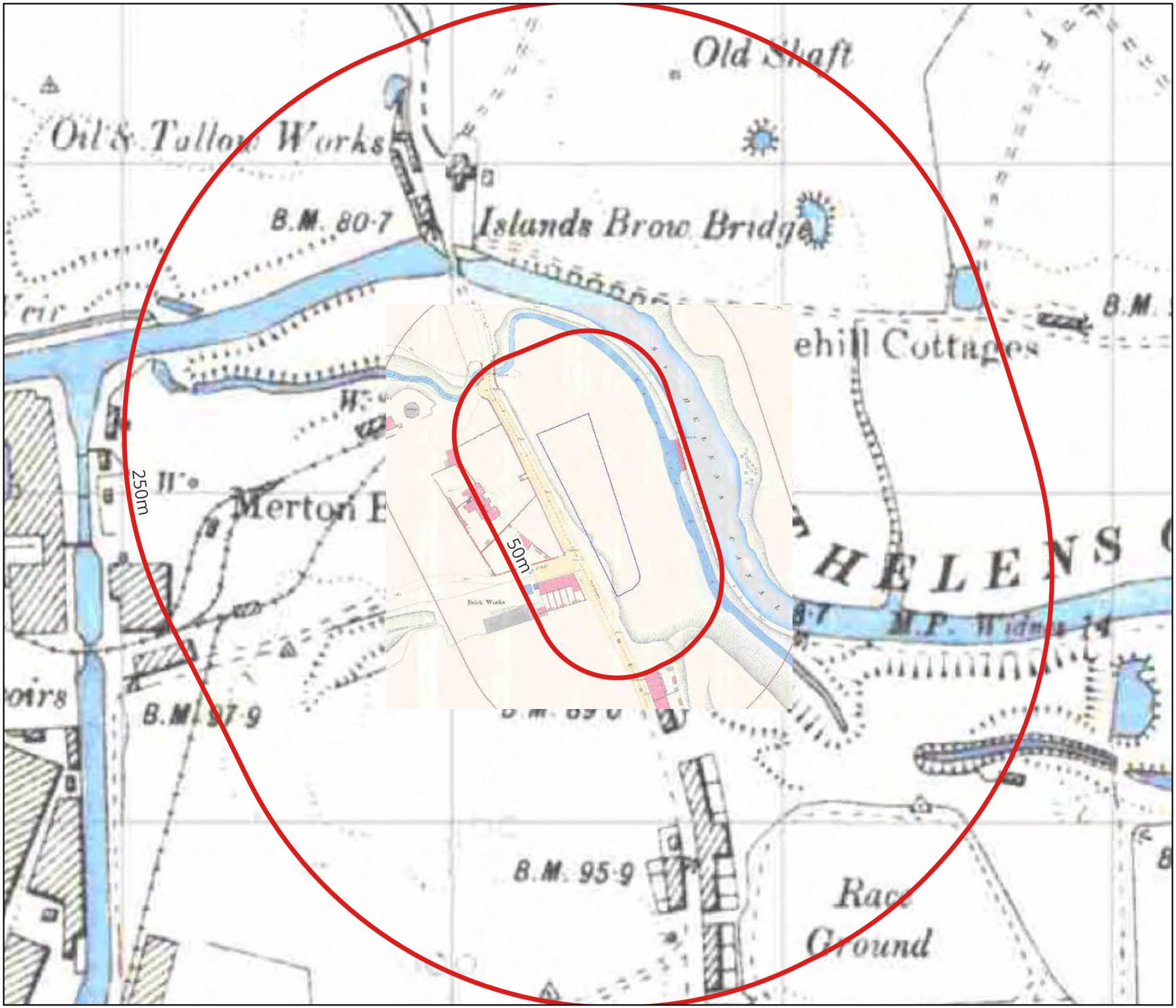
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1892

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



DEMETER ENVIRONMENTAL LTD

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Ropewalks
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Fleet Street
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Tel: 0151 521 2539
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Brighton Office:
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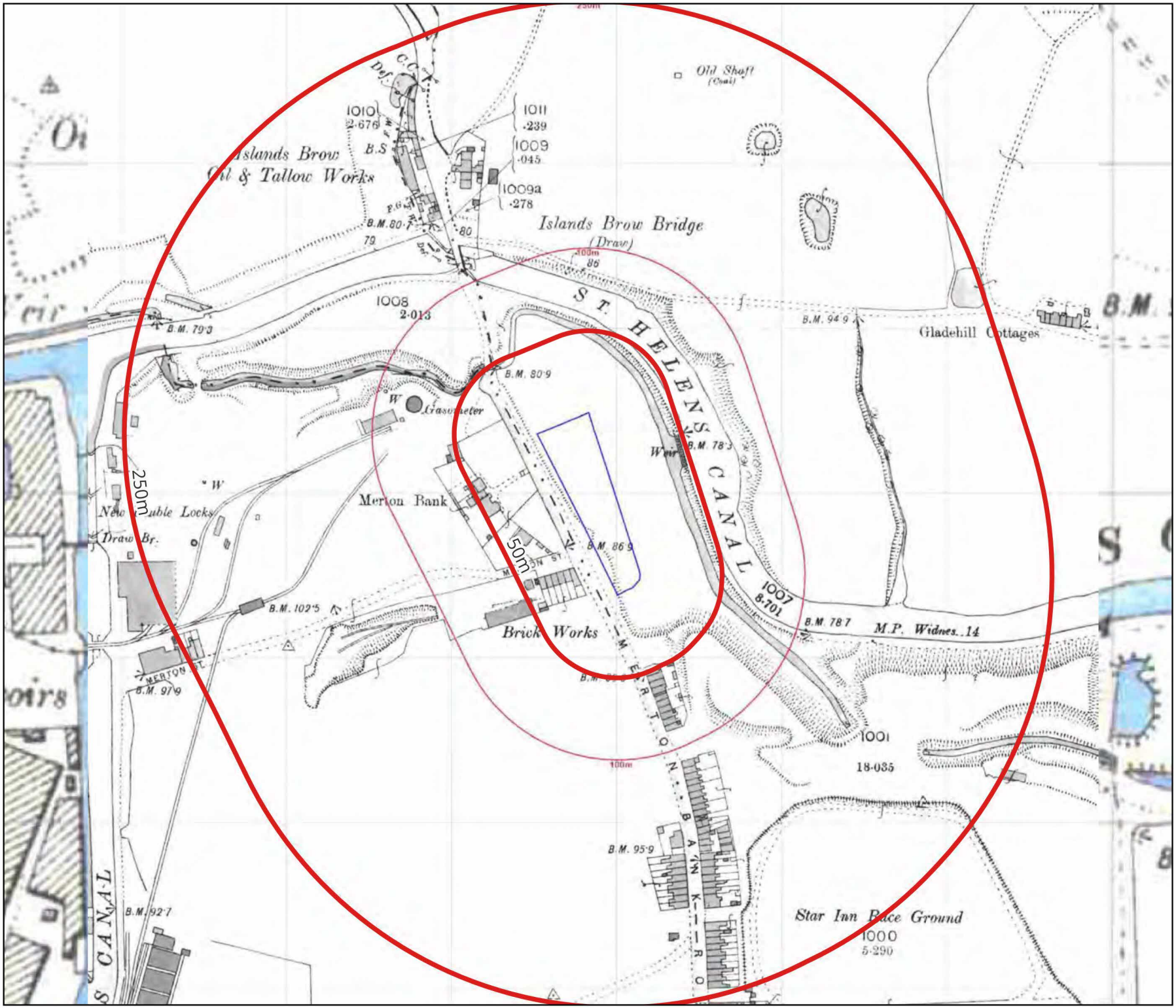
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1892

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



DEMETER ENVIRONMENTAL LTD

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Liverpool Office:
Ropewalks
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Fleet Street
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Tel: 0151 521 2539
Fax: 0151 909 3661

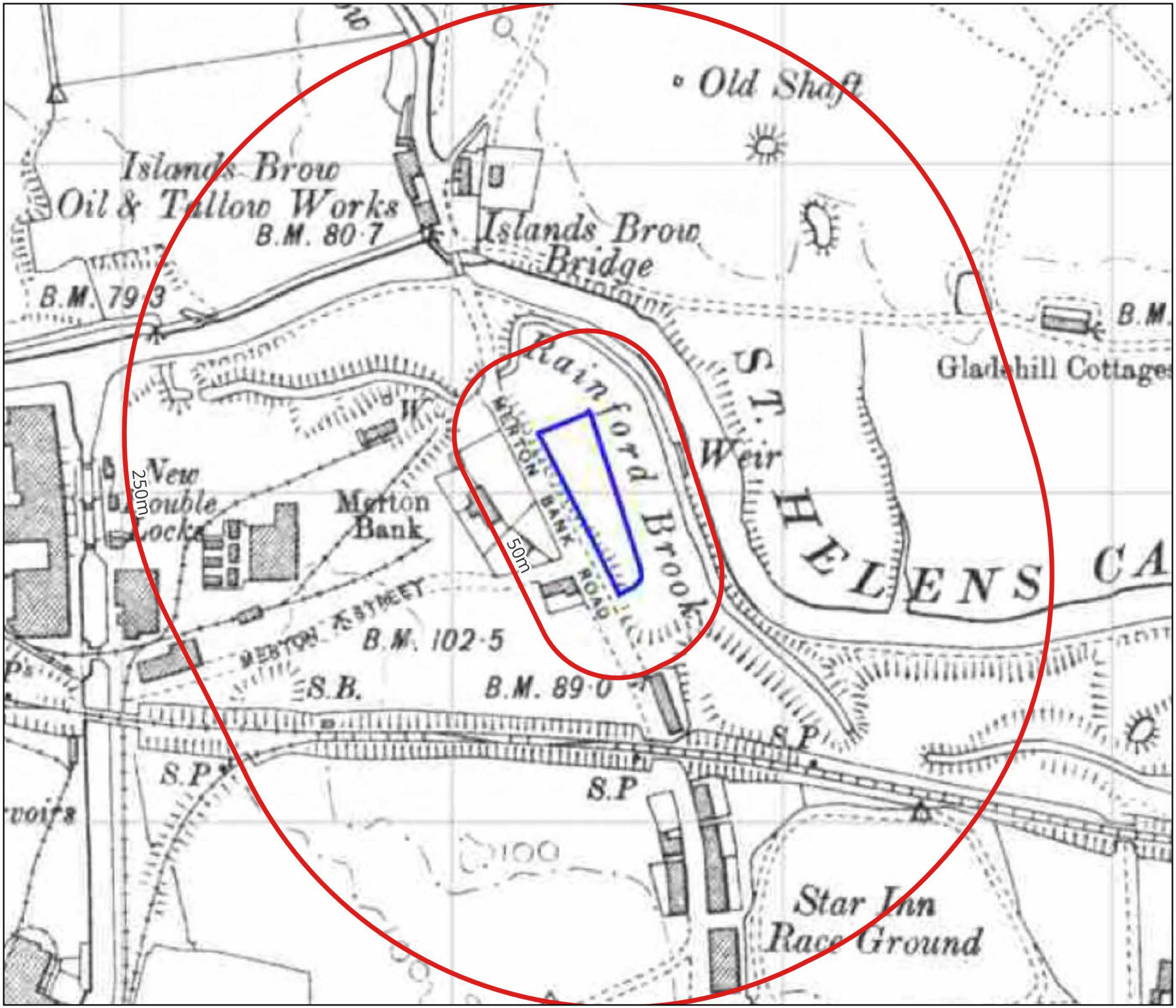
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1894

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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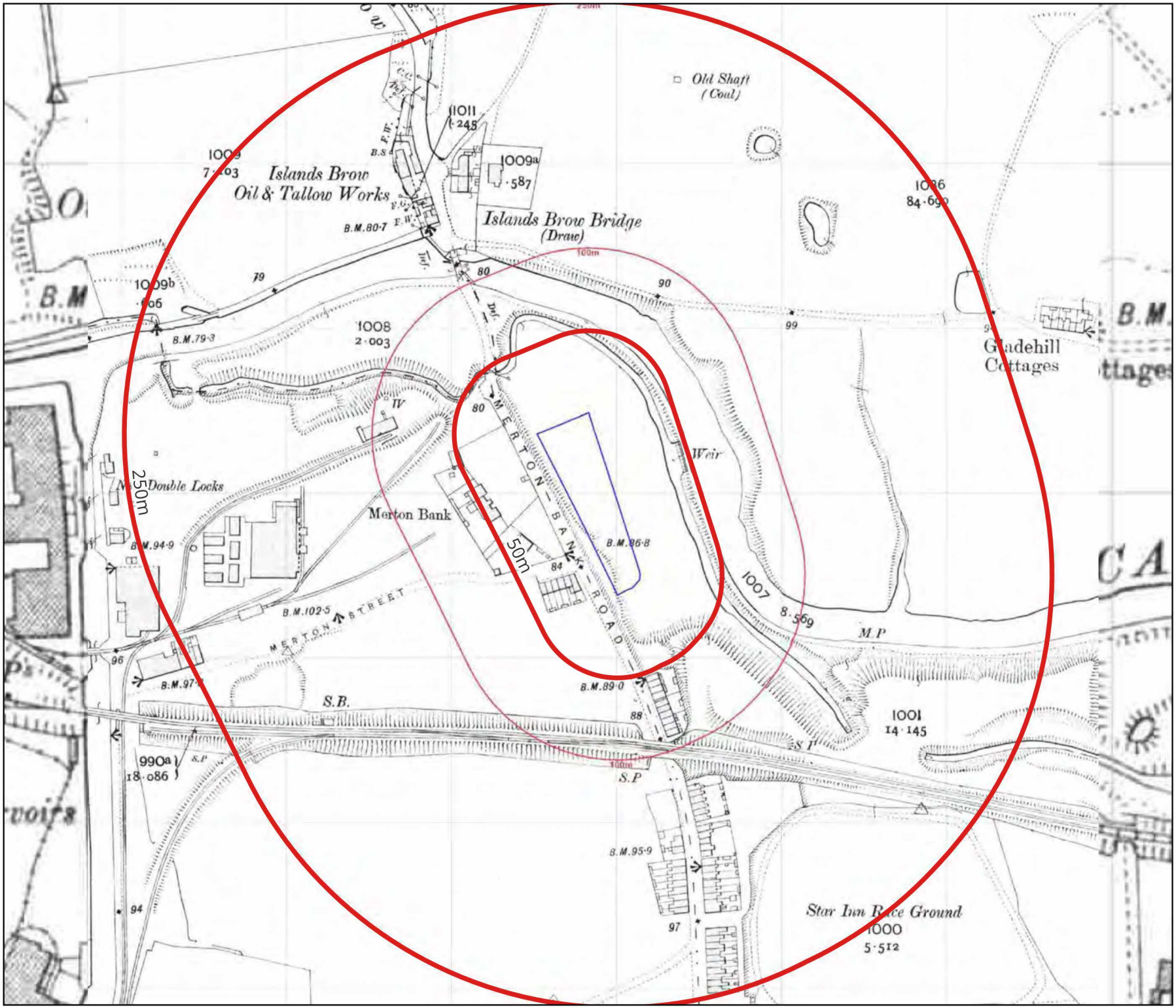
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 1906

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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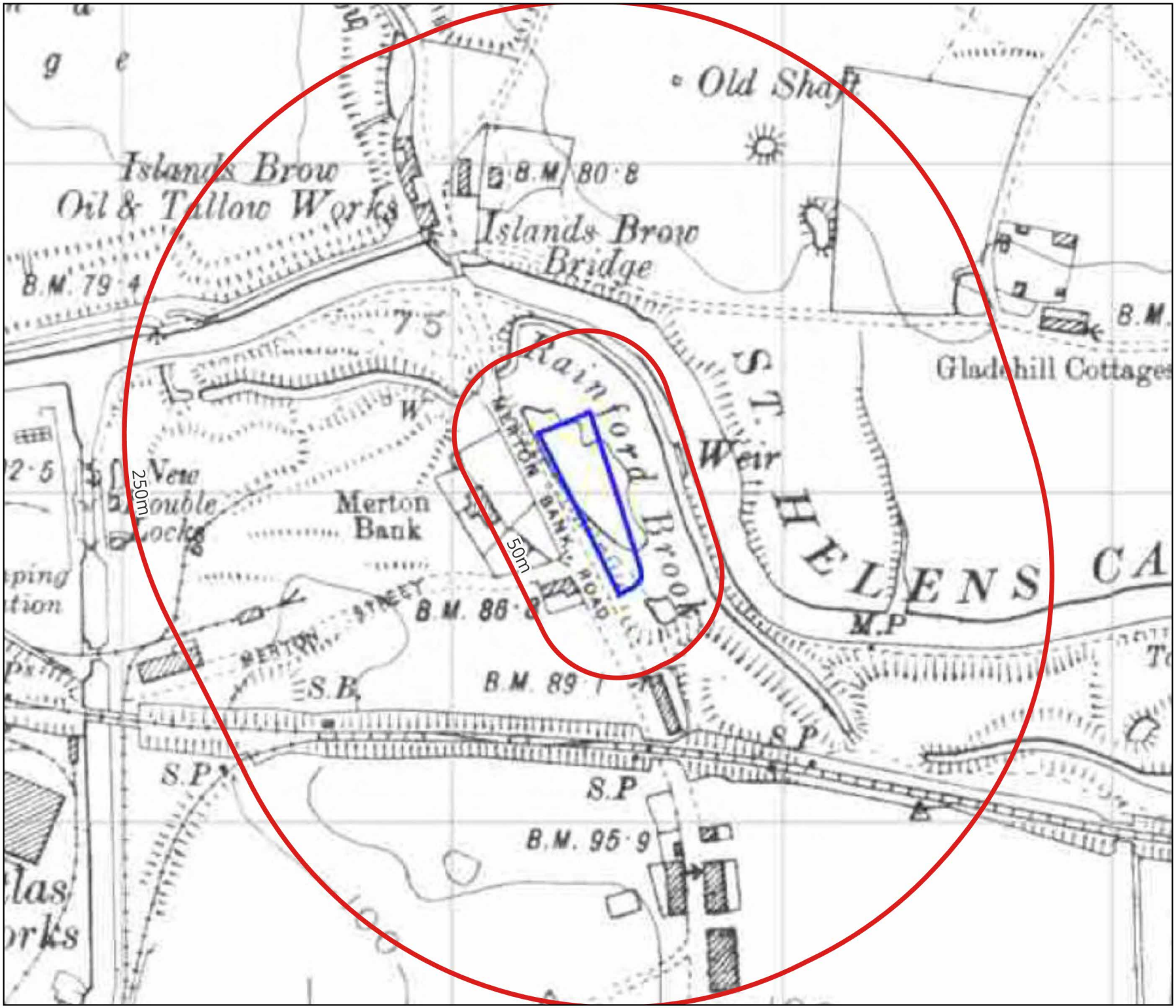
Date of Map: 1908

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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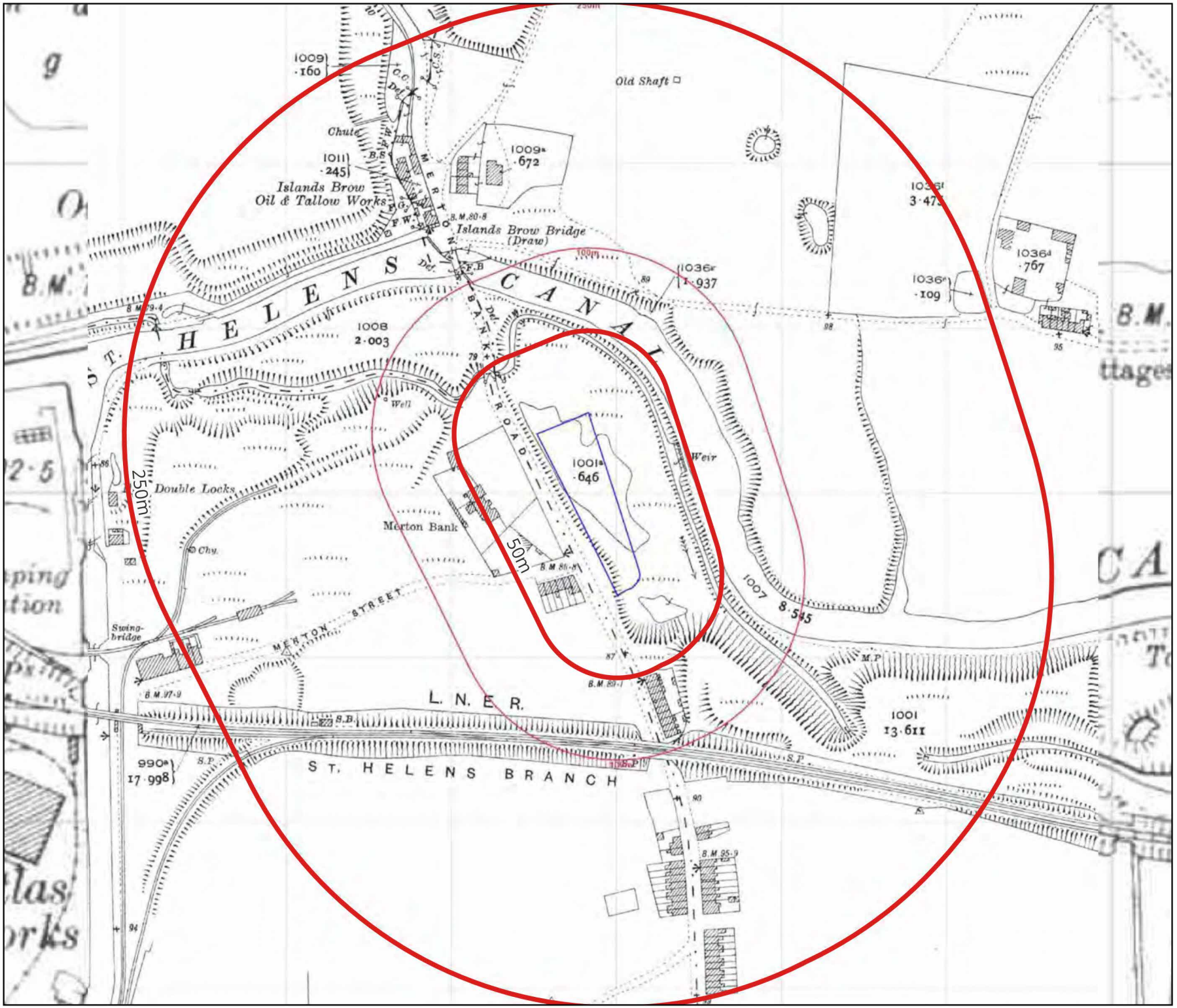
Date of Map: 1926

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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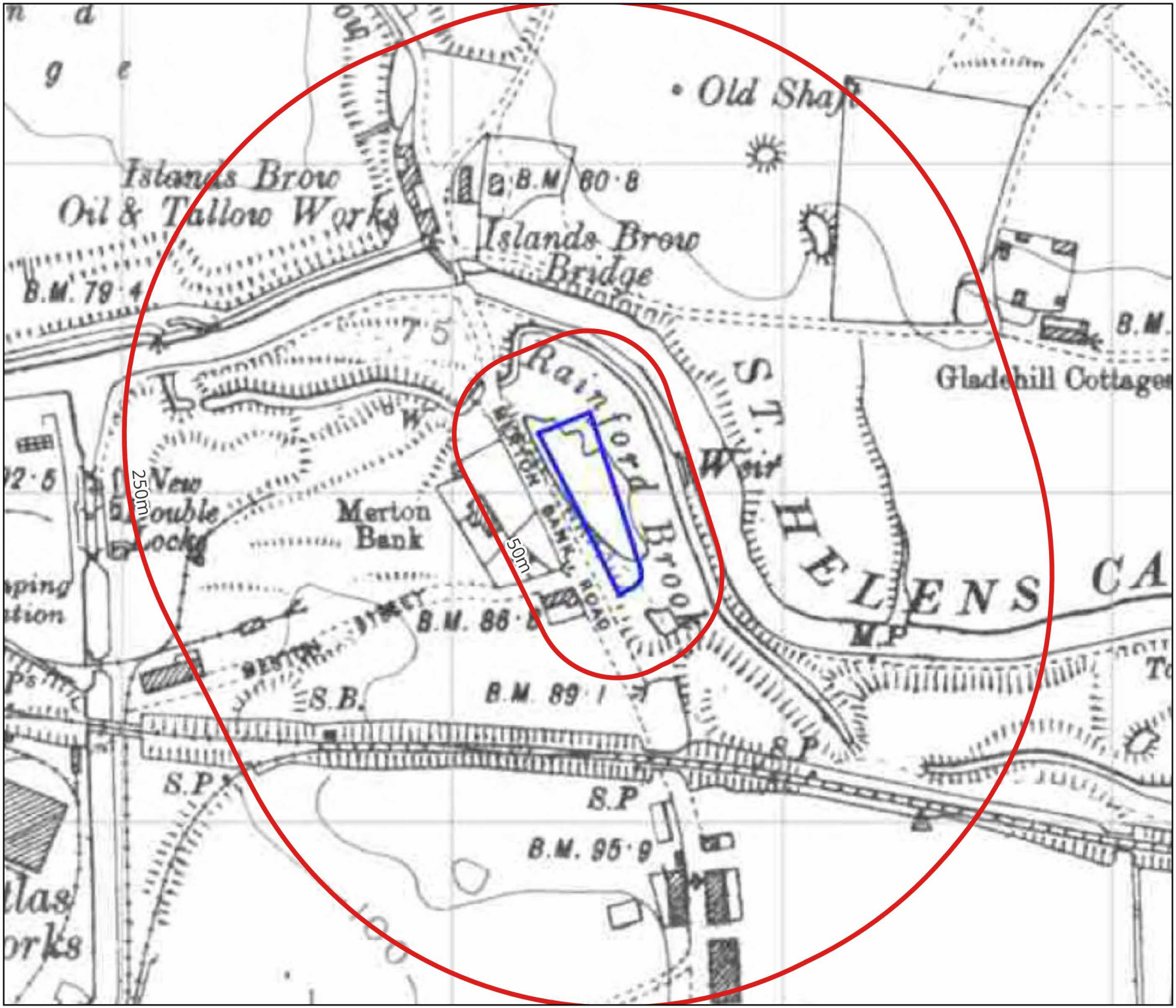
Date of Map: 1928

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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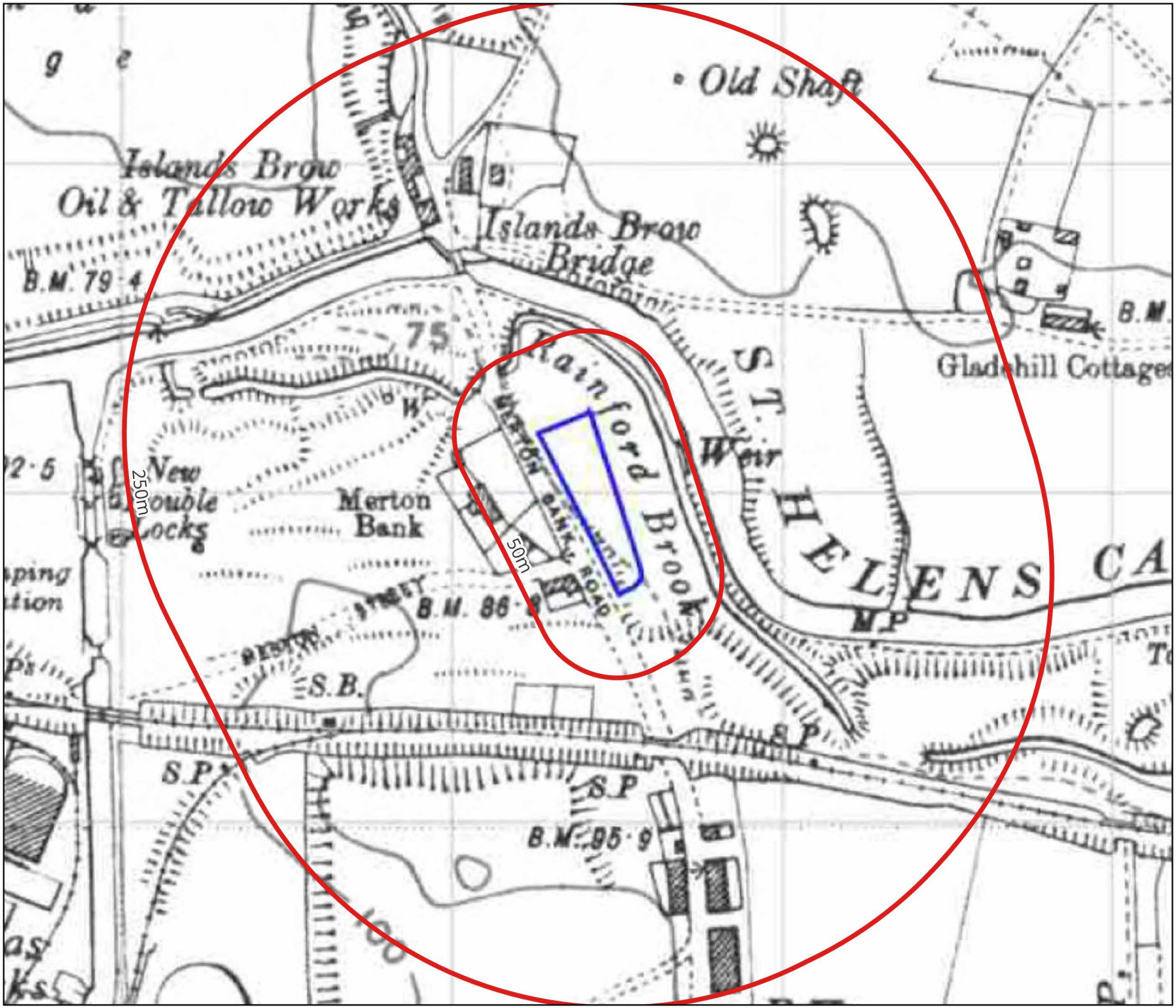
Date of Map: 1938

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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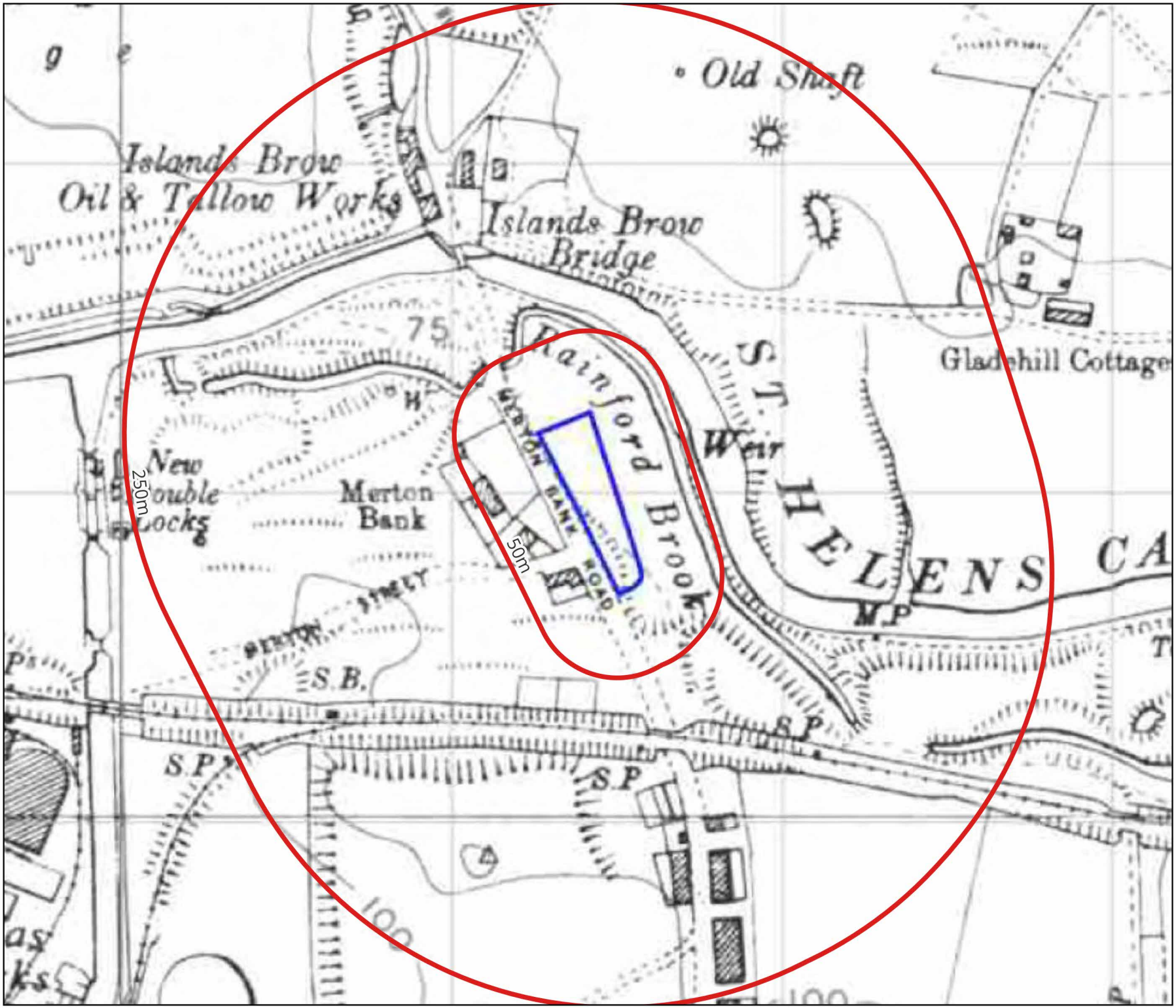
Date of Map: 1947-1948

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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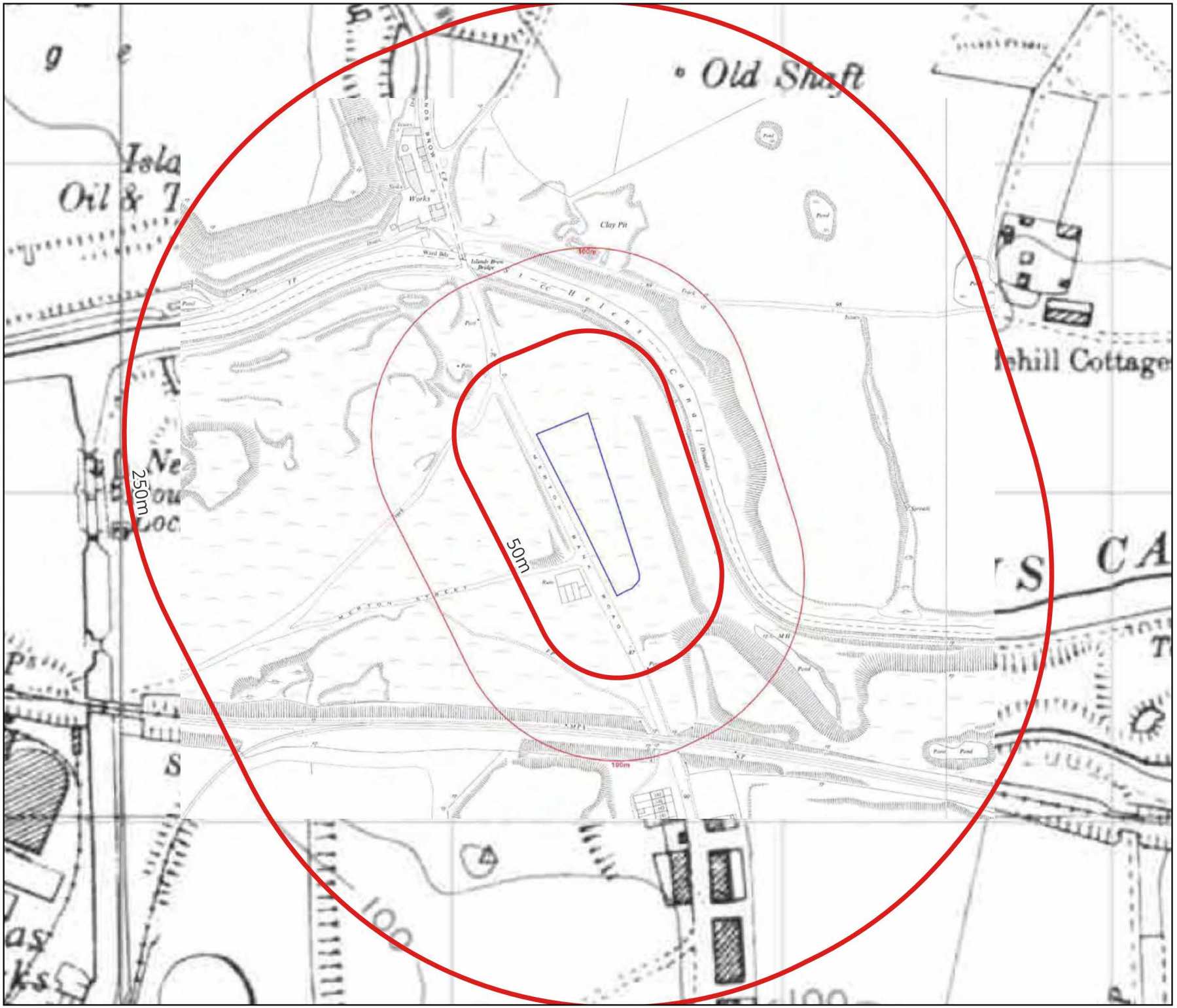
Date of Map: 1956

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Date of Map: 1958-1959

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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Date of Map: 1959-1960

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

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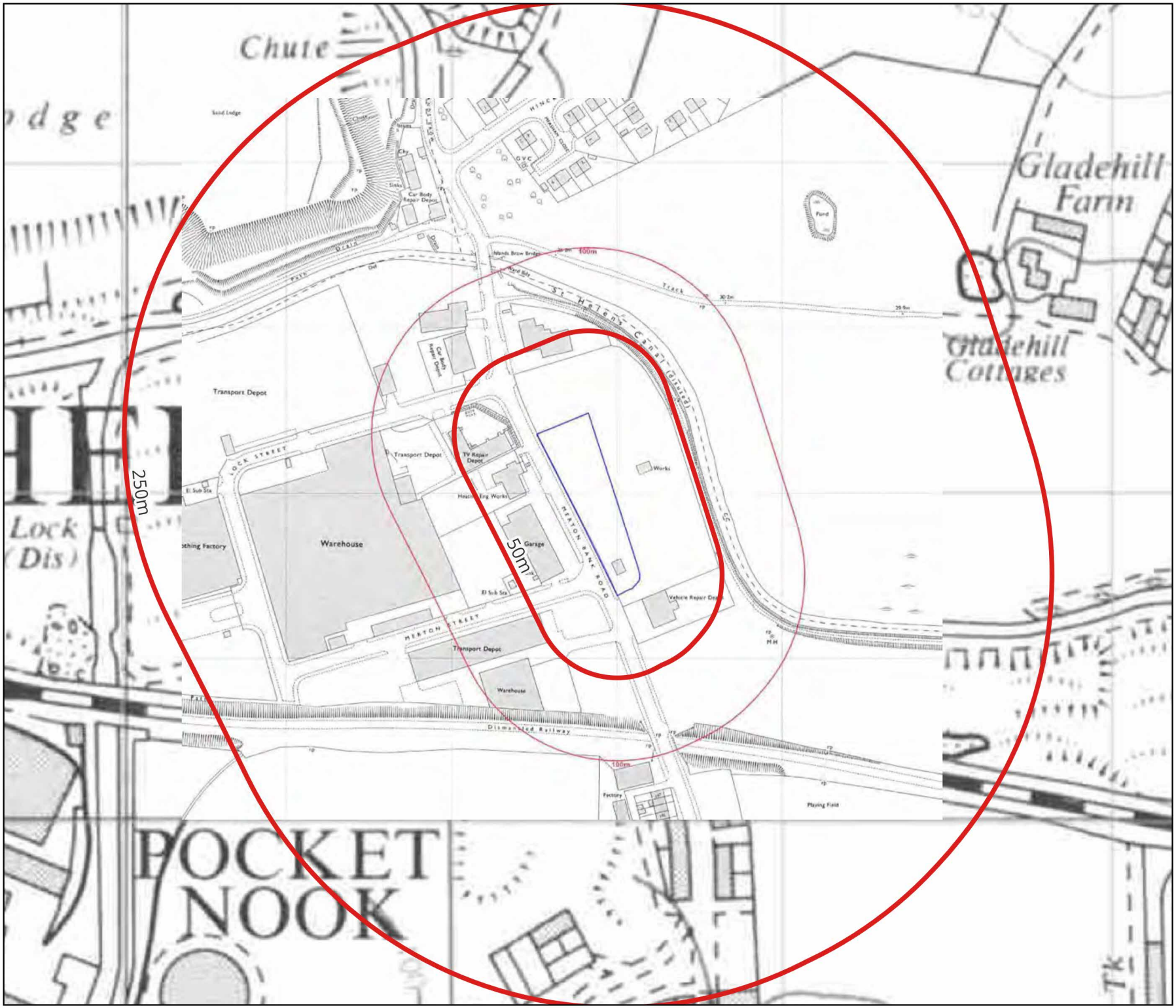
Date of Map: 1965

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Date of Map: 1970-1974

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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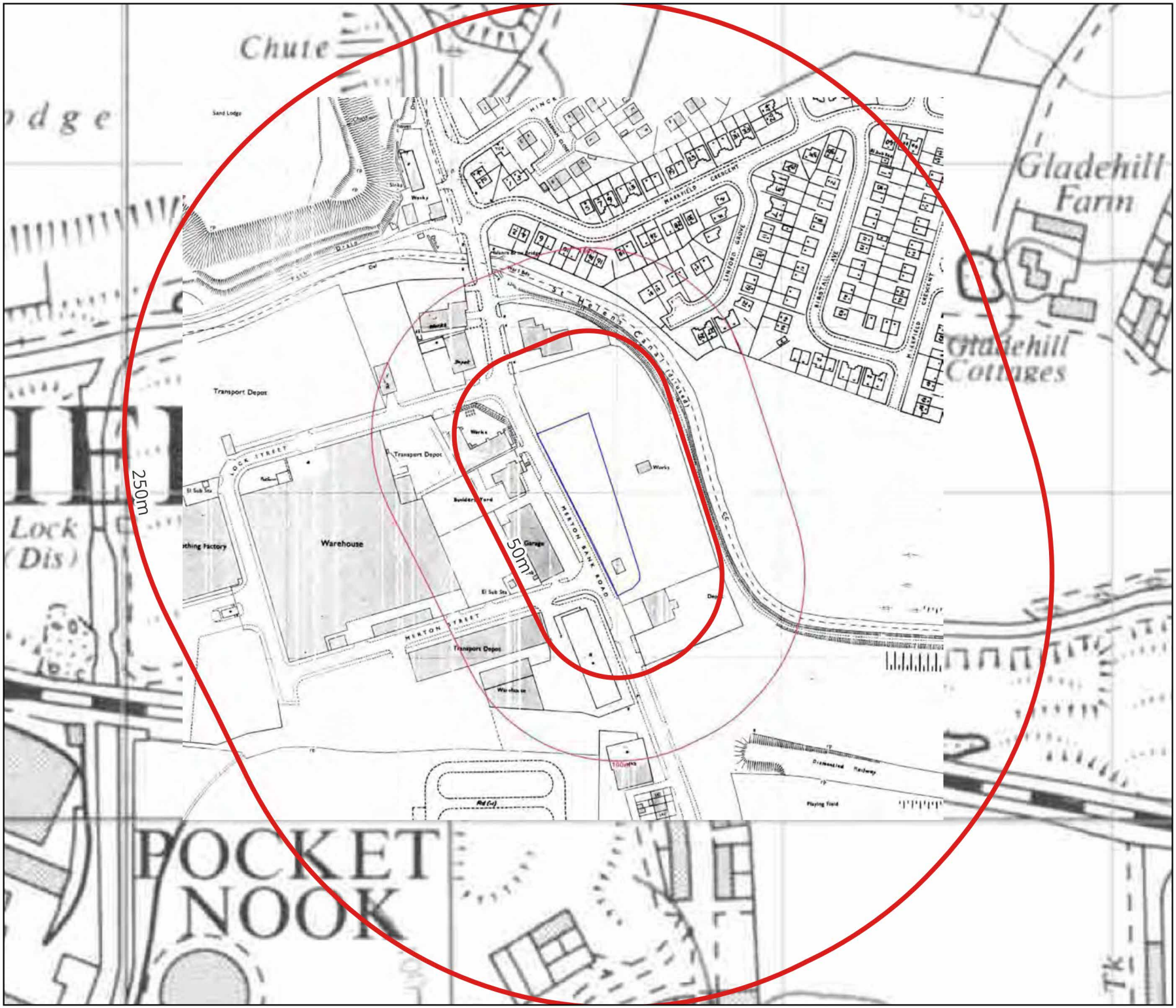
Date of Map: 1974-1975

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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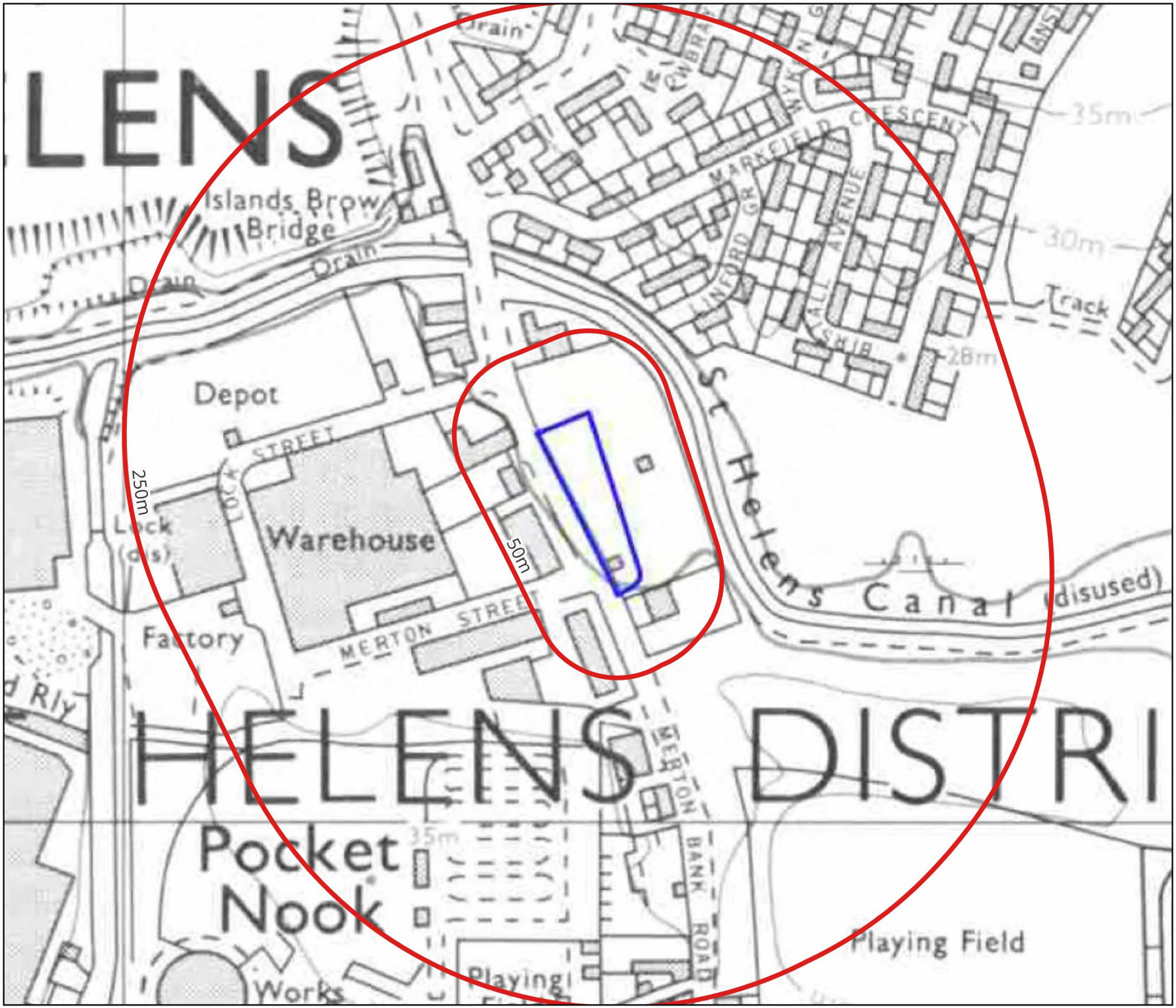
Date of Map: 1978

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Date of Map: 1981

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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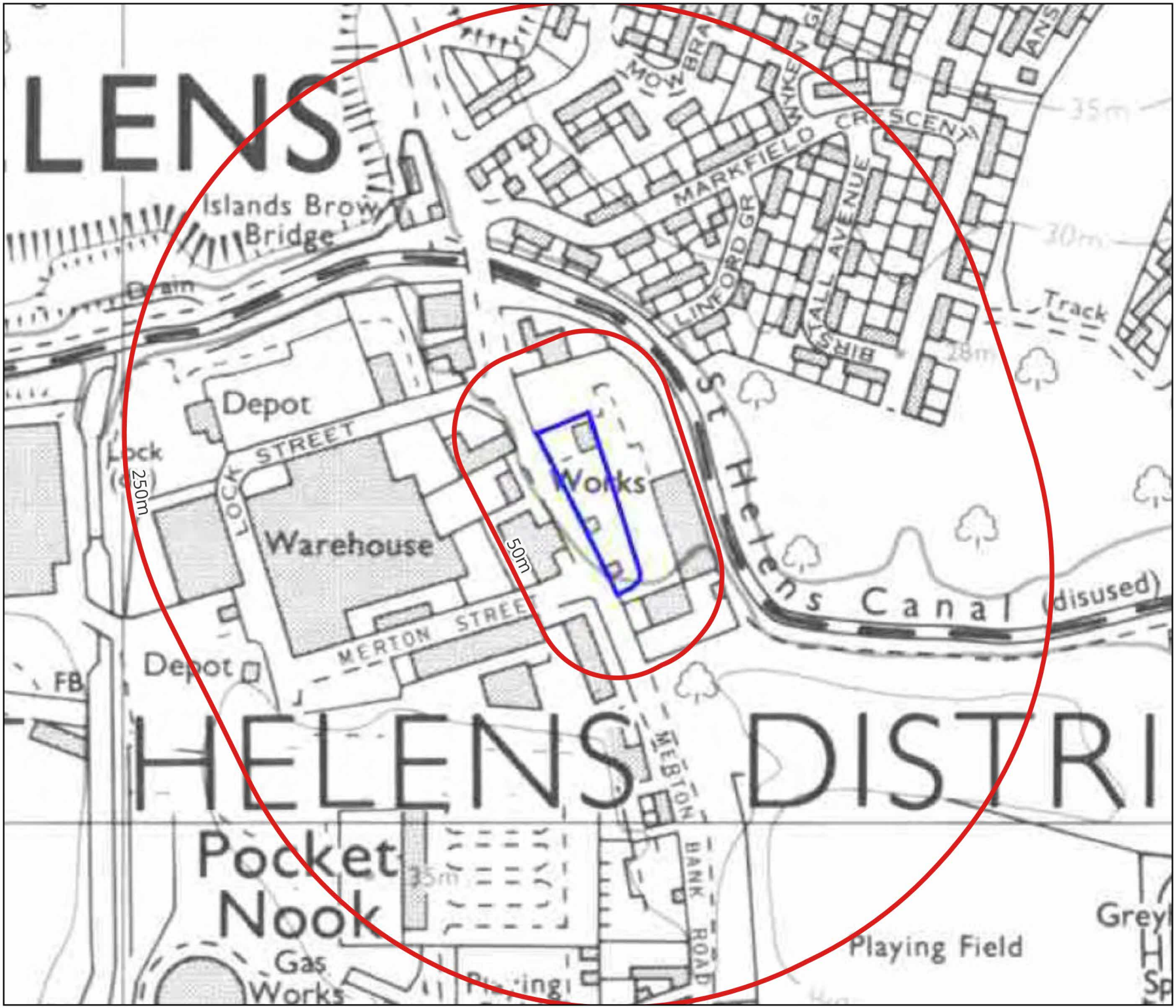
Date of Map: 1990-1993

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Date of Map: 1990

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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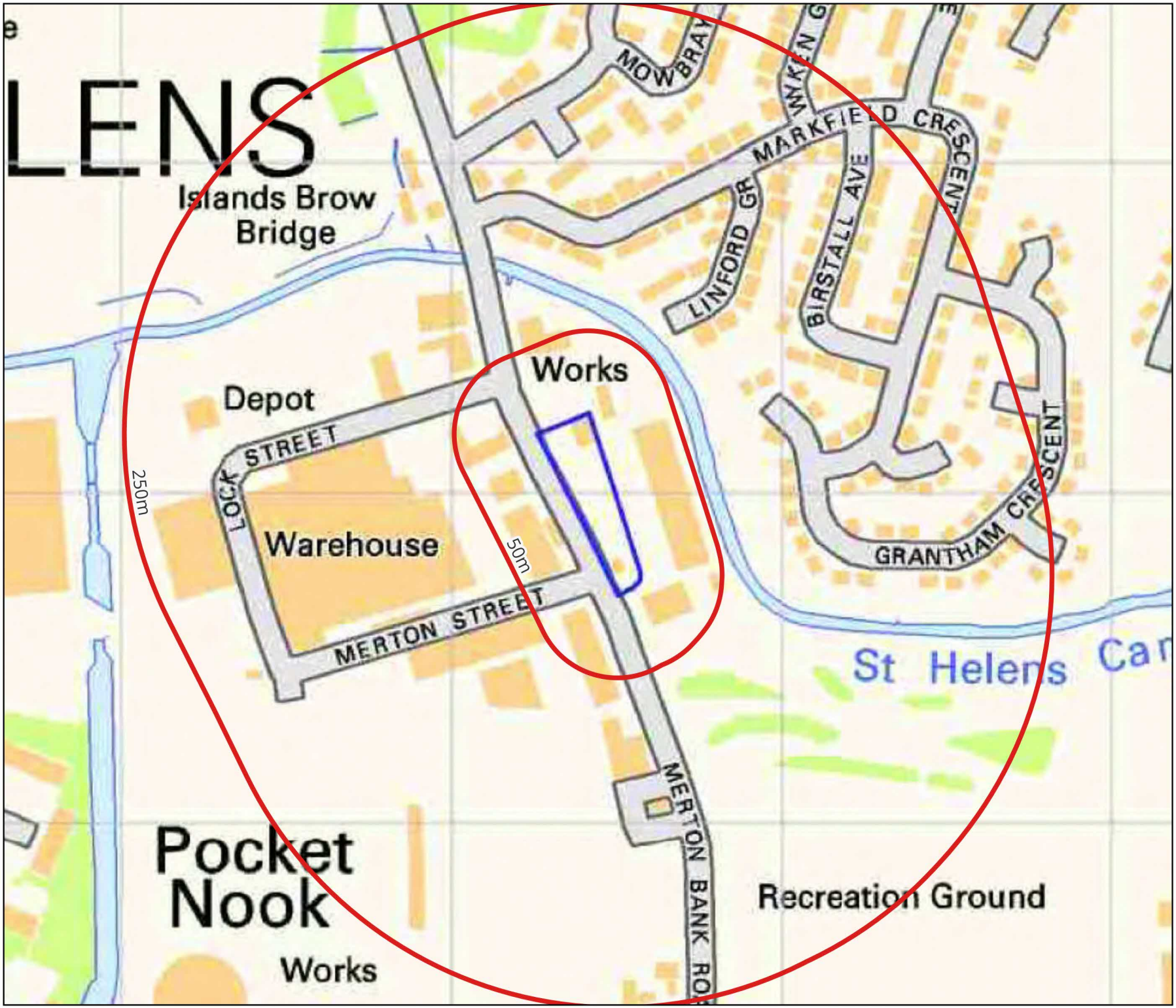
Date of Map: 1992-1994

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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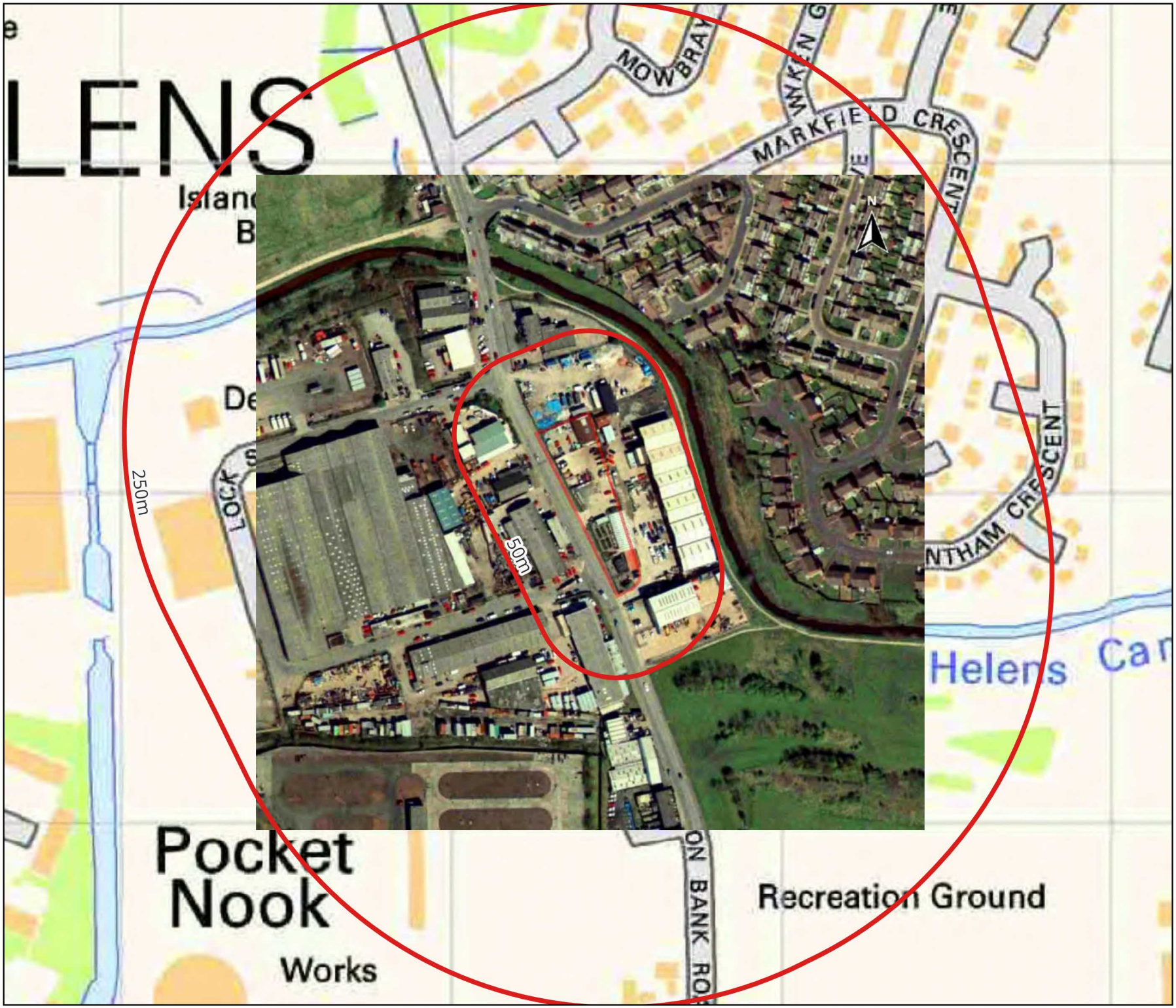
Date of Map: 2001

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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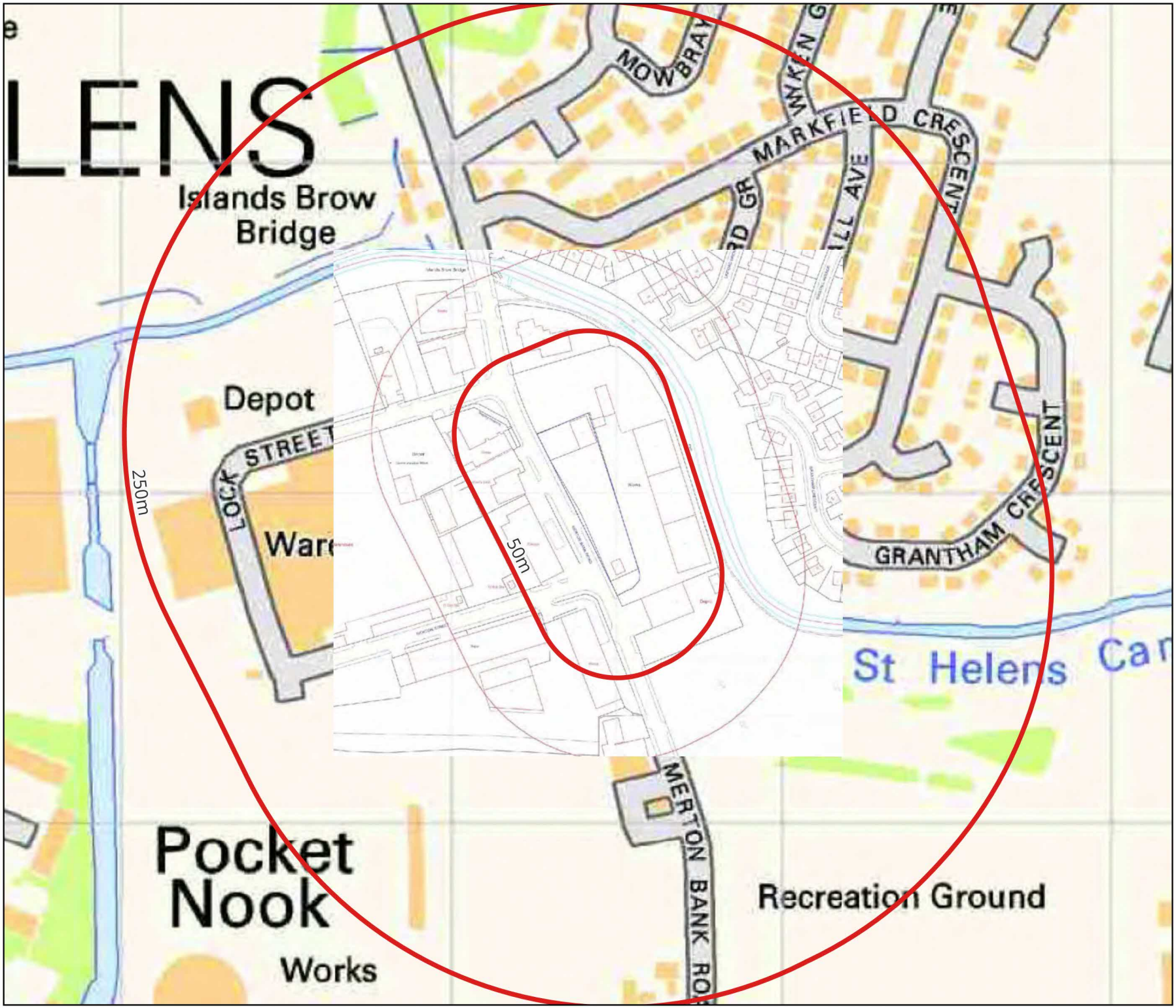
Date of Map: 2001

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Date of Map: 2003

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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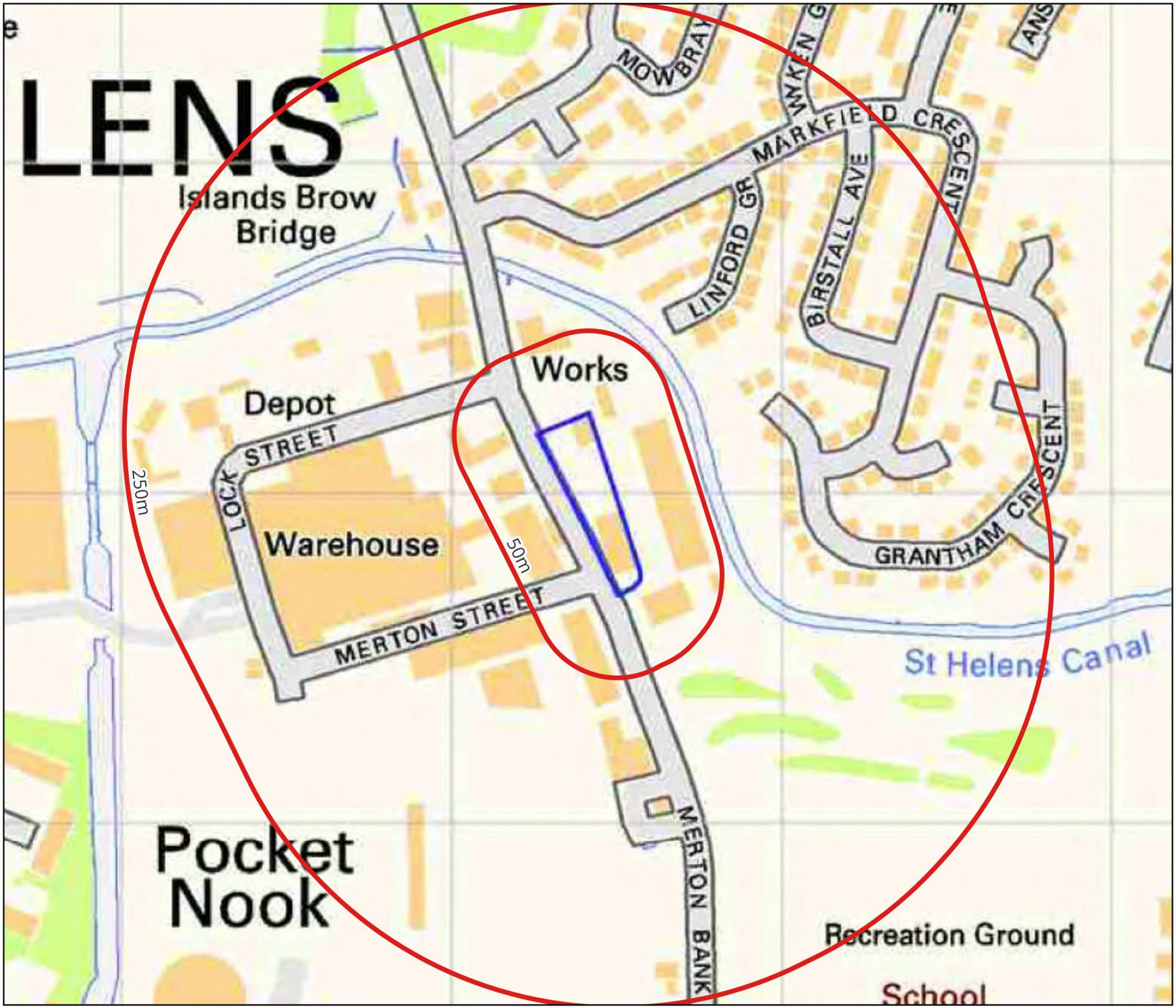
Date of Image: June 2009

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south



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Date of Map: 2010

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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Date of Image: May 2012

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south

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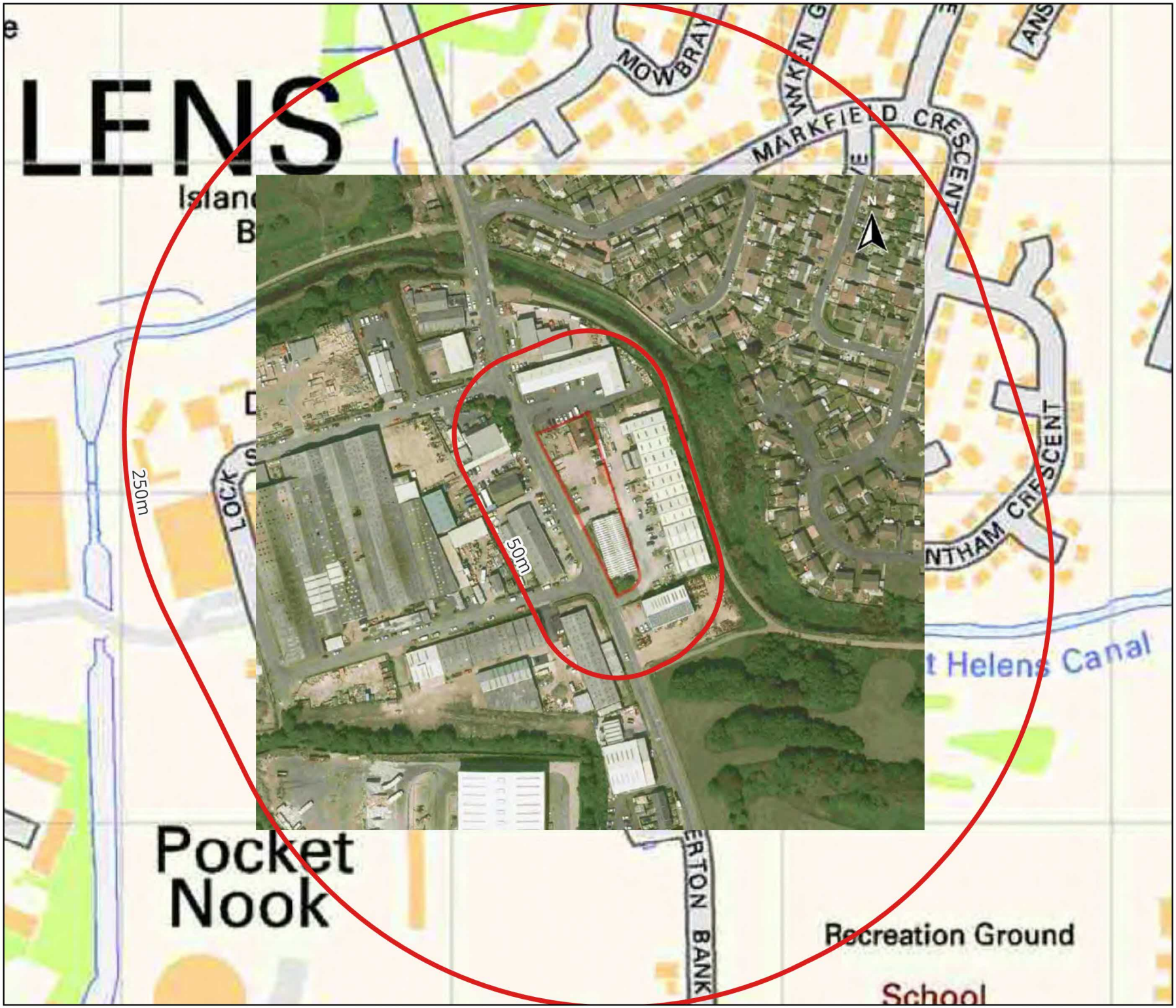
Date of Image: September 2014

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south



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Date of Map: 2015

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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Date of Image: SMay 2017

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south

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Date of Image: October 2018

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south

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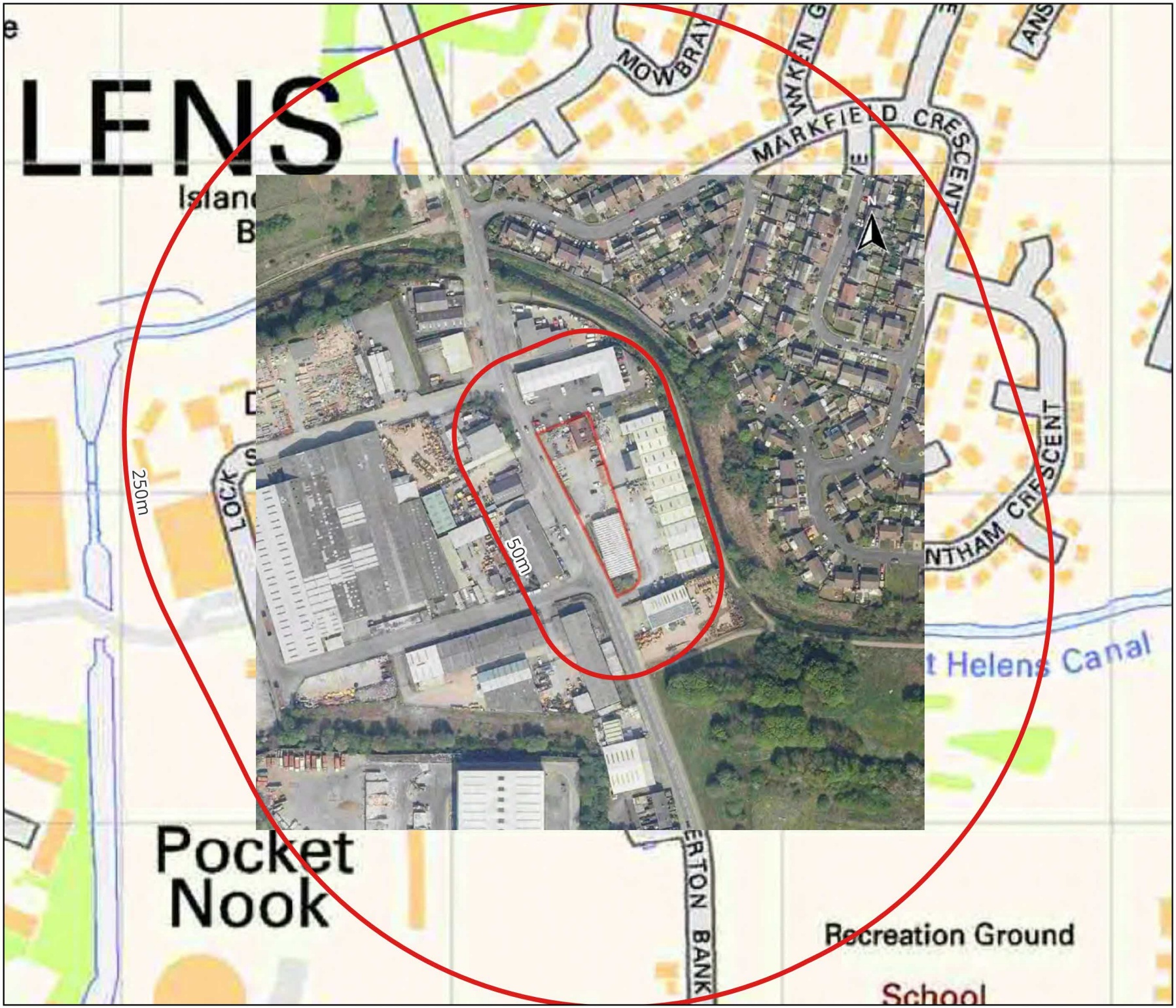
Date of Image: May 2019

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south



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Date of Map: 2019

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4

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Date of Image: November 2021

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south

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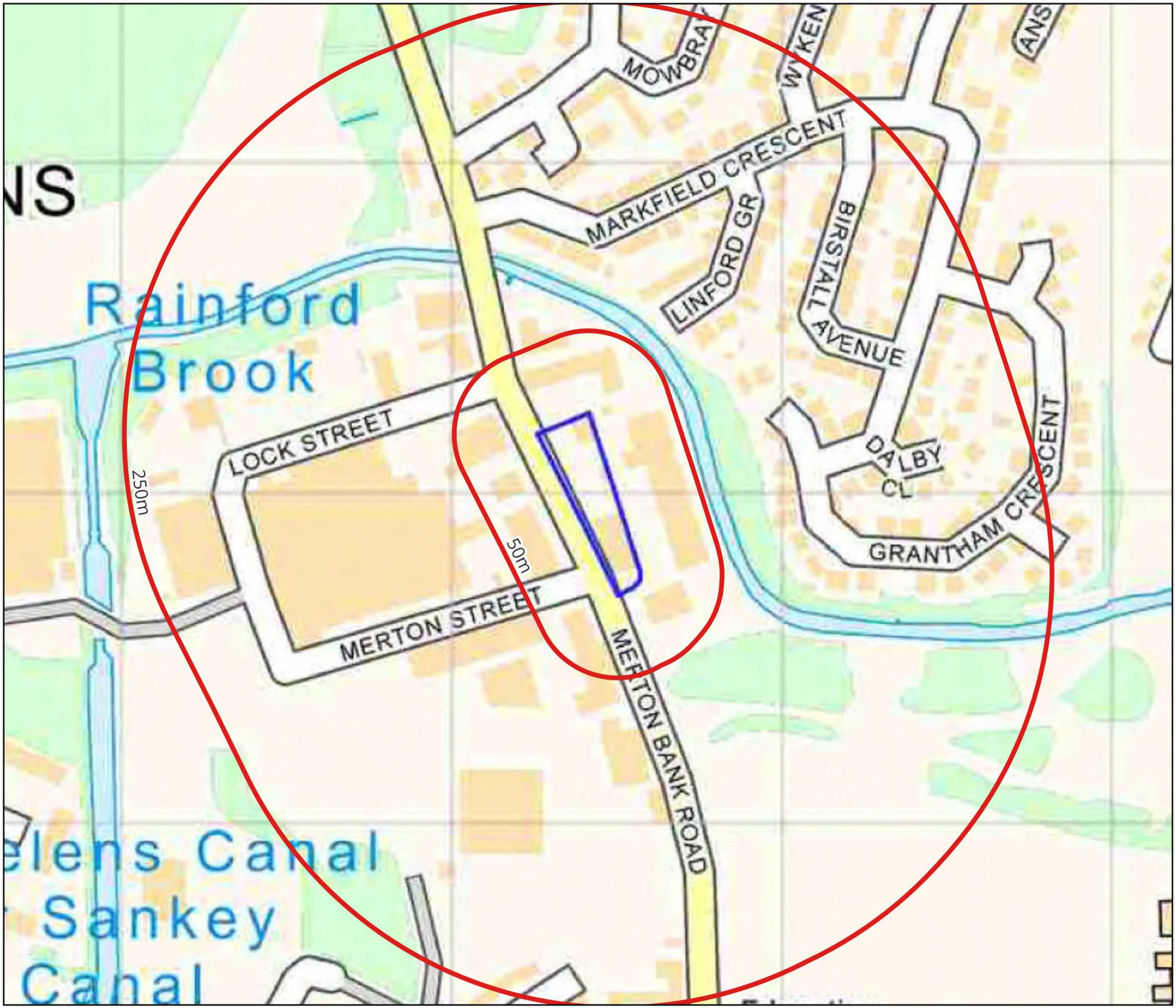
Date of Image: November 2022

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Description: View of northern area of the site looking south



DEMETER ENVIRONMENTAL LTD

Demeter Environmental Ltd
Liverpool Office:
Ropewalks
301 Tea Factory
St Peters Square
Fleet Street
Liverpool, L1 4DQ

Tel: 0151 521 2539
Fax: 0151 909 3661

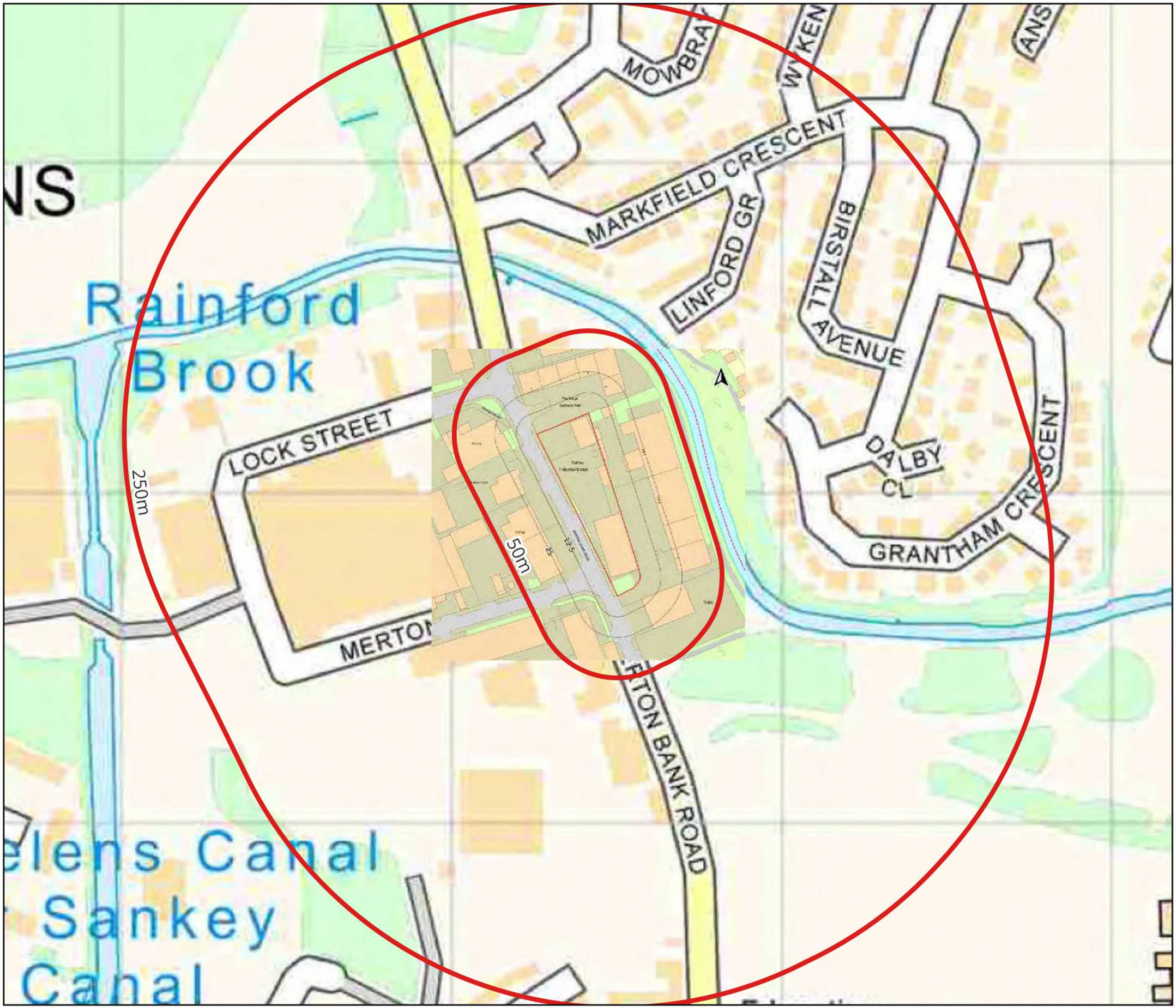
Brighton Office:
Gemini House
136-140 Old Shoreham Road
Brighton,East Sussex
BN3 7BD
Tel: 01273 741 727

Email: enquiries@demeter-environmental.co.uk

Date of Map: 2023

Site Name: Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Scale: 1:3,000 at A4



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Scale: 1:3,000 at A4

APPENDIX G: GROUNDSURE REPORTS

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Suregrow Garden Centre, Collins Industrial Estate, Merton Bank Road, St. Helens, WA9 1HY

Order Details

Date: 12/10/2023

Your ref: EMS_899913_1114261

Our Ref: EMS-899913_1148737

Site Details

Location: 352285 396197

Area: 0.27 ha

Authority: St Helens Metropolitan Borough Council ↗

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

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
13 >	1.1 >	Historical industrial land uses >	4	8	46	66	-
18 >	1.2 >	Historical tanks >	0	1	7	37	-
20 >	1.3 >	Historical energy features >	0	1	7	9	-
21	1.4	Historical petrol stations	0	0	0	0	-
21 >	1.5 >	Historical garages >	0	4	1	0	-
22	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
23 >	2.1 >	Historical industrial land uses >	5	12	63	98	-
30 >	2.2 >	Historical tanks >	0	1	11	50	-
32 >	2.3 >	Historical energy features >	0	1	13	15	-
34	2.4	Historical petrol stations	0	0	0	0	-
34 >	2.5 >	Historical garages >	0	5	1	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
35	3.1	Active or recent landfill	0	0	0	0	-
35 >	3.2 >	Historical landfill (BGS records) >	0	0	0	1	-
36 >	3.3 >	Historical landfill (LA/mapping records) >	0	0	0	2	-
36 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	1	0	-
37 >	3.5 >	Historical waste sites >	0	1	8	0	-
38 >	3.6 >	Licensed waste sites >	0	0	7	0	-
40 >	3.7 >	Waste exemptions >	0	0	18	13	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
43 >	4.1 >	Recent industrial land uses >	1	10	27	-	-
46 >	4.2 >	Current or recent petrol stations >	0	1	0	0	-
46	4.3	Electricity cables	0	0	0	0	-
47	4.4	Gas pipelines	0	0	0	0	-
47	4.5	Sites determined as Contaminated Land	0	0	0	0	-

47 >	4.6 >	Control of Major Accident Hazards (COMAH) >	0	0	0	1	-
47	4.7	Regulated explosive sites	0	0	0	0	-
48 >	4.8 >	Hazardous substance storage/usage >	0	0	0	1	-
48	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
48 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	5	0	-
49 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	1	0	-
50 >	4.12 >	Radioactive Substance Authorisations >	0	0	2	0	-
50 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	0	-
50	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
51	4.15	Pollutant release to public sewer	0	0	0	0	-
51	4.16	List 1 Dangerous Substances	0	0	0	0	-
51	4.17	List 2 Dangerous Substances	0	0	0	0	-
51 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	7	1	-
52	4.19	Pollution inventory substances	0	0	0	0	-
53	4.20	Pollution inventory waste transfers	0	0	0	0	-
53 >	4.21 >	Pollution inventory radioactive waste >	0	0	1	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
54 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
56 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
57 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
58	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
58	5.5	Groundwater vulnerability- local information	None (within 0m)				
59	5.6	Groundwater abstractions	0	0	0	0	0
60 >	5.7 >	Surface water abstractions >	0	0	0	0	6
61	5.8	Potable abstractions	0	0	0	0	0
62	5.9	Source Protection Zones	0	0	0	0	-
62	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	6.1 >	Water Network (OS MasterMap) >	0	0	3	-	-

64 >	6.2 >	Surface water features >	0	0	3	-	-
64 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
65 >	6.4 >	WFD Surface water bodies >	0	1	0	-	-
65 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
66 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
67 >	7.2 >	Historical Flood Events >	0	0	1	-	-
67	7.3	Flood Defences	0	0	0	-	-
67	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
68	7.5	Flood Storage Areas	0	0	0	-	-
69 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
70 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
71 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
73 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
74 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
75	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
75	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
75	10.4	Special Protection Areas (SPA)	0	0	0	0	0
75	10.5	National Nature Reserves (NNR)	0	0	0	0	0
76 >	10.6 >	Local Nature Reserves (LNR) >	0	0	1	0	2
76 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	2
76	10.8	Biosphere Reserves	0	0	0	0	0
77	10.9	Forest Parks	0	0	0	0	0
77	10.10	Marine Conservation Zones	0	0	0	0	0
77 >	10.11 >	Green Belt >	0	0	0	0	1
77	10.12	Proposed Ramsar sites	0	0	0	0	0

78	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
78	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
78	10.15	Nitrate Sensitive Areas	0	0	0	0	0
78 >	10.16 >	Nitrate Vulnerable Zones >	1	0	1	0	2
80 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
81 >	10.18 >	SSSI Units >	0	0	0	0	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
82	11.1	World Heritage Sites	0	0	0	-	-
82	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
82	11.3	National Parks	0	0	0	-	-
82	11.4	Listed Buildings	0	0	0	-	-
83	11.5	Conservation Areas	0	0	0	-	-
83	11.6	Scheduled Ancient Monuments	0	0	0	-	-
83	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
85	12.2	Open Access Land	0	0	0	-	-
85	12.3	Tree Felling Licences	0	0	0	-	-
85	12.4	Environmental Stewardship Schemes	0	0	0	-	-
85	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
86 >	13.1 >	Priority Habitat Inventory >	0	0	12	-	-
87	13.2	Habitat Networks	0	0	0	-	-
87 >	13.3 >	Open Mosaic Habitat >	0	0	1	-	-
88	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
89 >	14.1 >	10k Availability >	Identified (within 500m)				
90	14.2	Artificial and made ground (10k)	0	0	0	0	-
91	14.3	Superficial geology (10k)	0	0	0	0	-

91	14.4	Landslip (10k)	0	0	0	0	-
92	14.5	Bedrock geology (10k)	0	0	0	0	-
92	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
93 >	15.1 >	50k Availability >	Identified (within 500m)				
94 >	15.2 >	Artificial and made ground (50k) >	1	0	0	0	-
95 >	15.3 >	Artificial ground permeability (50k) >	1	0	-	-	-
96 >	15.4 >	Superficial geology (50k) >	2	0	1	0	-
97 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
97	15.6	Landslip (50k)	0	0	0	0	-
97	15.7	Landslip permeability (50k)	None (within 50m)				
98 >	15.8 >	Bedrock geology (50k) >	2	1	9	12	-
100 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
100 >	15.10 >	Bedrock faults and other linear features (50k) >	1	0	17	15	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
102	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
103 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
104 >	17.2 >	Running sands >	Low (within 50m)				
106 >	17.3 >	Compressible deposits >	Moderate (within 50m)				
108 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
109 >	17.5 >	Landslides >	Very low (within 50m)				
110 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
112	18.1	BritPits	0	0	0	0	-
113 >	18.2 >	Surface ground workings >	8	19	35	-	-
115 >	18.3 >	Underground workings >	0	0	5	8	1
116	18.4	Underground mining extents	0	0	0	0	-
116 >	18.5 >	Historical Mineral Planning Areas >	0	0	1	0	-

116 >	18.6 >	Non-coal mining >	0	0	0	0	1
117 >	18.7 >	JPB mining areas >	Identified (within 0m)				
117	18.8	The Coal Authority non-coal mining	0	0	0	0	-
118	18.9	Researched mining	0	0	0	0	-
118	18.10	Mining record office plans	0	0	0	0	-
118	18.11	BGS mine plans	0	0	0	0	-
118 >	18.12 >	Coal mining >	Identified (within 0m)				
119	18.13	Brine areas	None (within 0m)				
119	18.14	Gypsum areas	None (within 0m)				
119	18.15	Tin mining	None (within 0m)				
119	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
120	19.1	Natural cavities	0	0	0	0	-
120	19.2	Mining cavities	0	0	0	0	0
120	19.3	Reported recent incidents	0	0	0	0	-
120	19.4	Historical incidents	0	0	0	0	-
121	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
122 >	20.1 >	Radon >	Between 10% and 30% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
124 >	21.1 >	BGS Estimated Background Soil Chemistry >	2	2	-	-	-
124	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
125	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
126	22.1	Underground railways (London)	0	0	0	-	-
126	22.2	Underground railways (Non-London)	0	0	0	-	-
127	22.3	Railway tunnels	0	0	0	-	-
127 >	22.4 >	Historical railway and tunnel features >	0	0	14	-	-
128	22.5	Royal Mail tunnels	0	0	0	-	-

128 >	22.6 >	Historical railways >	0	0	2	-	-
128	22.7	Railways	0	0	0	-	-
128	22.8	Crossrail 1	0	0	0	0	-
129	22.9	Crossrail 2	0	0	0	0	-
129	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 22/04/2019

Site Area: 0.27ha

Recent site history - 2015 aerial photograph

Capture Date: 11/06/2015

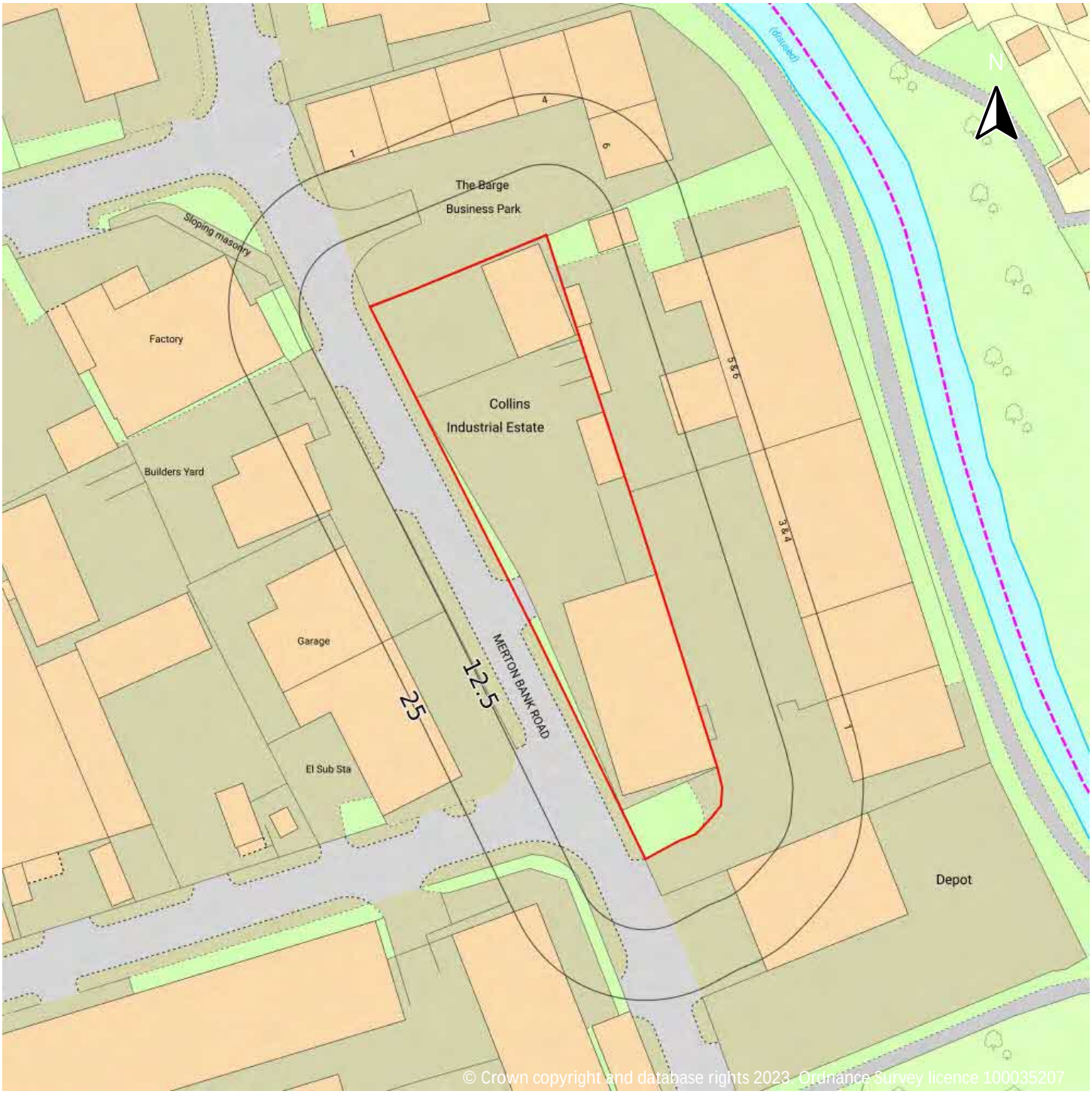
Site Area: 0.27ha

Recent site history - 2001 aerial photograph

Capture Date: 01/05/2001

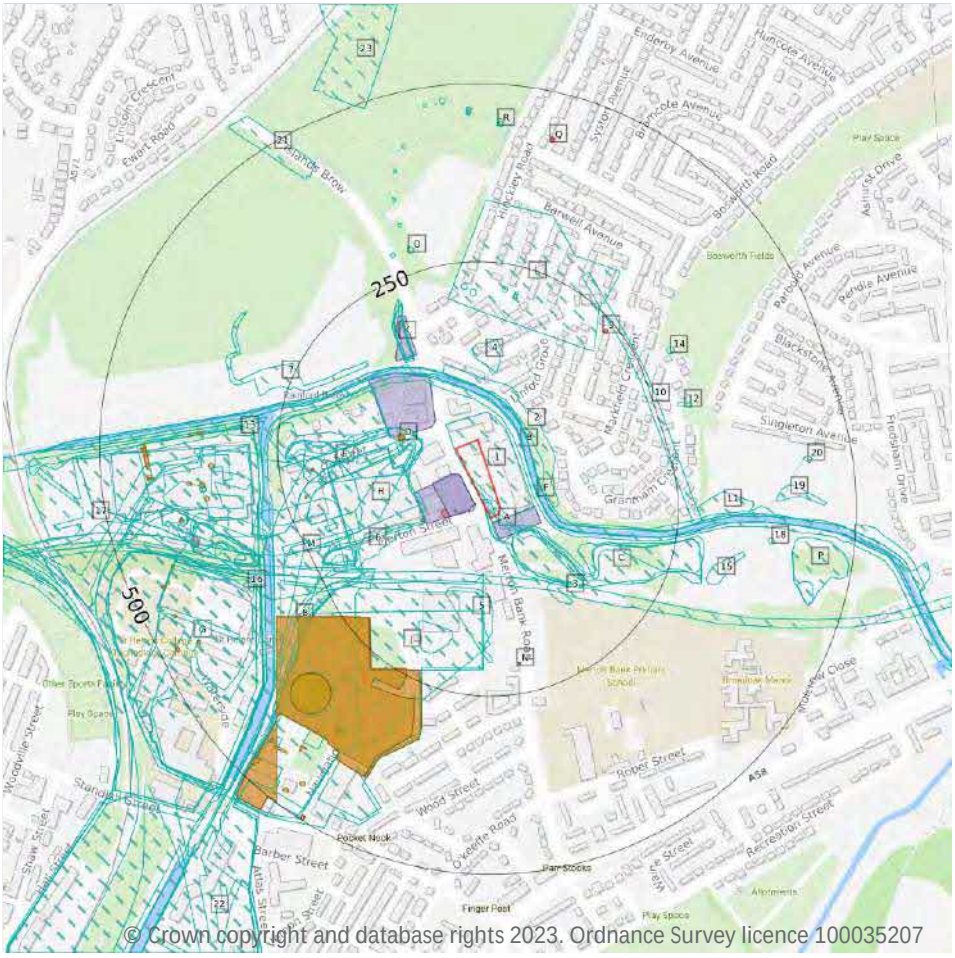
Site Area: 0.27ha

OS MasterMap site plan



Site Area: 0.27ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	124

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

Features are displayed on the Past land use map on page 13 >

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Works	1990	830314

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Pit	1955	839775
A	On site	Unspecified Heap	1892	975011
A	On site	Unspecified Ground Workings	1938	980524
C	36m SE	Unspecified Heap	1955	885711
C	37m SE	Unspecified Ground Workings	1965	935158
A	39m SE	Unspecified Heap	1906 - 1938	918719
B	44m N	Unspecified Wharf	1948	952644
E	47m NW	Unspecified Heap	1926 - 1938	918257
E	47m NW	Unspecified Ground Workings	1938	978549
E	47m NW	Unspecified Ground Workings	1948	983358
E	47m NW	Unspecified Heaps	1955	831263
B	51m NE	Disused Canal	1965	916504
F	53m N	Disused Canal	1990	907335
F	53m N	Disused Canal	1979	981474
G	56m NW	Railway Sidings	1906	896477
G	61m W	Railway Sidings	1892	971545
2	63m NE	Unspecified Pit	1965	839760
D	72m NW	Unspecified Tank	1892	824684
H	74m W	Unspecified Warehouse	1990	907594
H	77m W	Unspecified Warehouse	1979	898567
I	79m S	Unspecified Works	1965 - 1979	846416
3	81m S	Railway Sidings	1955	918665
E	95m NW	Unspecified Depot	1979	920045
E	95m NW	Unspecified Depot	1990	921531
4	98m N	Unspecified Pit	1965	839761
5	102m S	Unspecified Heap	1965	956912
6	105m SW	Unspecified Pit	1892	927986
J	106m S	Unspecified Heap	1948	976000

ID	Location	Land use	Dates present	Group ID
C	122m SE	Unspecified Heap	1892 - 1926	966206
I	130m S	Gas Works	1990	802199
K	137m NW	Oil and Tallow Works	1892	941774
K	140m NW	Oil and Tallow Works	1948	986828
K	141m NW	Oil and Tallow Works	1906 - 1938	986740
K	144m NW	Oil and Tallow Works	1955	925723
G	149m W	Railway Sidings	1906 - 1981	964233
G	161m W	Railway Sidings	1926 - 1938	945207
E	167m W	Unspecified Heap	1965	958630
J	167m S	Unspecified Heap	1965	891901
7	169m NW	Unspecified Ground Workings	1892	799939
L	171m N	Colliery	1851	798276
M	183m SW	Unspecified Depot	1990	818336
G	185m SW	Railway Sidings	1948	868605
8	185m SW	Railway Sidings	1965	919082
M	188m SW	Unspecified Heap	1955	803388
M	191m SW	Unspecified Pit	1948	917838
M	193m SW	Unspecified Pit	1906 - 1938	929219
M	195m SW	Unspecified Pit	1938	864817
M	197m W	Railway Building	1926 - 1938	976805
L	202m N	Shafts	1851	826705
M	203m SW	Unspecified Factory	1979	821335
L	204m N	Unspecified Old Shaft	1938	941093
L	206m N	Unspecified Old Shaft	1892 - 1948	943232
L	210m N	Unspecified Old Shaft	1955	990682
L	210m N	Shafts	1851	826704
L	211m N	Shafts	1851	826706
10	241m NE	Railway Sidings	1851	794607

ID	Location	Land use	Dates present	Group ID
M	241m W	Railway Building	1926 - 1938	917255
G	272m W	Unspecified Commercial/Industrial	1979	796638
11	276m E	Wharf	1851	831106
O	278m N	Shaft	1851	817677
G	278m W	Unspecified Works	1906	830270
G	279m W	Alkali Works	1851 - 1892	924832
12	281m E	Weighing Machine	1851	810046
O	282m N	Unspecified Old Shafts	1938	983302
13	283m W	Unspecified Heap	1965	803370
G	289m W	Unspecified Depot	1990	818337
G	290m W	Refuse Heap	1965 - 1979	899788
14	293m NE	Shaft	1851	817668
I	297m SW	Chemical Works	1892	834540
15	304m SE	Unspecified Ground Workings	1955	799938
G	309m W	Railway Sidings	1948 - 1990	862157
G	315m W	Colliery	1906	798279
G	316m W	Unspecified Ground Workings	1926 - 1938	885814
G	316m W	Unspecified Ground Workings	1948	872071
G	317m W	Unspecified Heap	1955	937940
O	318m N	Unspecified Old Shafts	1938	969045
G	319m SW	Unspecified Works	1965 - 1979	988282
I	322m SW	Unspecified Tank	1955	938576
G	323m W	Refuse Heap	1965	828780
I	324m SW	Unspecified Tank	1965 - 1979	847702
I	324m SW	Unspecified Tank	1990	959281
G	326m SW	Unspecified Works	1955	961205
G	326m SW	Plate Glass Works	1892 - 1906	886292
G	326m SW	Unspecified Works	1926 - 1938	967696

ID	Location	Land use	Dates present	Group ID
G	327m SW	Atlas Works	1948	798048
G	328m SW	Unspecified Works	1938	920832
G	333m SW	Plate Glass Works	1851	928595
16	342m SW	Unspecified Tank	1851	824683
O	353m N	Unspecified Old Shafts	1938	922104
17	355m W	Railway Sidings	1851 - 1990	845055
G	355m W	Pumping Station	1948	822107
G	356m W	Unspecified Tank	1938	824682
G	359m W	Shaft	1851	817692
G	359m W	Unspecified Tank	1851	824681
I	360m SW	Unspecified Tanks	1926 - 1938	919355
G	376m W	Pumping Station	1938	965655
G	379m W	Pumping Station	1926 - 1938	886656
18	379m E	Shaft	1851	817690
I	380m SW	Railway Building	1906	820007
G	386m W	Unspecified Ground Workings	1965	799906
19	389m E	Unspecified Heap	1955	803387
G	392m W	Unspecified Heap	1965	803369
O	392m N	Unspecified Old Shafts	1938	936647
G	395m W	Unspecified Tank	1938	824679
G	409m W	Refuse Heap	1965	828781
G	414m W	Shaft	1851	817695
P	414m E	Unspecified Ground Workings	1892	928784
O	421m N	Unspecified Old Shafts	1938	871664
I	426m SW	Railway Building	1906	819977
P	430m E	Unspecified Ground Workings	1906 - 1938	923911
20	431m E	Old Sand Pit	1906	834212
21	433m NW	Cuttings	1948 - 1955	987117

ID	Location	Land use	Dates present	Group ID
I	440m SW	Unspecified Tanks	1926	948930
I	440m SW	Unspecified Tanks	1938	982439
R	440m N	Unspecified Old Shafts	1892 - 1938	964669
R	443m N	Shafts	1851	826703
R	456m N	Unspecified Old Shafts	1938	917482
22	457m SW	Unspecified Commercial/Industrial	1892 - 1938	866236
R	457m N	Unspecified Old Shafts	1906 - 1938	909860
R	458m N	Shafts	1851	826688
R	473m N	Unspecified Old Shafts	1938	978638
R	474m N	Shafts	1851	826687
23	491m N	Colliery	1851	798256

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	45

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

Features are displayed on the Past land use map on page 13 >

ID	Location	Land use	Dates present	Group ID
B	38m SW	Unspecified Tank	1970	113499
D	74m NW	Gasometer	1894	108462
K	188m NW	Unspecified Tank	1958	133152
N	207m S	Tanks	1978 - 1985	149341
N	207m S	Unspecified Tank	1993	113500
E	219m W	Unspecified Tank	1894 - 1908	134243
I	219m SW	Gas Works	1985	139147

ID	Location	Land use	Dates present	Group ID
I	220m SW	Gas Works	1978 - 1994	123040
I	324m SW	Gasometer	1993 - 1994	124179
I	324m SW	Gasometer	1978	136549
I	324m SW	Unspecified Tank	1959	147665
I	324m SW	Gasholder	1985	120421
G	341m W	Unspecified Tank	1894 - 1908	134985
G	353m W	Unspecified Tank	1894 - 1908	139864
G	356m W	Unspecified Tank	1894 - 1908	131617
G	356m W	Tanks	1894	105933
G	358m W	Unspecified Tank	1908	113496
I	364m SW	Unspecified Tank	1928	113507
G	373m W	Unspecified Tank	1908	113495
G	373m W	Unspecified Tank	1894	113494
G	375m W	Unspecified Tank	1908	113493
G	396m W	Unspecified Tank	1894	140040
G	396m W	Unspecified Tank	1908	138503
I	413m SW	Tanks	1894	105931
I	414m SW	Gas Board Depot	1972	108750
I	420m SW	Unspecified Tank	1894	113508
G	425m W	Unspecified Tank	1908	113484
G	428m W	Unspecified Tank	1976	113492
G	429m W	Unspecified Tank	1894	113486
G	429m W	Unspecified Tank	1908	113485
G	431m W	Tanks	1894 - 1928	139704
G	431m W	Tanks	1908	136240
G	433m W	Unspecified Tank	1908	113489
I	434m SW	Tanks	1894	105932
I	435m SW	Tanks	1894	105930

ID	Location	Land use	Dates present	Group ID
G	443m W	Unspecified Tank	1958 - 1959	134879
G	452m W	Unspecified Tank	1928	113490
I	453m SW	Unspecified Tank	1894	113506
G	453m SW	Unspecified Tank	1894 - 1928	129573
G	456m SW	Unspecified Tank	1958 - 1959	144934
I	458m SW	Unspecified Tank	1894	113511
I	468m SW	Tanks	1928	105935
G	473m SW	Unspecified Tank	1894 - 1908	127878
G	474m SW	Unspecified Tank	1894	113491
I	475m SW	Unspecified Tank	1928	113509

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	17

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

Features are displayed on the Past land use map on page 13 >

ID	Location	Land use	Dates present	Group ID
B	50m SW	Electricity Substation	1992	64135
B	50m SW	Electricity Substation	1970 - 1990	70934
D	74m NW	Gasometer	1894	59655
B	85m SW	Electricity Substation	1990 - 1992	78683
E	201m W	Electricity Substation	1970 - 1992	72621
I	219m SW	Gas Works	1985	76034
I	220m SW	Gas Works	1978 - 1994	78614
9	233m NE	Electricity Substation	1990 - 1992	74791

ID	Location	Land use	Dates present	Group ID
I	324m SW	Gasometer	1993 - 1994	66607
I	324m SW	Gasometer	1978	68418
I	324m SW	Gasholder	1985	63409
G	380m W	Electricity Substation	1985	61400
I	414m SW	Gas Board Depot	1972	59831
Q	431m N	Electricity Substation	1985	61402
Q	434m N	Electricity Substation	1972	61399
G	441m SW	Electricity Substation	1992 - 1996	80931
I	493m SW	Electricity Substation	1985 - 1994	83700

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	5

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

Features are displayed on the Past land use map on page 13 >

ID	Location	Land use	Dates present	Group ID
A	8m S	Vehicle Repair Depot	1970	20532
B	10m S	Garage	1970	21003

ID	Location	Land use	Dates present	Group ID
B	11m S	Garage	1990 - 1992	26947
D	46m NW	Car Body Repair Depot	1970	20633
K	143m NW	Car Body Repair Depot	1970	20634

This data is sourced from Ordnance Survey / Groundsure.

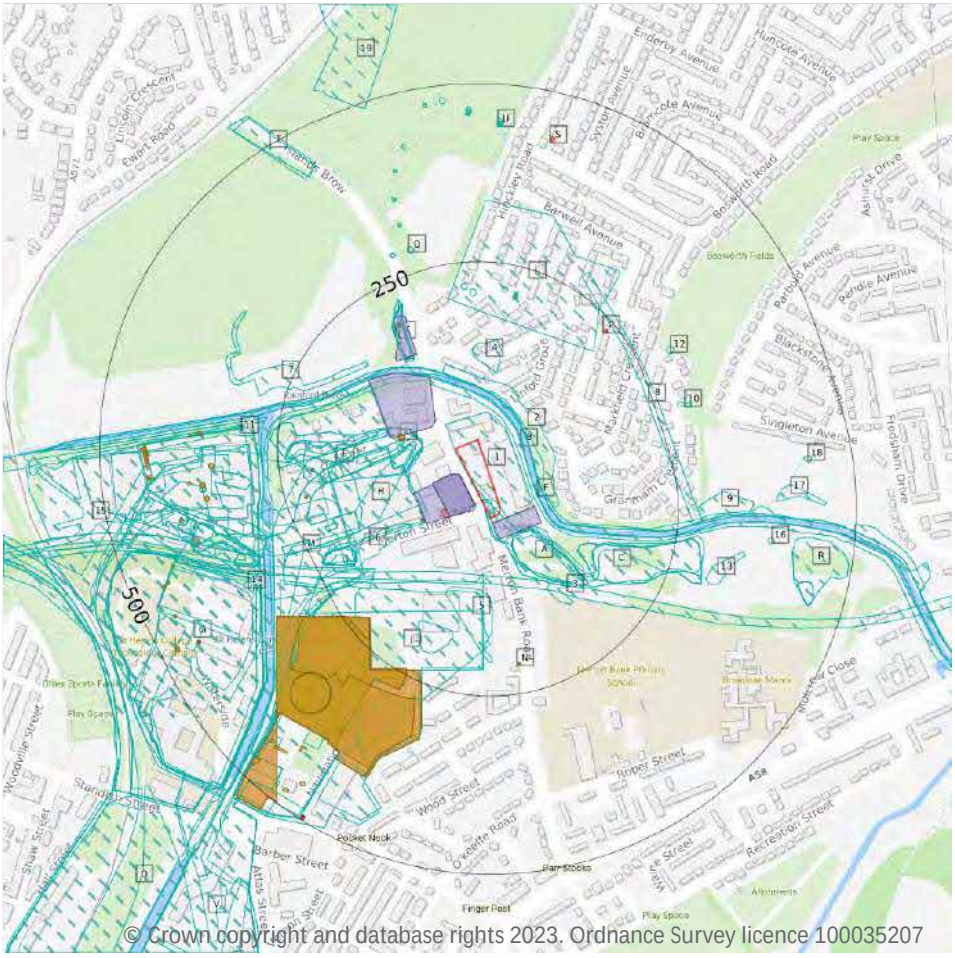
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	178

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

Features are displayed on the Past land use - un-grouped map on page 23 >

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Works	1990	830314
A	On site	Unspecified Heap	1892	975011
A	On site	Unspecified Pit	1955	839775

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Ground Workings	1938	980524
A	On site	Unspecified Ground Workings	1938	980524
C	36m SE	Unspecified Heap	1955	885711
C	37m SE	Unspecified Ground Workings	1965	935158
A	39m SE	Unspecified Heap	1938	918719
A	39m SE	Unspecified Heap	1926	918719
A	39m SE	Unspecified Heap	1906	918719
B	44m N	Unspecified Wharf	1948	952644
E	47m NW	Unspecified Heap	1938	918257
E	47m NW	Unspecified Heap	1926	918257
E	47m NW	Unspecified Ground Workings	1938	978549
E	47m NW	Unspecified Ground Workings	1938	978549
E	47m NW	Unspecified Ground Workings	1948	983358
E	47m NW	Unspecified Heaps	1955	831263
B	51m NE	Disused Canal	1965	916504
F	53m N	Disused Canal	1979	981474
F	53m N	Disused Canal	1990	907335
G	56m NW	Railway Sidings	1906	896477
G	61m W	Railway Sidings	1892	971545
2	63m NE	Unspecified Pit	1965	839760
D	72m NW	Unspecified Tank	1892	824684
H	74m W	Unspecified Warehouse	1990	907594
H	77m W	Unspecified Warehouse	1979	898567
I	79m S	Unspecified Works	1979	846416
3	81m S	Railway Sidings	1955	918665
E	95m NW	Unspecified Depot	1979	920045
E	95m NW	Unspecified Depot	1990	921531
4	98m N	Unspecified Pit	1965	839761

ID	Location	Land Use	Date	Group ID
5	102m S	Unspecified Heap	1965	956912
6	105m SW	Unspecified Pit	1892	927986
J	106m S	Unspecified Heap	1948	976000
C	122m SE	Unspecified Heap	1926	966206
C	122m SE	Unspecified Heap	1906	966206
C	122m SE	Unspecified Heap	1892	966206
I	130m S	Gas Works	1990	802199
K	137m NW	Oil and Tallow Works	1892	941774
K	140m NW	Oil and Tallow Works	1948	986828
K	141m NW	Oil and Tallow Works	1938	986740
K	141m NW	Oil and Tallow Works	1926	986740
K	141m NW	Oil and Tallow Works	1906	986740
K	141m NW	Oil and Tallow Works	1938	986740
K	144m NW	Oil and Tallow Works	1955	925723
G	149m W	Railway Sidings	1938	964233
G	161m W	Railway Sidings	1938	945207
G	161m W	Railway Sidings	1926	945207
E	167m W	Unspecified Heap	1965	958630
J	167m S	Unspecified Heap	1965	891901
7	169m NW	Unspecified Ground Workings	1892	799939
L	171m N	Colliery	1851	798276
M	183m SW	Unspecified Depot	1990	818336
G	185m SW	Railway Sidings	1948	868605
I	185m SW	Railway Sidings	1965	919082
M	188m SW	Unspecified Heap	1955	803388
M	191m SW	Unspecified Pit	1948	917838
M	193m SW	Unspecified Pit	1938	929219
M	193m SW	Unspecified Pit	1926	929219

ID	Location	Land Use	Date	Group ID
M	193m SW	Unspecified Pit	1906	929219
M	195m SW	Unspecified Pit	1938	864817
M	195m SW	Unspecified Pit	1938	864817
M	197m W	Railway Building	1938	976805
M	197m W	Railway Building	1926	976805
L	202m N	Shafts	1851	826705
M	203m SW	Unspecified Factory	1979	821335
L	204m N	Unspecified Old Shaft	1938	941093
L	204m N	Unspecified Old Shaft	1938	941093
L	206m N	Unspecified Old Shaft	1948	943232
L	206m N	Unspecified Old Shaft	1938	943232
L	206m N	Unspecified Old Shaft	1926	943232
L	206m N	Unspecified Old Shaft	1906	943232
L	206m N	Unspecified Old Shaft	1892	943232
L	210m N	Unspecified Old Shaft	1955	990682
L	210m N	Shafts	1851	826704
L	211m N	Shafts	1851	826706
O	219m SW	Railway Sidings	1892	971545
8	241m NE	Railway Sidings	1851	794607
M	241m W	Railway Building	1938	917255
M	241m W	Railway Building	1926	917255
G	272m W	Unspecified Commercial/Industrial	1979	796638
9	276m E	Wharf	1851	831106
Q	278m N	Shaft	1851	817677
G	278m W	Unspecified Works	1906	830270
G	279m W	Alkali Works	1851	924832
10	281m E	Weighing Machine	1851	810046
Q	282m N	Unspecified Old Shafts	1938	983302

ID	Location	Land Use	Date	Group ID
Q	282m N	Unspecified Old Shafts	1938	983302
11	283m W	Unspecified Heap	1965	803370
G	289m W	Unspecified Depot	1990	818337
G	290m W	Refuse Heap	1979	899788
G	290m W	Alkali Works	1892	924832
12	293m NE	Shaft	1851	817668
G	294m W	Refuse Heap	1965	899788
I	297m SW	Chemical Works	1892	834540
13	304m SE	Unspecified Ground Workings	1955	799938
G	309m W	Railway Sidings	1979	862157
G	309m W	Railway Sidings	1965	862157
I	314m SW	Unspecified Works	1965	846416
G	315m W	Colliery	1906	798279
G	316m W	Unspecified Ground Workings	1938	885814
G	316m W	Unspecified Ground Workings	1926	885814
G	316m W	Unspecified Ground Workings	1948	872071
G	317m W	Unspecified Heap	1955	937940
Q	318m N	Unspecified Old Shafts	1938	969045
Q	318m N	Unspecified Old Shafts	1938	969045
G	319m SW	Unspecified Works	1979	988282
G	319m SW	Unspecified Works	1965	988282
I	322m SW	Unspecified Tank	1955	938576
G	323m W	Refuse Heap	1965	828780
I	324m SW	Unspecified Tank	1979	847702
I	324m SW	Unspecified Tank	1965	847702
I	324m SW	Unspecified Tank	1990	959281
G	326m SW	Unspecified Works	1955	961205
G	326m SW	Unspecified Works	1938	967696

ID	Location	Land Use	Date	Group ID
G	326m SW	Unspecified Works	1926	967696
G	326m SW	Plate Glass Works	1906	886292
G	326m SW	Plate Glass Works	1892	886292
G	327m SW	Atlas Works	1948	798048
G	328m SW	Unspecified Works	1938	920832
G	333m SW	Plate Glass Works	1851	928595
14	342m SW	Unspecified Tank	1851	824683
Q	353m N	Unspecified Old Shafts	1938	922104
Q	353m N	Unspecified Old Shafts	1938	922104
15	355m W	Railway Sidings	1851	845055
G	355m W	Pumping Station	1948	822107
G	356m W	Unspecified Tank	1938	824682
G	357m W	Unspecified Heap	1955	937940
G	359m W	Shaft	1851	817692
G	359m W	Unspecified Tank	1851	824681
I	360m SW	Unspecified Tanks	1938	919355
I	360m SW	Unspecified Tanks	1926	919355
G	376m W	Pumping Station	1938	965655
G	379m W	Pumping Station	1938	886656
G	379m W	Pumping Station	1926	886656
16	379m E	Shaft	1851	817690
I	380m SW	Railway Building	1906	820007
G	386m W	Unspecified Ground Workings	1965	799906
17	389m E	Unspecified Heap	1955	803387
G	392m W	Unspecified Heap	1965	803369
Q	392m N	Unspecified Old Shafts	1938	936647
Q	392m N	Unspecified Old Shafts	1938	936647
G	395m W	Unspecified Tank	1938	824679

ID	Location	Land Use	Date	Group ID
O	407m W	Railway Sidings	1955	964233
G	409m W	Refuse Heap	1965	828781
G	414m W	Shaft	1851	817695
R	414m E	Unspecified Ground Workings	1892	928784
Q	421m N	Unspecified Old Shafts	1938	871664
Q	421m N	Unspecified Old Shafts	1938	871664
I	426m SW	Railway Building	1906	819977
R	430m E	Unspecified Ground Workings	1938	923911
R	430m E	Unspecified Ground Workings	1926	923911
R	430m E	Unspecified Ground Workings	1906	923911
18	431m E	Old Sand Pit	1906	834212
T	433m NW	Cuttings	1955	987117
T	434m NW	Cuttings	1948	987117
I	440m SW	Unspecified Tanks	1938	982439
I	440m SW	Unspecified Tanks	1926	948930
U	440m N	Unspecified Old Shafts	1938	964669
U	440m N	Unspecified Old Shafts	1938	964669
I	441m SW	Unspecified Tanks	1938	982439
U	442m N	Unspecified Old Shafts	1938	964669
U	442m N	Unspecified Old Shafts	1926	964669
U	442m N	Unspecified Old Shafts	1906	964669
U	442m N	Unspecified Old Shafts	1892	964669
U	443m N	Shafts	1851	826703
U	456m N	Unspecified Old Shafts	1938	917482
U	456m N	Unspecified Old Shafts	1938	917482
U	457m N	Unspecified Old Shafts	1938	909860
U	457m N	Unspecified Old Shafts	1926	909860
U	457m N	Unspecified Old Shafts	1906	909860

ID	Location	Land Use	Date	Group ID
V	457m SW	Unspecified Commercial/Industrial	1938	866236
V	457m SW	Unspecified Commercial/Industrial	1926	866236
U	458m N	Shafts	1851	826688
U	473m N	Unspecified Old Shafts	1938	978638
U	473m N	Unspecified Old Shafts	1938	978638
U	474m N	Shafts	1851	826687
19	491m N	Colliery	1851	798256

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	62

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

Features are displayed on the Past land use - un-grouped map on page 23 >

ID	Location	Land Use	Date	Group ID
B	38m SW	Unspecified Tank	1970	113499
D	74m NW	Gasometer	1894	108462
K	188m NW	Unspecified Tank	1958	133152
K	189m NW	Unspecified Tank	1958	133152
N	207m S	Tanks	1978	149341
N	207m S	Tanks	1985	149341
N	207m S	Unspecified Tank	1993	113500
E	219m W	Unspecified Tank	1894	134243
E	219m W	Unspecified Tank	1908	134243
I	219m SW	Gas Works	1985	139147
I	220m SW	Gas Works	1993	123040
I	240m SW	Gas Works	1994	123040
I	275m S	Gas Works	1978	123040

ID	Location	Land Use	Date	Group ID
I	324m SW	Gasometer	1994	124179
I	324m SW	Gasometer	1993	124179
I	324m SW	Unspecified Tank	1959	147665
I	324m SW	Gasometer	1978	136549
I	324m SW	Gasholder	1985	120421
I	325m SW	Unspecified Tank	1959	147665
G	341m W	Unspecified Tank	1894	134985
G	341m W	Unspecified Tank	1908	134985
G	353m W	Unspecified Tank	1894	139864
G	353m W	Unspecified Tank	1908	139864
G	356m W	Unspecified Tank	1894	131617
G	356m W	Unspecified Tank	1908	131617
G	356m W	Tanks	1894	105933
G	358m W	Unspecified Tank	1908	113496
I	364m SW	Unspecified Tank	1928	113507
G	373m W	Unspecified Tank	1908	113495
G	373m W	Unspecified Tank	1894	113494
G	375m W	Unspecified Tank	1908	113493
G	396m W	Unspecified Tank	1894	140040
G	396m W	Unspecified Tank	1908	138503
I	413m SW	Tanks	1894	105931
I	414m SW	Gas Board Depot	1972	108750
I	420m SW	Unspecified Tank	1894	113508
G	425m W	Unspecified Tank	1908	113484
G	428m W	Unspecified Tank	1976	113492
G	429m W	Unspecified Tank	1894	113486
G	429m W	Unspecified Tank	1908	113485
G	431m W	Tanks	1894	139704

ID	Location	Land Use	Date	Group ID
G	431m W	Tanks	1908	136240
G	433m W	Tanks	1928	139704
G	433m W	Unspecified Tank	1908	113489
I	434m SW	Tanks	1894	105932
I	435m SW	Tanks	1894	105930
G	443m W	Unspecified Tank	1958	134879
G	444m W	Unspecified Tank	1959	134879
G	452m W	Unspecified Tank	1928	113490
I	453m SW	Unspecified Tank	1894	113506
G	453m SW	Unspecified Tank	1894	129573
G	453m SW	Unspecified Tank	1908	129573
G	453m SW	Unspecified Tank	1928	129573
G	456m SW	Unspecified Tank	1959	144934
G	456m SW	Unspecified Tank	1959	144934
G	457m SW	Unspecified Tank	1958	144934
I	458m SW	Unspecified Tank	1894	113511
I	468m SW	Tanks	1928	105935
G	473m SW	Unspecified Tank	1894	127878
G	473m SW	Unspecified Tank	1908	127878
G	474m SW	Unspecified Tank	1894	113491
I	475m SW	Unspecified Tank	1928	113509

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	29

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

Features are displayed on the Past land use - un-grouped map on page 23 >

ID	Location	Land Use	Date	Group ID
B	50m SW	Electricity Substation	1992	64135
B	50m SW	Electricity Substation	1970	70934
B	50m SW	Electricity Substation	1990	70934
D	74m NW	Gasometer	1894	59655
B	85m SW	Electricity Substation	1992	78683
B	86m SW	Electricity Substation	1990	78683
E	201m W	Electricity Substation	1992	72621
E	201m W	Electricity Substation	1970	72621
E	201m W	Electricity Substation	1990	72621
I	219m SW	Gas Works	1985	76034
I	220m SW	Gas Works	1993	78614
P	233m NE	Electricity Substation	1990	74791
P	233m NE	Electricity Substation	1992	74791
I	240m SW	Gas Works	1994	78614
I	275m S	Gas Works	1978	78614
I	324m SW	Gasometer	1994	66607
I	324m SW	Gasometer	1993	66607
I	324m SW	Gasometer	1978	68418
I	324m SW	Gasholder	1985	63409
G	380m W	Electricity Substation	1985	61400
I	414m SW	Gas Board Depot	1972	59831
S	431m N	Electricity Substation	1985	61402
S	434m N	Electricity Substation	1972	61399
G	441m SW	Electricity Substation	1992	80931
G	442m SW	Electricity Substation	1996	80931
G	442m SW	Electricity Substation	1994	80931
I	493m SW	Electricity Substation	1994	83700
I	493m SW	Electricity Substation	1993	83700

ID	Location	Land Use	Date	Group ID
I	494m SW	Electricity Substation	1985	83700

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	6

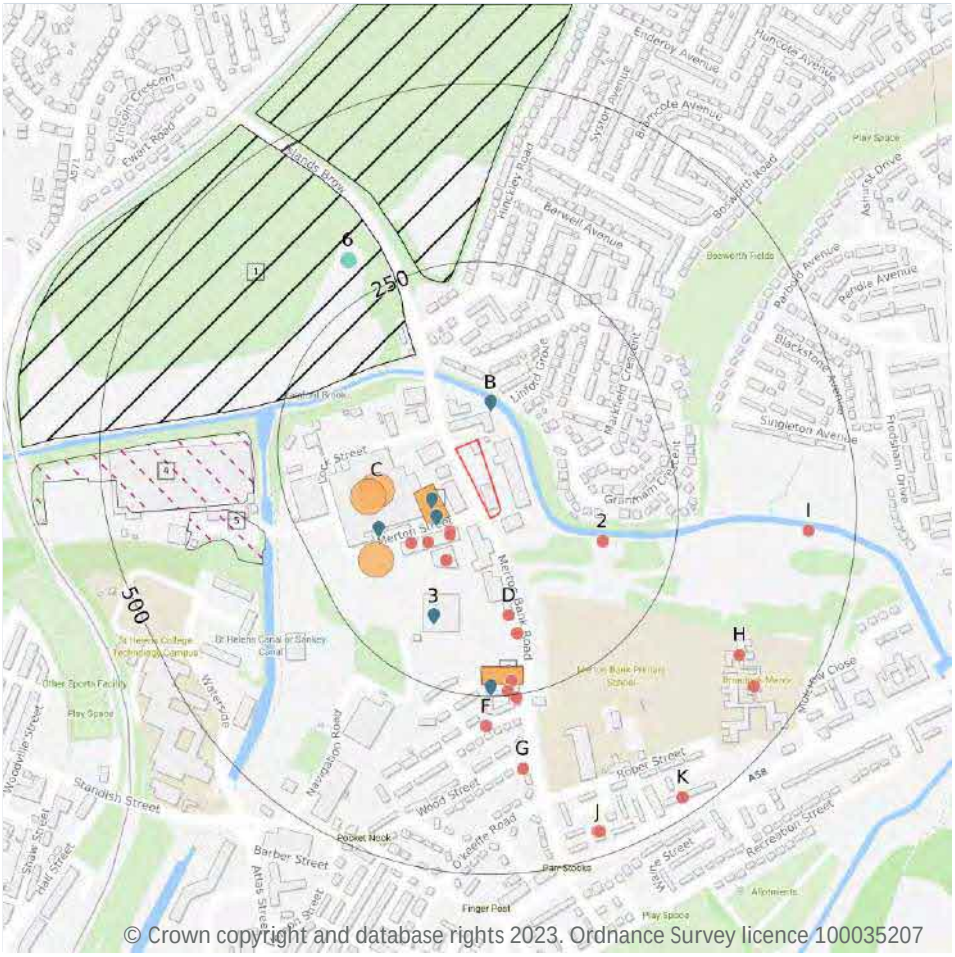
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on page 23 >

ID	Location	Land Use	Date	Group ID
A	8m S	Vehicle Repair Depot	1970	20532
B	10m S	Garage	1970	21003
B	11m S	Garage	1992	26947
B	12m S	Garage	1990	26947
D	46m NW	Car Body Repair Depot	1970	20633
K	143m NW	Car Body Repair Depot	1970	20634

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Historical landfill (BGS)

Historical landfill (LA/OS)

Historical waste sites

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	1

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

Features are displayed on the Waste and landfill map on page 35 >

ID	Location	Address	BGS Number	Risk	Waste Type
6	305m NW	Pilkington Bros, Sand Lodges, St Helens	983	No risk to aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	2

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

Features are displayed on the Waste and landfill map on page 35 >

ID	Location	Site address	Source	Data type
4	285m W	Refuse Tip	1975 mapping	Polygon
5	293m W	Refuse Tip	1975 mapping	Polygon

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

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

Features are displayed on the Waste and landfill map on page 35 >

ID	Location	Details		
1	144m NW	Site Address: Pilkington Brothers, Sand Lodges, St Helens, Merseyside Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Pilkington Brothers Limited Licence Holder: - First Recorded 31/12/1914 Last Recorded: -

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

3.5 Historical waste sites

Records within 500m	9

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

Features are displayed on the Waste and landfill map on page 35 >

ID	Location	Address	Further Details	Date
A	49m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1992
A	50m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1989
C	100m W	Site Address: Central Grange Environmental W, Merton Street, St. Helens, Merseyside, WA9 1HU	Type of Site: Recycling Centre (Alterations) Planning application reference: P/2018/0695/FUL Description: Scheme comprises raising of part of roof along with re-cladding and re-roofing. Data source: Historic Planning Application Data Type: Point	26/09/2018
C	115m W	Site Address: Former Ravenhead Glass Warehou, Lock Street, St. Helens, Merseyside, WA9 1HS	Type of Site: Energy From Waste Plant (Refurb) Planning application reference: P/2013/0475 Description: Scheme comprises change of use of warehouse building and installation of plant and machinery, including 39m high flue, to form a 10.6MW energy from waste plant that will be powered by refuse derived fuel, together with the relocation of the materials rec lamation and waste recycling facility to accept non-hazardous wastes, currently located on Merton Street, to the application site and demolition of the materials reclamation and waste recycling facility. Data source: Historic Planning Application Data Type: Point	-
C	145m SW	Site Address: Scrap Yard, Merton Street, ST. HELENS, Merseyside, WA9 1HX	Type of Site: Waste Transfer Station(c/u) Planning application reference: P/2003/1259 Description: Scheme comprises part change of use from salvage yard to general waste transfer station. An application (ref: P/2003/1259) for Detailed Planning permission was submitted to St. Helens B.C. on 3rd October 2003. Data source: Historic Planning Application Data Type: Point	-

ID	Location	Address	Further Details	Date
E	207m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1993
E	207m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1994
E	209m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1985
E	209m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1976

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

3.6 Licensed waste sites

Records within 500m	7

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

Features are displayed on the Waste and landfill map on page 35 >

ID	Location	Details		
B	54m N	Site Name: Dafairle Salvage Site Address: Merton Street, St Helens, Merseyside, WA9 Correspondence Address: Dafairle Salvage, Merton Street, St Helens, Merseyside, WA9	Type of Site: Metal Recycling Site (mixed MRS's) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FAI001 EPR reference: - Operator: Fairless D Waste Management licence No: 53975 Annual Tonnage: 416.66	Issue Date: 05/09/1988 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
B	54m N	Site Name: Dafairle Salvage Site Address: David John Fairless, Merton Street, St Helens, Merseyside, WA9 1HX Correspondence Address: -	Type of Site: Metal Recycling Site (Vehicle Dismantler) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 655652 EPR reference: EA/EPR/XP3591CL Operator: David John Fairless Waste Management licence No: 53975 Annual Tonnage: 417	Issue Date: 05/09/1988 Effective Date: 05/09/1988 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: 05/09/1988 Status: Expired
A	63m SW	Site Name: Merton Street Transfer Station Site Address: 1, Merton Street, Merton Bank, St. Helens, Merseyside, WA9 1HX Correspondence Address: Daivd John Fairless, 55, Haresfinch View, Haresfinch, St. Helens, Merseyside, WA11 9LQ	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FAI008 EPR reference: - Operator: Fairless David John Waste Management licence No: 50383 Annual Tonnage: 0	Issue Date: 17/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
A	68m SW	Site Name: Merton Street Transfer Station Site Address: David John Fairless, 1, Merton Street, Merton Bank, St Helens, Merseyside, WA9 1HX Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 634509 EPR reference: EA/EPR/NP3994CG Operator: David John Fairless Waste Management licence No: 50383 Annual Tonnage: 4999	Issue Date: 17/03/2005 Effective Date: 17/03/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: 17/03/2005 Status: Expired
C	148m SW	Site Name: Centralgrange Environmental Waste Ltd Site Address: Central Grange Environmental Waste Limited, Land/premises At, Merton Street, St Helens, Merseyside, WA9 1HU Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 629175 EPR reference: EA/EPR/CP3494CH Operator: Central Grange Environmental Waste Limited Waste Management licence No: 50362 Annual Tonnage: 74999	Issue Date: 28/02/2005 Effective Date: 28/02/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: 28/02/2005 Status: Issued

ID	Location	Details		
3	159m S	Site Name: Pocket Nook Resource Management Centre Site Address: Biffa Waste Services Limited, Navigation Road, St Helens, Merseyside, WA9 1LR Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 643554 EPR reference: EA/EPR/AP3190SH Operator: Biffa Waste Services Limited Waste Management licence No: 100466 Annual Tonnage: 199999	Issue Date: 22/07/2009 Effective Date: 22/07/2009 Modified: 22/07/2009 Surrendered Date: - Expiry Date: - Cancelled Date: 22/07/2009 Status: Issued
E	238m S	Site Name: Tinico Alloys Ltd Site Address: Tinico Alloys Limited, Merton Bank, Merton Bank Road, St Helens, Merseyside, WA9 1DX Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 636935 EPR reference: EA/EPR/QP3396CS Operator: Tinico Alloys Limited Waste Management licence No: 53896 Annual Tonnage: 5000	Issue Date: 24/08/1989 Effective Date: 24/08/1989 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: 24/08/1989 Status: Revoked

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

3.7 Waste exemptions

Records within 500m	31

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

Features are displayed on the Waste and landfill map on page 35 >

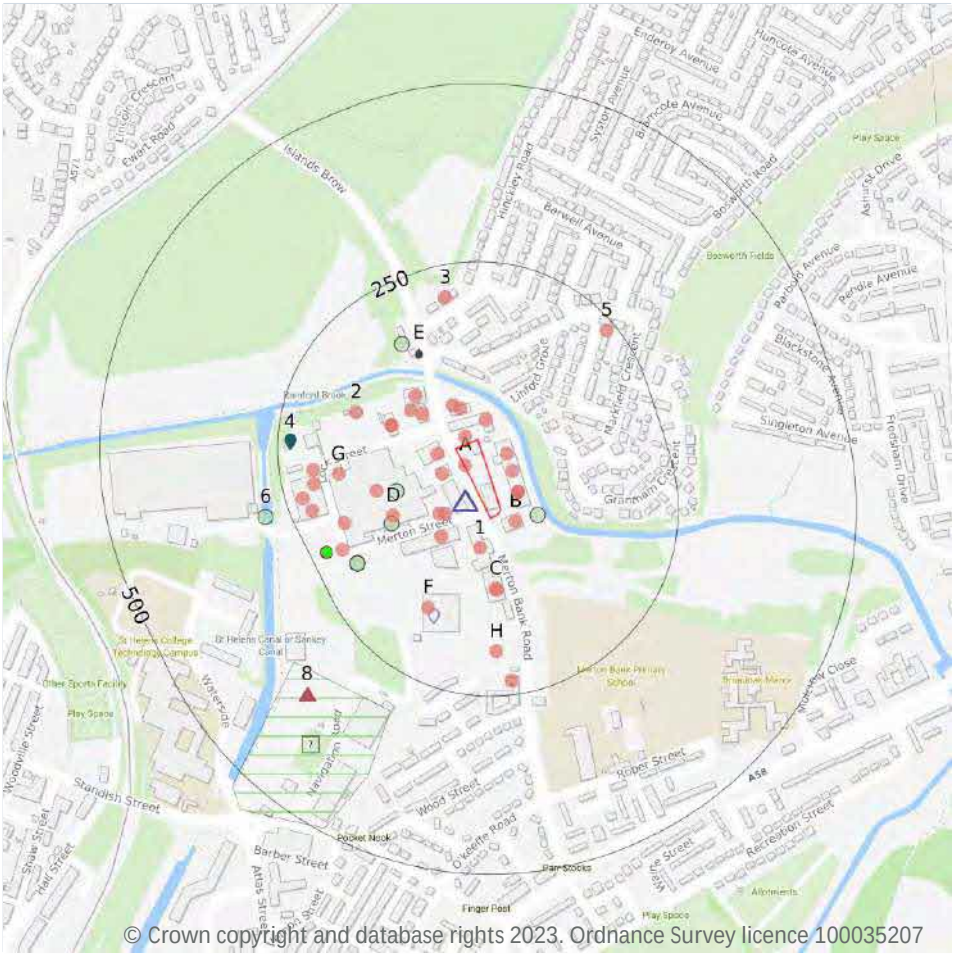
ID	Location	Site	Reference	Category	Sub-Category	Description
A	60m SW	Unit 3 Merton Street St. Helens St Helens Council WA9 1HX	EPR/LE5144VG/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
A	60m SW	Unit 3 Merton Street St. Helens St Helens Council WA9 1HX	EPR/LE5144VG/A001	Treating waste exemption	Non-Agricultural Waste Only	Manual treatment of waste
A	62m SW	UNIT 3, MERTON STREET, ST. HELENS, WA9 1HX	WEX159888	Treating waste exemption	Not on a Farm	Manual treatment of waste

ID	Location	Site	Reference	Category	Sub-Category	Description
A	87m S	RM Pallets, unit 3, 1 MERTON STREET, ST HELENS, WA9 1HX	WEX304254	Treating waste exemption	Not on a farm	Recovery of scrap metal
A	87m S	RM Pallets, unit 3, 1 MERTON STREET, ST HELENS, WA9 1HX	WEX304254	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
A	94m SW	1 Merton Street Mersyside WA9 1HX	EPR/TF0502NM/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
A	116m SW	RM Pallets, unit 3, 1 MERTON STREET, ST HELENS, WA9 1HX	WEX171483	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
A	116m SW	RM Pallets, unit 3, 1 MERTON STREET, ST HELENS, WA9 1HX	WEX171483	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	139m S	-	WEX254051	Treating waste exemption	Not on a farm	Recovery of scrap metal
2	149m SE	-	WEX232136	Using waste exemption	Not on a farm	Use of waste in construction
D	166m S	99 Merton Bank Road St. Helens Merseyside WA9 1DY	EPR/VF0002VM/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
D	166m S	99 Merton Bank Road St. Helens Merseyside WA9 1DY	EPR/VF0002VM/A001	Treating waste exemption	Non-Agricultural Waste Only	Recovery of scrap metal
E	230m S	99, MERTON BANK ROAD, ST. HELENS, WA9 1DZ	WEX155415	Treating waste exemption	Not on a Farm	Recovery of scrap metal
E	230m S	99, MERTON BANK ROAD, ST. HELENS, WA9 1DZ	WEX155415	Storing waste exemption	Not on a Farm	Storage of waste in a secure place
E	230m S	99, MERTON BANK ROAD, ST. HELENS, WA9 1DZ	WEX292653	Treating waste exemption	Not on a farm	Recovery of scrap metal
E	230m S	99, MERTON BANK ROAD, ST. HELENS, WA9 1DZ	WEX292653	Storing waste exemption	Not on a farm	Storage of waste in a secure place
E	244m S	0, HOLLY BANK STREET, ST HELENS, ST HELENS, WA91EG	WEX150523	Using waste exemption	Not on a farm	Use of waste in construction
E	244m S	PARK ROAD, ST HELENS, ST HELENS, WA9 1EG	WEX150530	Using waste exemption	Not on a farm	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
E	255m S	2, HOLLY BANK STREET, ST. HELENS, WA9 1EG	WEX148035	Using waste exemption	Not on a farm	Use of waste in construction
F	293m S	-	WEX128415	Treating waste exemption	Not on a farm	Screening and blending of waste
F	293m S	-	WEX128415	Using waste exemption	Not on a farm	Use of waste in construction
G	355m S	99 Merton Bank Road St. Helens Merseyside WA9 1DY	EPR/MH0419DM/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
G	355m S	99 Merton Bank Road St. Helens Merseyside WA9 1DY	EPR/MH0419DM/A001	Treating waste exemption	Non-Agricultural Waste Only	Recovery of scrap metal
H	392m SE	Broadoak Manor Care Home, Mulcrow Close, St Helens, WA9 1HB	WEX164499	Treating waste exemption	Not on a Farm	Sorting and de-naturing of controlled drugs for disposal
H	432m SE	BROADOAK MANOR CARE HOME, MULCROW CLOSE, PARR, ST. HELENS, WA9 1HB	WEX301408	Treating waste exemption	Not on a Farm	Sorting and de-naturing of controlled drugs for disposal
I	434m E	-	WEX254107	Using waste exemption	Not on a farm	Use of waste in construction
I	434m E	-	WEX254107	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
J	466m S	-	WEX363316	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
J	467m S	81A, PARK ROAD, ST. HELENS, WA9 1EP	WEX329794	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
K	474m SE	-	WEX128418	Using waste exemption	Not on a farm	Use of waste in construction
K	474m SE	-	WEX128418	Treating waste exemption	Not on a farm	Screening and blending of waste

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

4 Current industrial land use



Site Outline

Search buffers in metres (m)

4.1 Recent industrial land uses

Records within 250m	38

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Company	Address	Activity	Category
A	On site	Industrial Estate	Merseyside, WA9	Business Parks and Industrial Estates	Industrial Features
A	10m N	Business Park	Merseyside, WA9	Business Parks and Industrial Estates	Industrial Features

ID	Location	Company	Address	Activity	Category
B	26m SE	H E Services (Plant Hire) Ltd	H E Services (Plant Hire) Ltd Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Construction and Tool Hire	Hire Services
A	27m NW	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
A	31m N	N K Car Sales N W Ltd	Unit 5, Merton Bank Road, St. Helens, Merseyside, WA9 1HZ	Secondhand Vehicles	Motoring
B	31m SE	Merton Bank Auto Body Repairs	2 Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Vehicle Repair, Testing and Servicing	Repair and Servicing
B	31m SE	M B Auto Body Repairs	2 Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	32m W	G R S Contractors Ltd	Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Civil Engineers	Engineering Services
B	32m E	Arc Glass	4 Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Glass	Industrial Products
B	33m NE	Kirk Craig Ltd	Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HZ	General Construction Supplies	Industrial Products
1	45m S	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
A	51m N	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
A	54m SW	Electricity Sub Station	Merseyside, WA9	Electrical Features	Infrastructure and Facilities
A	58m N	Steve Caunce Ltd	Trafalgar House Collins Industrial Estate, Merton Bank Road, St. Helens, Merseyside, WA9 1HY	Civil Engineers	Engineering Services
A	62m SW	Saint Helens Motor Care	Unit 4 Fairless Business Park, Merton Street, St. Helens, Merseyside, WA9 1HZ	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	68m NW	Anthony's Motor Services Ltd	-, Merton Bank Road, St. Helens, Merseyside, WA9 1HP	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	73m SW	D A W Engineering	Unit 4, Merton Street, St. Helens, Merseyside, WA9 1HX	Tool Repairs	Repair and Servicing

ID	Location	Company	Address	Activity	Category
A	83m NW	Alfatune	-, Merton Bank Road, St. Helens, Merseyside, WA9 1HP	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	94m NW	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
A	95m NW	Factory	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
A	96m NW	Cottoms	-, Lock Street, St. Helens, Merseyside, WA9 1HS	Catering and Non Specific Food Products	Foodstuffs
C	99m S	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
C	100m S	Esspee	149, Merton Bank Road, St. Helens, Merseyside, WA9 1DZ	Electrical Production and Manipulation Equipment	Industrial Products
D	121m SW	Woodwards S V S Ltd	-, Merton Street, St. Helens, Merseyside, WA9 1HU	Vehicle Bodybuilders	Industrial Products
D	125m W	Centralgrange Ltd	Merton Bank Industrial Estate, Merton Street, St. Helens, Merseyside, WA9 1HU	Recycling, Reclamation and Disposal	Recycling Services
2	149m NW	Q E D Scaffolding Ltd	-, Lock Street, St. Helens, Merseyside, WA9 1HS	Construction and Tool Hire	Hire Services
F	153m S	Waste Processing Facility	Merseyside, WA9	Waste Storage, Processing and Disposal	Infrastructure and Facilities
G	169m W	Electricity Sub Station	Merseyside, WA9	Electrical Features	Infrastructure and Facilities
G	187m W	Mast (Telecommunication)	Merseyside, WA9	Telecommunications Features	Infrastructure and Facilities
H	187m S	Works	Merseyside, WA9	Unspecified Works Or Factories	Industrial Features
G	203m W	Electricity Sub Station	Merseyside, WA9	Electrical Features	Infrastructure and Facilities
3	205m N	Phillips Vehicle Repairs	7, Hinckley Road, St. Helens, Merseyside, WA11 9HU	Vehicle Repair, Testing and Servicing	Repair and Servicing
G	205m W	Red Squirrel Storage	Unit 1 Dashmore Business Park, Lock Street, St. Helens, Merseyside, WA9 1HS	Container and Storage	Transport, Storage and Delivery

ID	Location	Company	Address	Activity	Category
G	206m SW	Mast (Telecommunication)	Merseyside, WA9	Telecommunications Features	Infrastructure and Facilities
G	219m W	S P M Manufacturers Ltd	Dashmore Business Park, Lock Street, St. Helens, Merseyside, WA9 1HS	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
G	226m W	Business Park	Merseyside, WA9	Business Parks and Industrial Estates	Industrial Features
H	230m S	St Helens Concrete Ltd	99, Merton Bank Road, St. Helens, Merseyside, WA9 1DZ	Concrete Products	Industrial Products
5	237m NE	Electricity Sub Station	Merseyside, WA11	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Company	Address	LPG	Status
A	22m SW	OBSOLETE	Merton Bank Road, Merton Bank, St Helens, Merseyside, WA9 1HZ	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	1

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Company	Address	Operational status	Tier
7	305m S	British Gas	British Gas, Pocket Nook Street, St Helens, WA9 1LS	Historical NIHHS Site	-

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	1

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Details	
8	356m SW	Application reference number: P/2000/0380 Application status: Approved Application date: 01/01/2000 Address: National Grid Gas plc pka Transco PLC, Pocket Nook Holder Station, Pocket Nook Street, Pocket Nook, St Helens, Merseyside, England, WA9 1LS	Details: Application to continue hazardous substances consent (now revoked) under section 17 of the Planning Hazardous substances act Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	5

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Details	
F	159m S	Operator: Biffa Waste Services Ltd Installation Name: Pocket Nook Resource Management Centre - EPR/CP3938FB Process: ASSOCIATED PROCESS Permit Number: YP3532VR Original Permit Number: CP3938FB	EPR Reference: - Issue Date: 21/05/2014 Effective Date: 21/05/2014 Last date noted as effective: 21/03/2023 Status: Superceded

ID	Location	Details	
F	159m S	Operator: Biffa Waste Services Ltd Installation Name: Pocket Nook Resource Managment Centre Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY PHYSICO-CHEMICAL TREATMENT Permit Number: CP3938FB Original Permit Number: CP3938FB	EPR Reference: - Issue Date: 12/09/2011 Effective Date: 12/09/2011 Last date noted as effective: 21/03/2023 Status: Superceded
F	159m S	Operator: Biffa Waste Services Ltd Installation Name: Pocket Nook Resource Management Centre - EPR/CP3938FB Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: YP3532VR Original Permit Number: CP3938FB	EPR Reference: - Issue Date: 21/05/2014 Effective Date: 21/05/2014 Last date noted as effective: 21/03/2023 Status: Superceded
F	159m S	Operator: Biffa Waste Services Ltd Installation Name: Pocket Nook Resource Managment Centre Process: ASSOCIATED PROCESS Permit Number: JP3238EW Original Permit Number: CP3938FB	EPR Reference: - Issue Date: 27/11/2013 Effective Date: 27/11/2013 Last date noted as effective: 21/03/2023 Status: Superceded
F	159m S	Operator: Biffa Waste Services Ltd Installation Name: Pocket Nook Resource Managment Centre Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: JP3238EW Original Permit Number: CP3938FB	EPR Reference: - Issue Date: 27/11/2013 Effective Date: 27/11/2013 Last date noted as effective: 21/03/2023 Status: Superceded

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

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

Records within 500m	1

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Address	Details	
4	233m W	Breedon Southern Ltd, Lock Street, St Helens, WA9 1HS	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	2

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Address	Details	
G	228m SW	Manchester Royal Infirmary, Manchester, M13 9WL	Operator: Manchester University NHS Foundation Trust Type: - Permission number: PB3292DC Date of approval: -	Effective from: 01/04/2018 Last date of update: 01/01/2020 Status: Issued
G	228m SW	The University of Manchester PET-MR Centre, St Mary's Hospital, Oxford Road, Manchester, M13 9WL	Operator: The University of Manchester Type: - Permission number: XB3694DK Date of approval: -	Effective from: 11/11/2016 Last date of update: 01/01/2020 Status: Issued

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

4.13 Licensed Discharges to controlled waters

Records within 500m	1

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Address	Details	
E	143m NW	BURGY BANK, ST HELENS, MERSEYSIDE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991364 Permit Version: 1 Receiving Water: RAINFORD BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 07/03/1990 Revocation Date: 31/08/2022

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	8

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

Features are displayed on the Current industrial land use map on page 43 >

ID	Location	Details	
B	53m SE	Incident Date: 25/11/2002 Incident Identification: 122864 Pollutant: Contaminated Water Pollutant Description: Chemically Contaminated Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
D	100m W	Incident Date: 13/06/2001 Incident Identification: 8959 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

ID	Location	Details	
D	127m SW	Incident Date: 31/07/2011 Incident Identification: 908264 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 2 (Significant)
E	165m NW	Incident Date: 26/02/2002 Incident Identification: 60609 Pollutant: Contaminated Water Pollutant Description: Chemically Contaminated Run-Off	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
G	195m SW	Incident Date: 06/05/2003 Incident Identification: 156317 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
G	195m SW	Incident Date: 06/05/2003 Incident Identification: 156317 Pollutant: Inert Materials and Wastes:Specific Waste Materials Pollutant Description: Construction and Demolition Materials and Wastes:Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
G	195m SW	Incident Date: 06/05/2003 Incident Identification: 156317 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	283m W	Incident Date: 21/03/2003 Incident Identification: 144859 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

4.21 Pollution inventory radioactive waste

Records within 500m	1

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

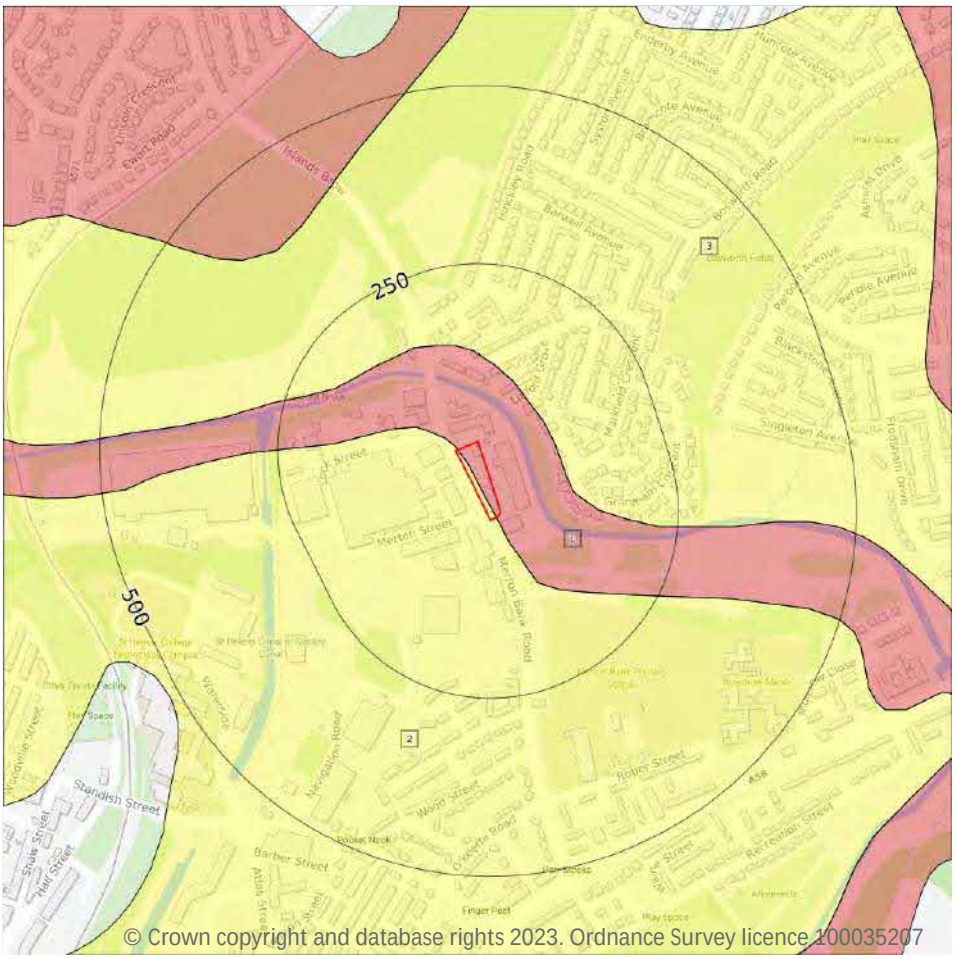
Features are displayed on the Current industrial land use map on page 43 >

ID: G, Location: 228m SW, Permit: PB3292DC
Operator: Manchester University NHS Foundation Trust
Address: Manchester Royal Infirmary, Manchester M13 9WL
Releases:

Route	Substance	Quantity released
Wastewater	Tritium	- -
Wastewater	Carbon 14	- -
Wastewater	Selenium 75	76.6MBq -
Wastewater	Technetium 99m	250.1GBq -
Wastewater	Indium 111	911MBq -
Wastewater	Iodine 123	8.4GBq -
Wastewater	Other Beta/Gamma	268.4MBq -
Wastewater	Iodine 125	- -
Wastewater	Iodine 131	3.6GBq -
Wastewater	Total Beta/Gamma (Excl Tritium)	387GBq -
Wastewater	Fluorine 18	123.6GBq -

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

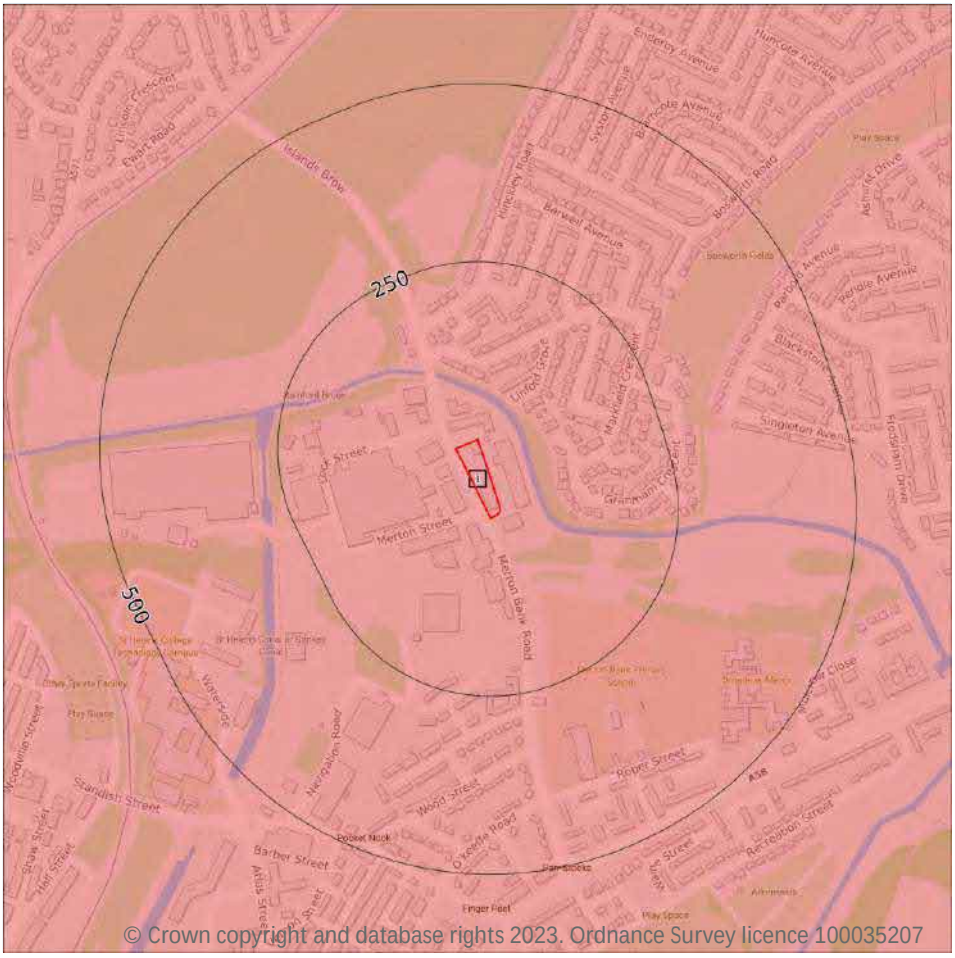
Features are displayed on the Hydrogeology map on page 54 >

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

ID	Location	Designation	Description
3	91m NE	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

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	1

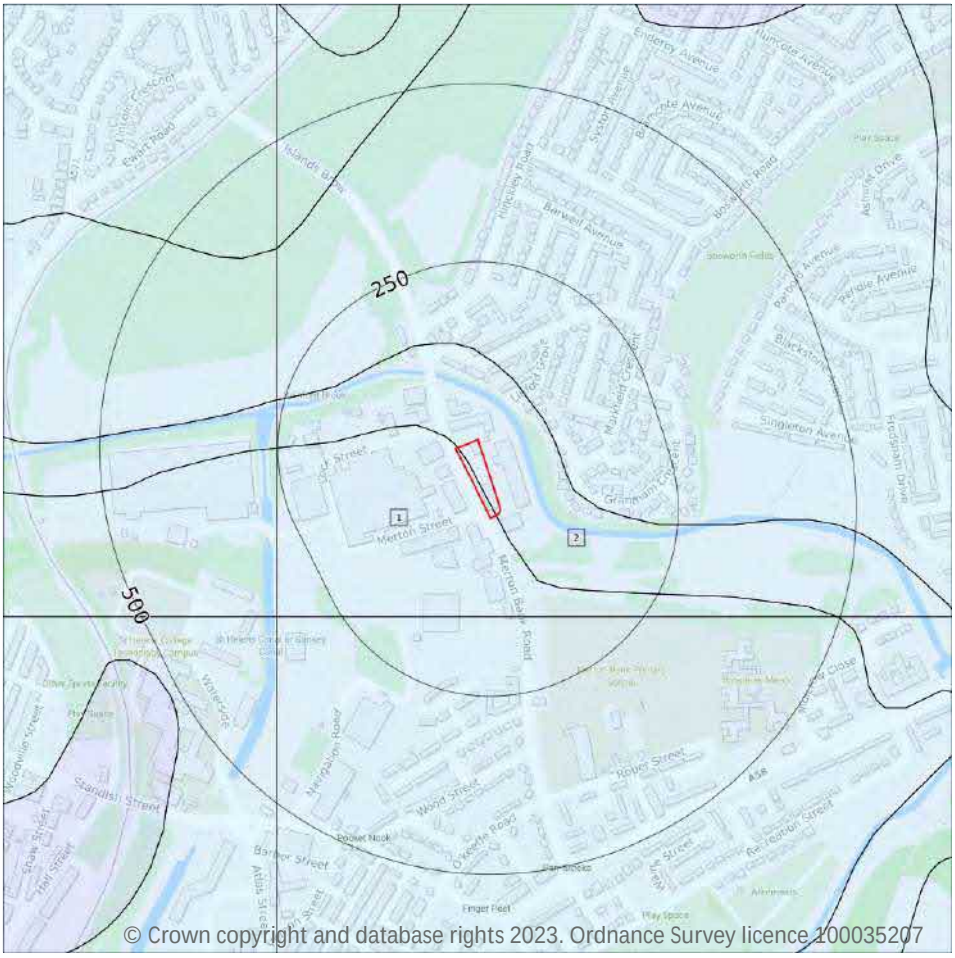
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on page 56 >

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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on page 57 >

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

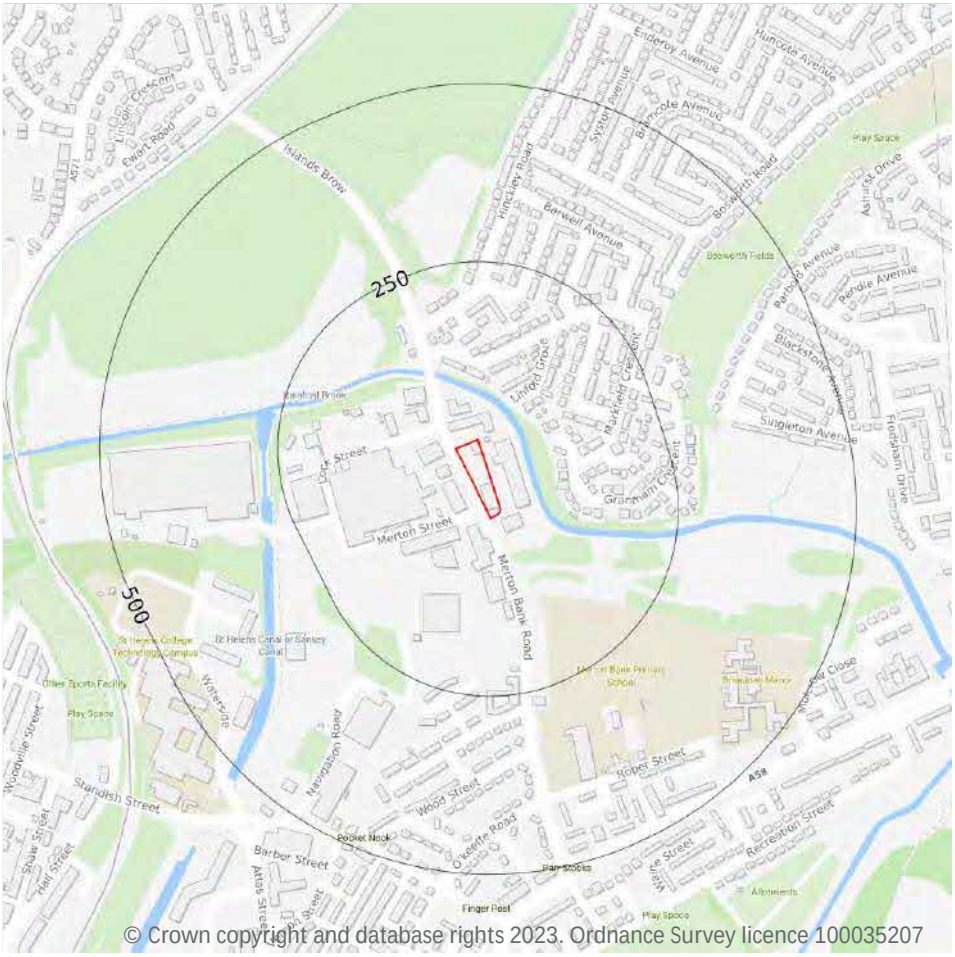
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

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

5.6 Groundwater abstractions

Records within 2000m	0

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

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

5.7 Surface water abstractions

Records within 2000m	6

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

Features are displayed on the Abstractions and Source Protection Zones map on page 59 >

ID	Location	Details	
-	1572m SW	Status: Historical Licence No: 2569025077 Details: Evaporative Cooling Direct Source: "Surface, Non-Tidal - North West Region" Point: "ST. HELENS CANAL AT ST. HELENS, MSERSYSIDE" Data Type: Point Name: PILKINGTON PROPERTIES LTD Easting: 351270 Northing: 394950	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/01/1995 Expiry Date: - Issue No: 100 Version Start Date: 11/01/1995 Version End Date: -
-	1572m SW	Status: Historical Licence No: 2569025077 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "ST. HELENS CANAL AT ST. HELENS, MSERSYSIDE" Data Type: Point Name: PILKINGTON PROPERTIES LTD Easting: 351270 Northing: 394950	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/01/1995 Expiry Date: - Issue No: 100 Version Start Date: 11/01/1995 Version End Date: -
-	1572m SW	Status: Historical Licence No: 2569025077 Details: Evaporative Cooling Direct Source: Surface, Non-Tidal - North West Region Point: ST. HELENS CANAL AT ST. HELENS, MSERSYSIDE Data Type: Point Name: PILKINGTON PROPERTIES LTD Easting: 351270 Northing: 394950	Annual Volume (m^3): 7273600 Max Daily Volume (m^3): 7273600 Original Application No: 1488 Original Start Date: 11/01/1995 Expiry Date: - Issue No: 100 Version Start Date: 11/01/1995 Version End Date: -

ID	Location	Details	
-	1572m SW	Status: Historical Licence No: 2569025077 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: ST. HELENS CANAL AT ST. HELENS, MSERSYSIDE Data Type: Point Name: PILKINGTON PROPERTIES LTD Easting: 351270 Northing: 394950	Annual Volume (m^3): 7273600 Max Daily Volume (m^3): 7273600 Original Application No: 1488 Original Start Date: 11/01/1995 Expiry Date: - Issue No: 100 Version Start Date: 11/01/1995 Version End Date: -
-	1908m NW	Status: Historical Licence No: 2569025057 Details: Spray Irrigation - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "RAINFORD BRK AT WINDLE HALL FARM & POTTERY FARM, RAINFORD" Data Type: Line Name: E COOK & SONS Easting: 350200 Northing: 397970	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/07/1981 Expiry Date: - Issue No: 100 Version Start Date: 17/04/1997 Version End Date: -
-	1908m NW	Status: Historical Licence No: 2569025057 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: RAINFORD BRK AT WINDLE HALL FARM & POTTERY FARM, RAINFORD Data Type: Line Name: MR D H COOK MRS J COOK AND MR C G COOK Easting: 350200 Northing: 397970	Annual Volume (m^3): 15456.40 Max Daily Volume (m^3): 545.52 Original Application No: 2588 Original Start Date: 15/07/1981 Expiry Date: - Issue No: 101 Version Start Date: 03/08/2004 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

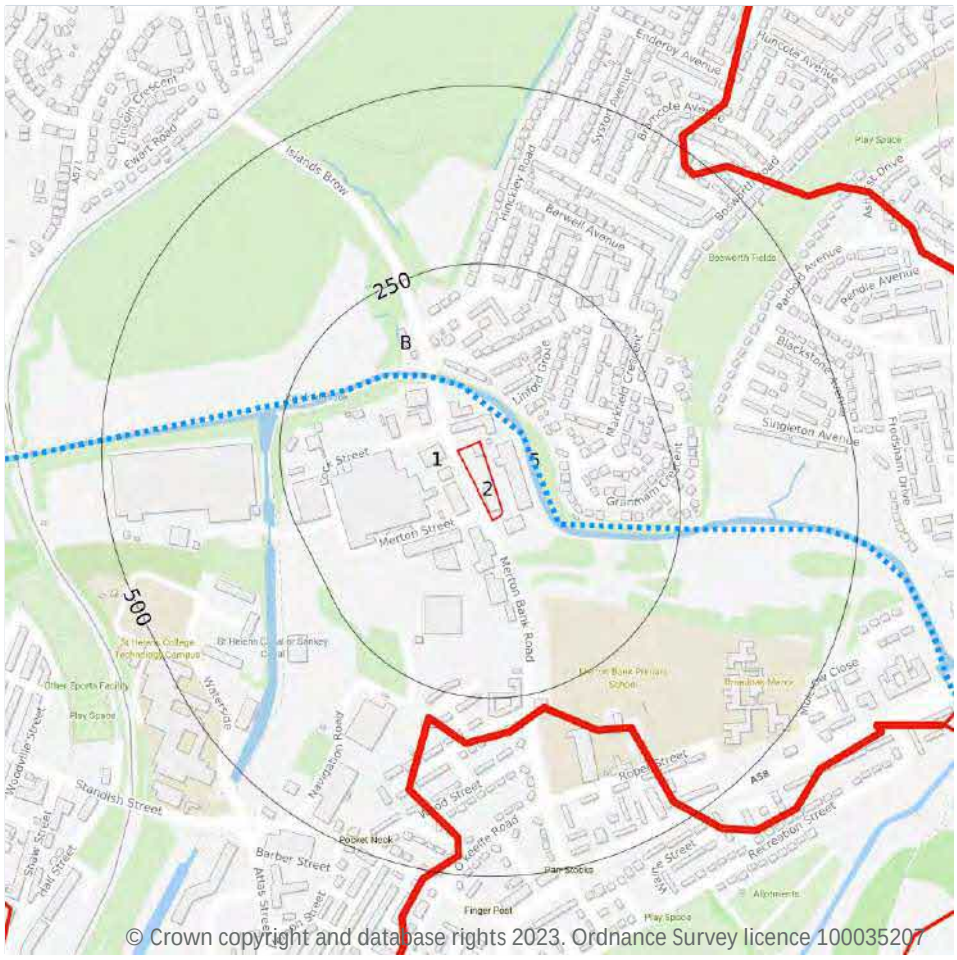
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	3

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

Features are displayed on the Hydrology map on page 63 >

ID	Location	Type of water feature	Ground level	Permanence	Name
5	56m E	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sankey Canal

ID	Location	Type of water feature	Ground level	Permanence	Name
B	169m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	3

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

Features are displayed on the Hydrology map on page 63 >

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

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

Features are displayed on the Hydrology map on page 63 >

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River	Rainford Brook	GB112069061240	Sankey	Mersey Lower

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

6.4 WFD Surface water bodies

Records identified	1

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

Features are displayed on the Hydrology map on page 63 >

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	45m N	River	Rainford Brook	GB112069061240 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	1

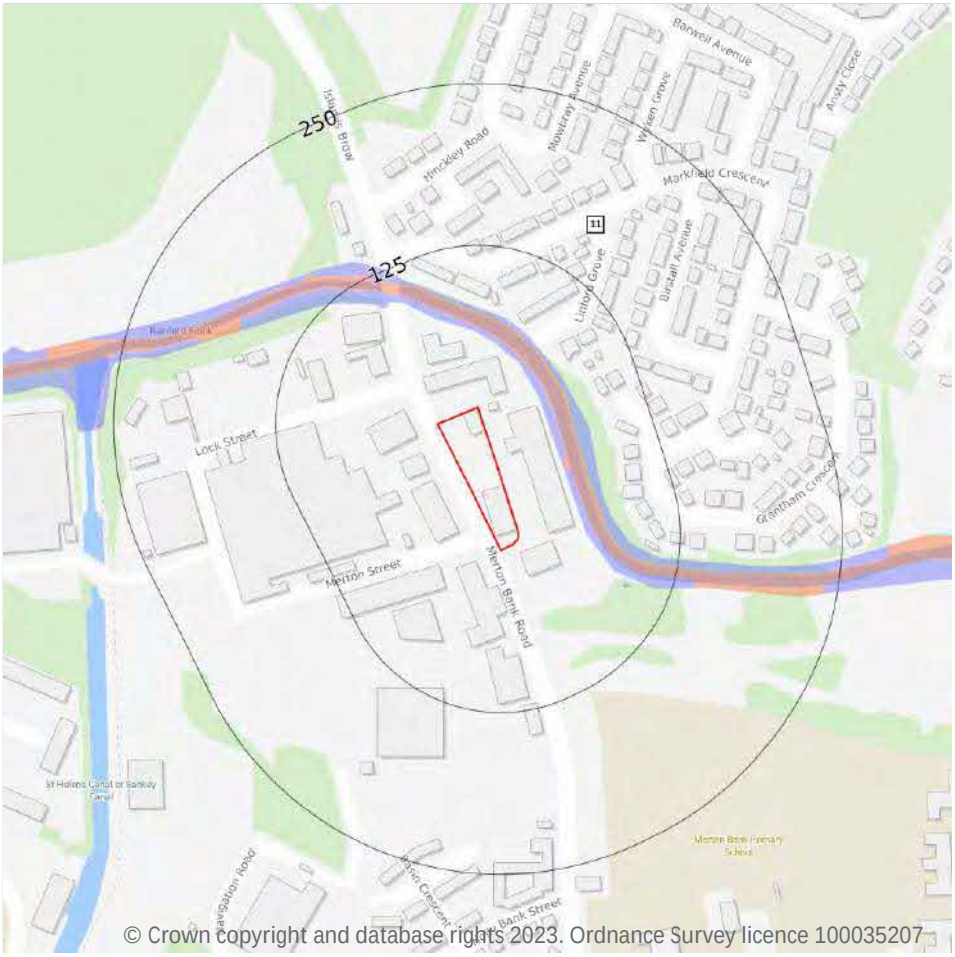
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on page 63 >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	Sankey and Glaze Carboniferous aquifers	GB41202G100100 ↗	Poor	Poor	Good	2019

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

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

7.1 Risk of flooding from rivers and the sea

Records within 50m	5

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

Features are displayed on the River and coastal flooding map on page 66 >

Distance	Flood risk category
On site	N/A
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	1

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

Features are displayed on the River and coastal flooding map on page 66 >

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
11	166m NE	Ea01316_21 January 2008_Rainford Brook_Broad Oak	2008-01-21 2008-01-22	Main river	Unknown	Fluvial

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	1

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

Features are displayed on the River and coastal flooding map on page 66 >

Location	Type
45m NE	Zone 2 - (Fluvial /Tidal Models)

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

7.7 Flood Zone 3

Records within 50m	1

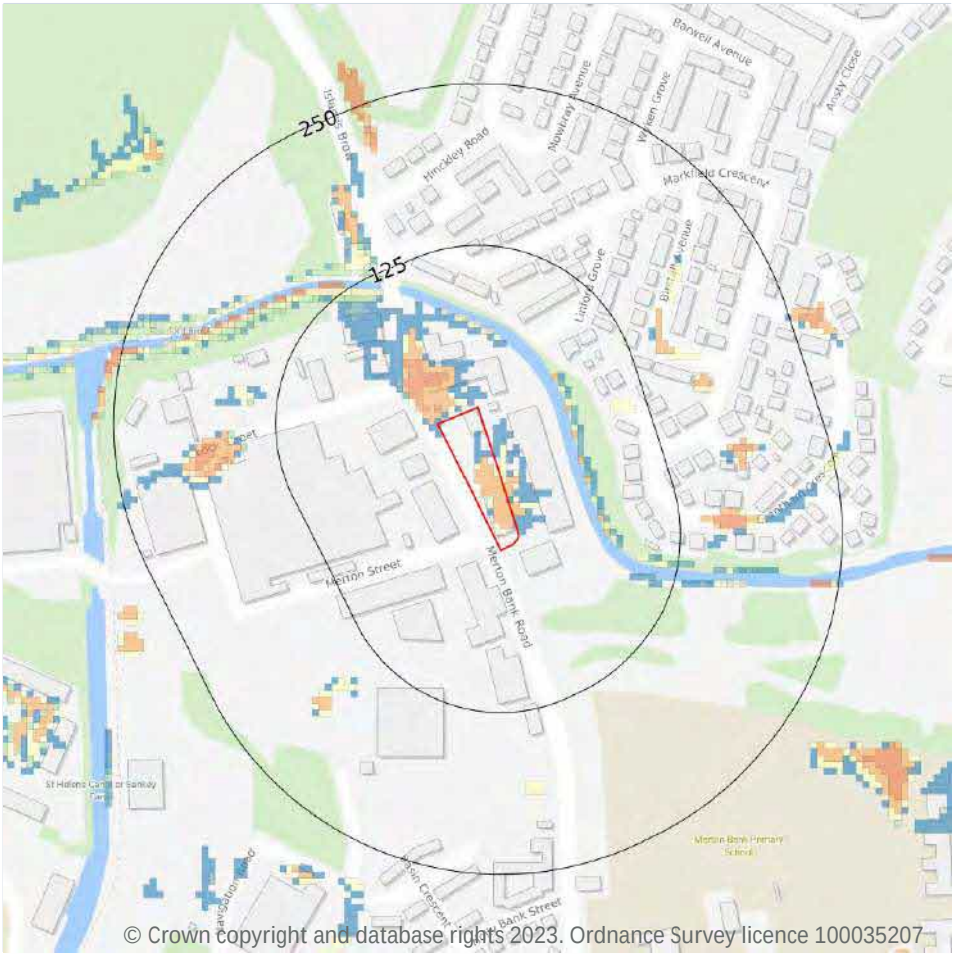
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on page 66 >

Location	Type
50m NE	Zone 3 - (Fluvial Models)

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	1 in 30 year, 0.1m - 0.3m
Highest risk within 50m	1 in 30 year, 0.3m - 1.0m

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

Features are displayed on the Surface water flooding map on page 71 >

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

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

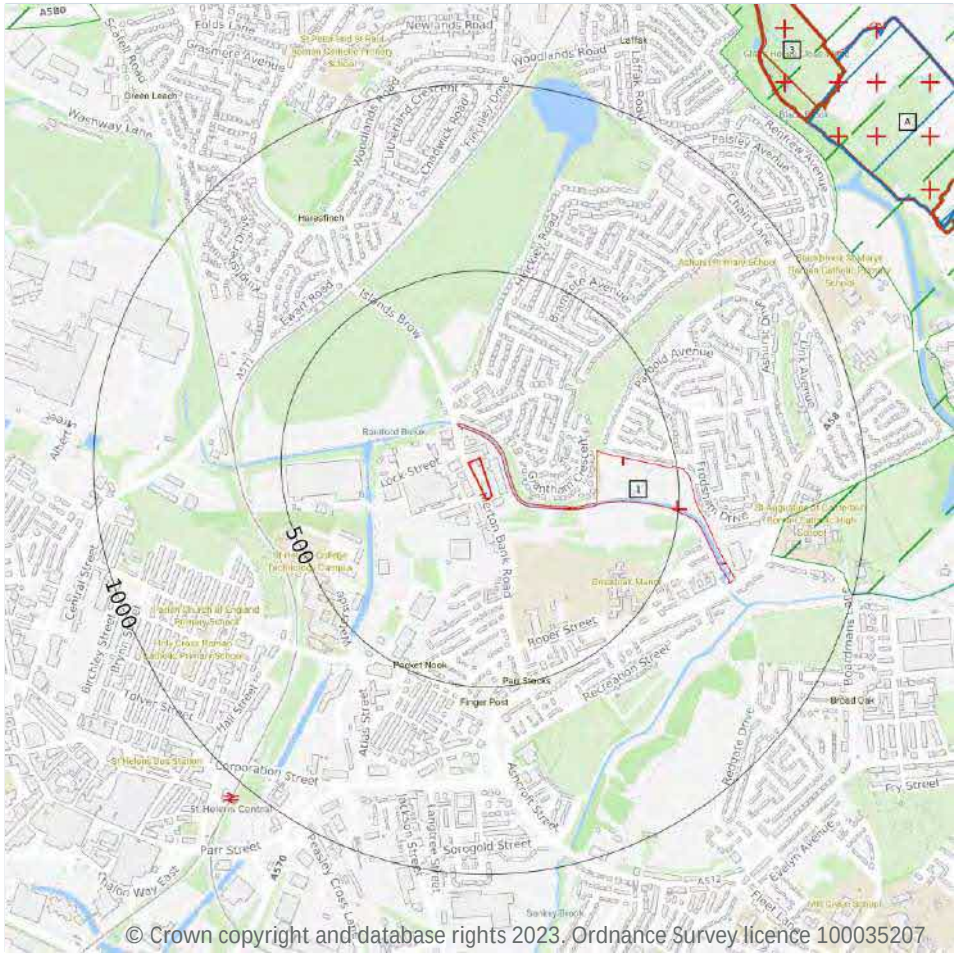
Highest risk on site	Low
Highest risk within 50m	Low

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

Features are displayed on the Groundwater flooding map on page 73 >

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Local Nature Reserves (LNR)

Designated Ancient Woodland

Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on page 74 >

ID	Location	Name	Data source
A	1253m NE	Stanley Bank Meadow	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	3

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

Features are displayed on the Environmental designations map on page 74 >

ID	Location	Name	Data source
1	51m NE	Parr Hall Millennium Green	Natural England
A	1247m NE	Stanley Bank	Natural England
-	1657m NW	Clinkham Wood	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	2

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

Features are displayed on the Environmental designations map on page 74 >

ID	Location	Name	Woodland Type
3	1249m NE	Stream Wood 2 (Glass House Close Wood)	Ancient & Semi-Natural Woodland
4	1371m NE	Stanley Bank Wood	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	1

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

Features are displayed on the Environmental designations map on page 74 >

ID	Location	Name	Local Authority name
2	762m E	Merseyside and Greater Manchester	St. Helens

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	4

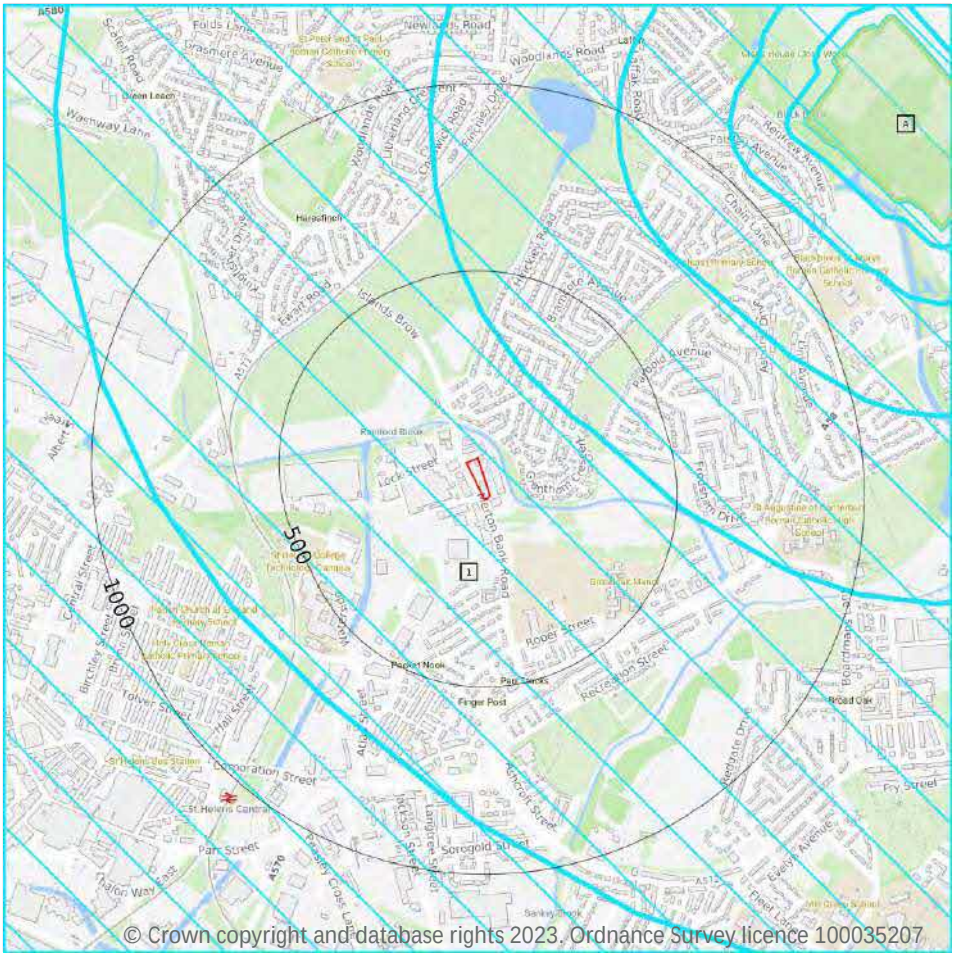
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	Sankey Brook (Black Bk to Mersey) NVZ	Surface Water	639	Existing

Location	Name	Type	NVZ ID	Status
156m S	Sankey Brook (Black Bk to Mersey) NVZ	Surface Water	639	Existing
1778m E	Sankey Brook (Black Bk to Mersey) NVZ	Surface Water	639	Existing
1786m E	Sankey Brook (Black Bk to Mersey) NVZ	Surface Water	639	Existing

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

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

10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on page 80 >

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	1

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

Features are displayed on the SSSI Impact Zones and Units map on page 80 >

ID: A
Location: 1253m NE
SSSI name: Stanley Bank Meadow
Unit name: Whole Site
Broad habitat: Neutral Grassland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland dry acid grassland (U1b,c,d,f)	Favourable	11/06/2014
Lowland mixed deciduous woodland	Favourable	11/06/2014
Mire grasslands and rush pastures (upland)	Favourable	11/06/2014
Wet woodland	Favourable	11/06/2014

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

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations

Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on page 84 >

ID	Location	Classification	Description
1	On site	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

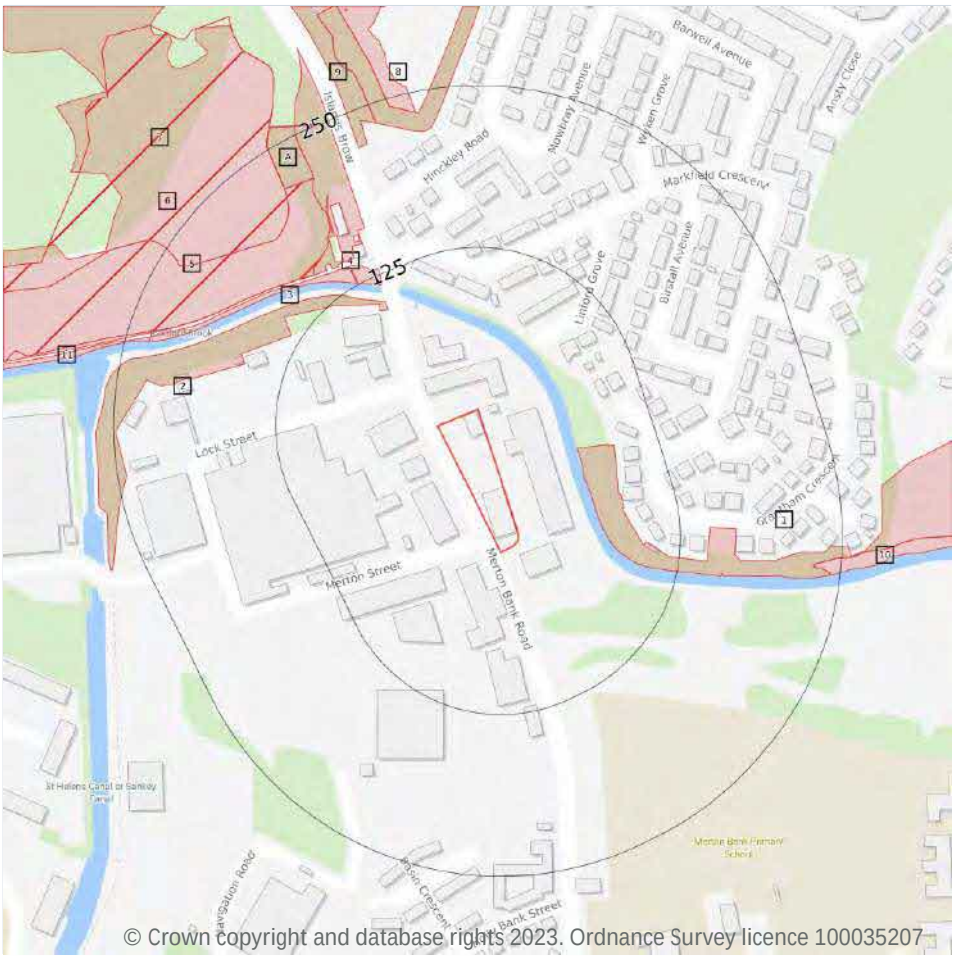
12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

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

Habitat Networks

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

13.1 Priority Habitat Inventory

Records within 250m	12

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

Features are displayed on the Habitat designations map on page 86 >

ID	Location	Main Habitat	Other habitats
1	62m E	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
2	97m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	117m NW	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
4	143m NW	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	145m NW	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
7	191m NW	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
A	214m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%); GQSIG (INV > 50%)
8	219m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	222m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	229m E	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
11	231m W	Good quality semi-improved grassland	Main habitat: GQSIG (INV > 50%)
A	250m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%); GQSIG (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	1

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

Features are displayed on the Habitat designations map on page 86 >

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
6	150m NW	NLUD Ref: 431500022	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-

This data is sourced from Natural England.

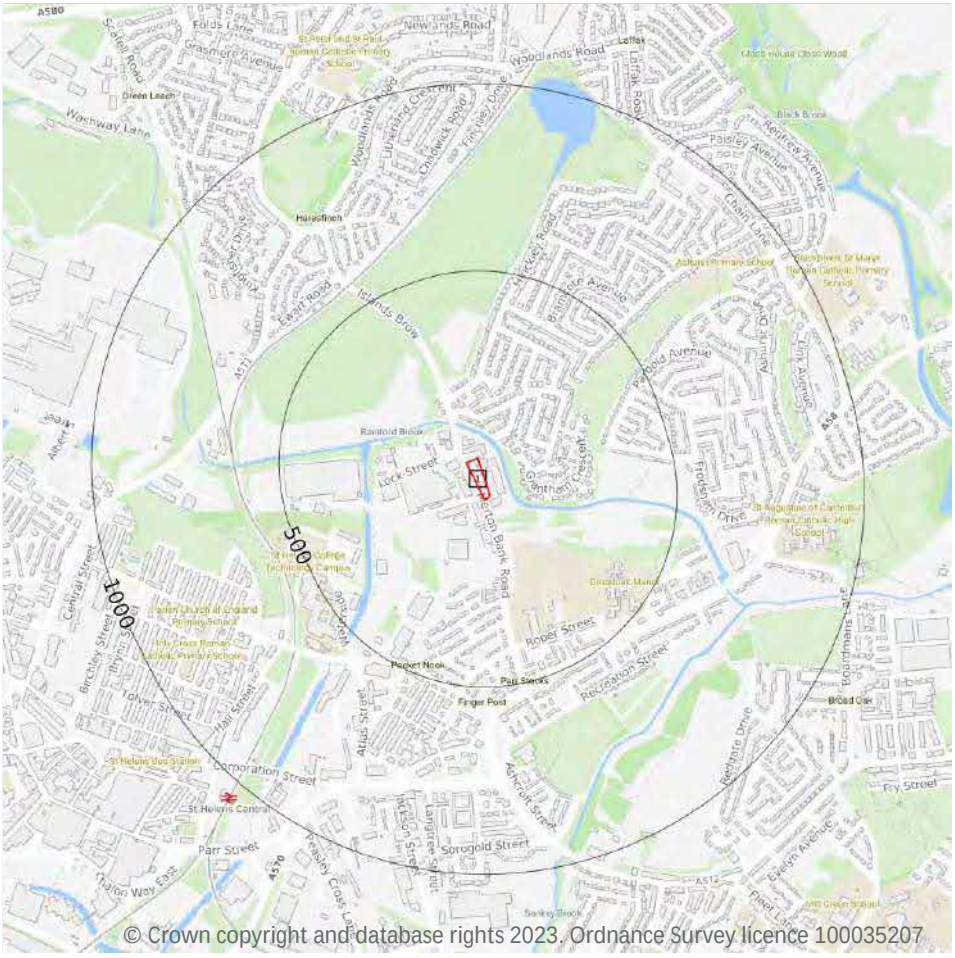
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on page 89 >

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

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

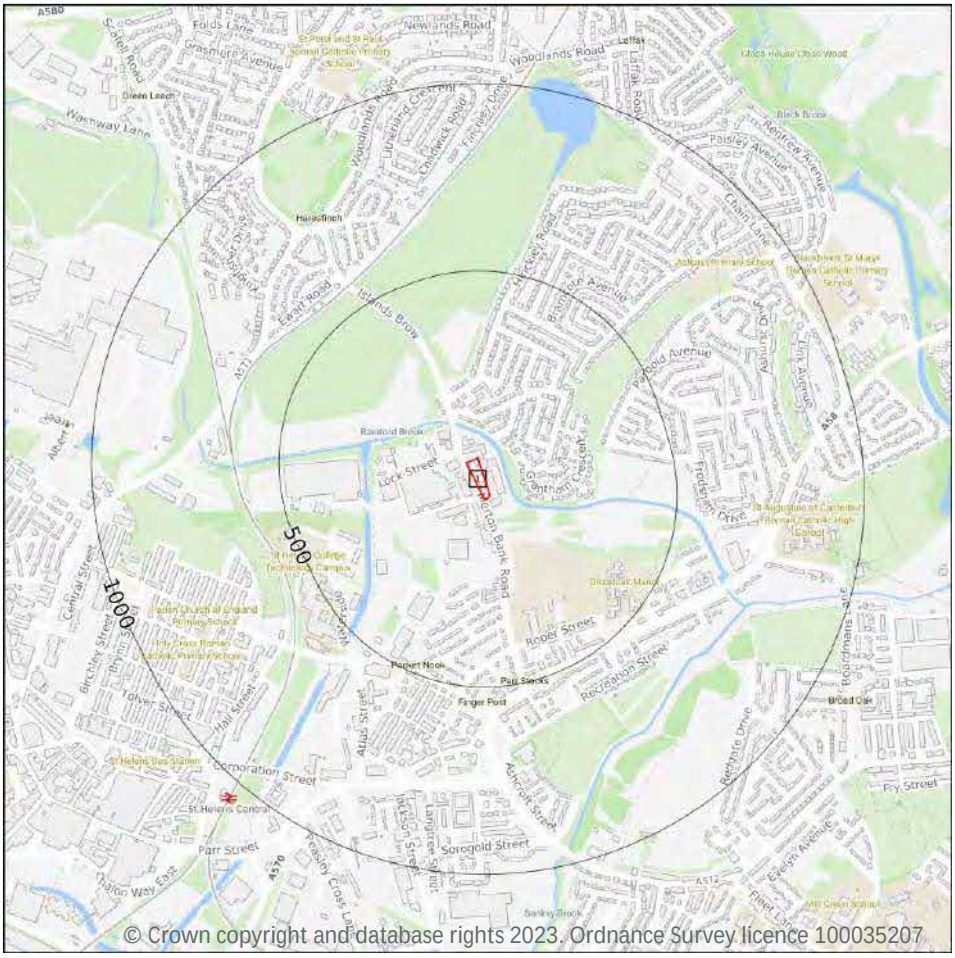
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

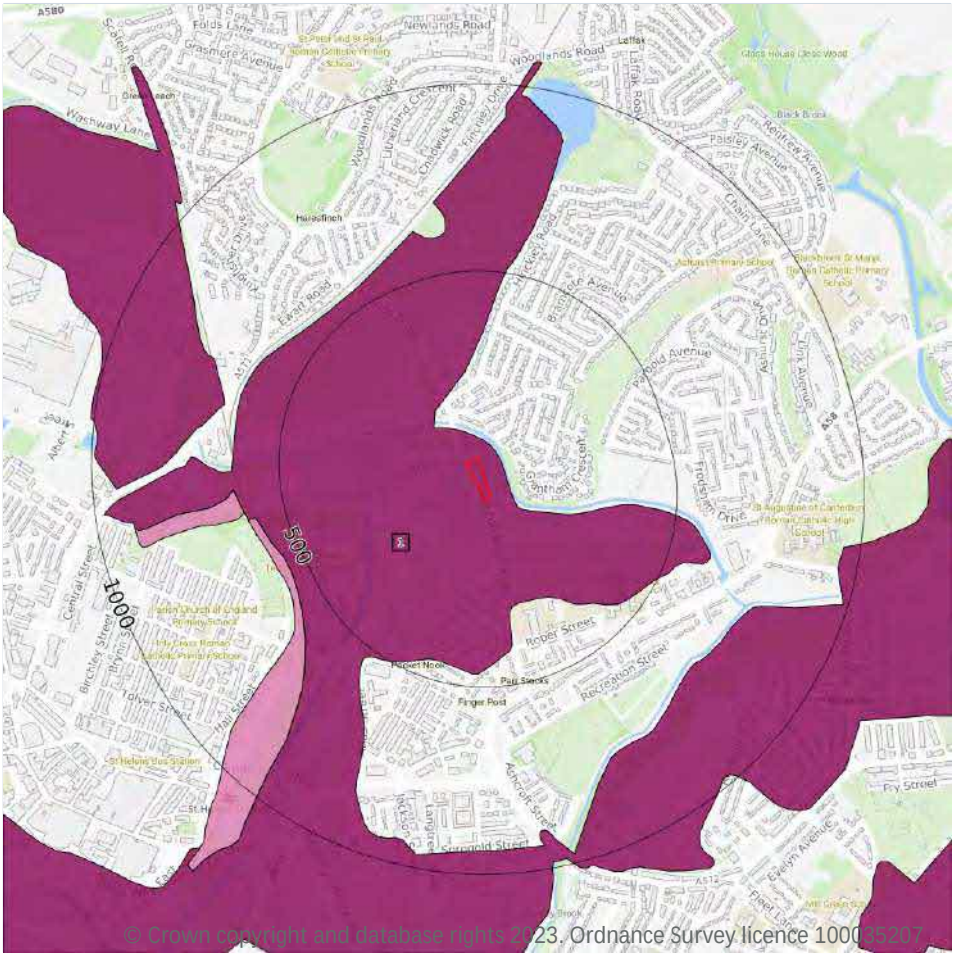
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on page 93 >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	EW084_wigan_v4

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on page 94 >

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

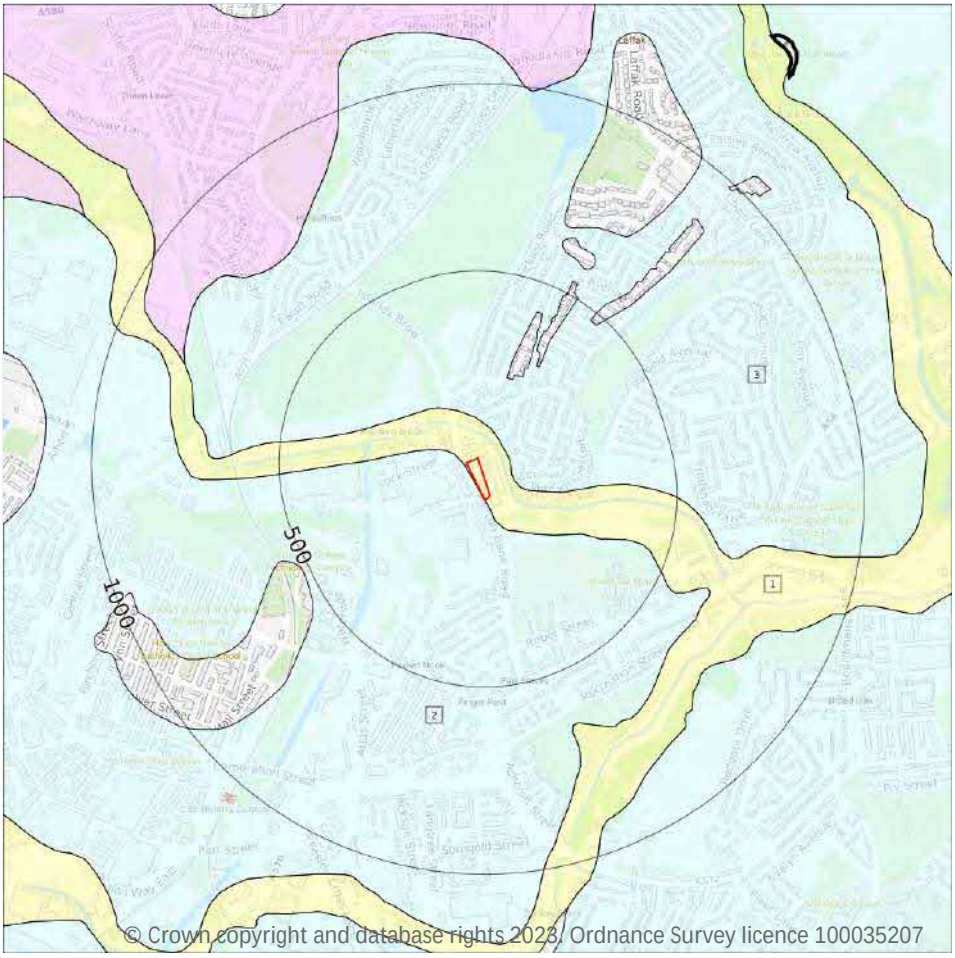
Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	Very High	Low

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m	3

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on page 96 >

ID	Location	LEX Code	Description	Rock description
1	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	72m NE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	High	Very Low
0m S	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

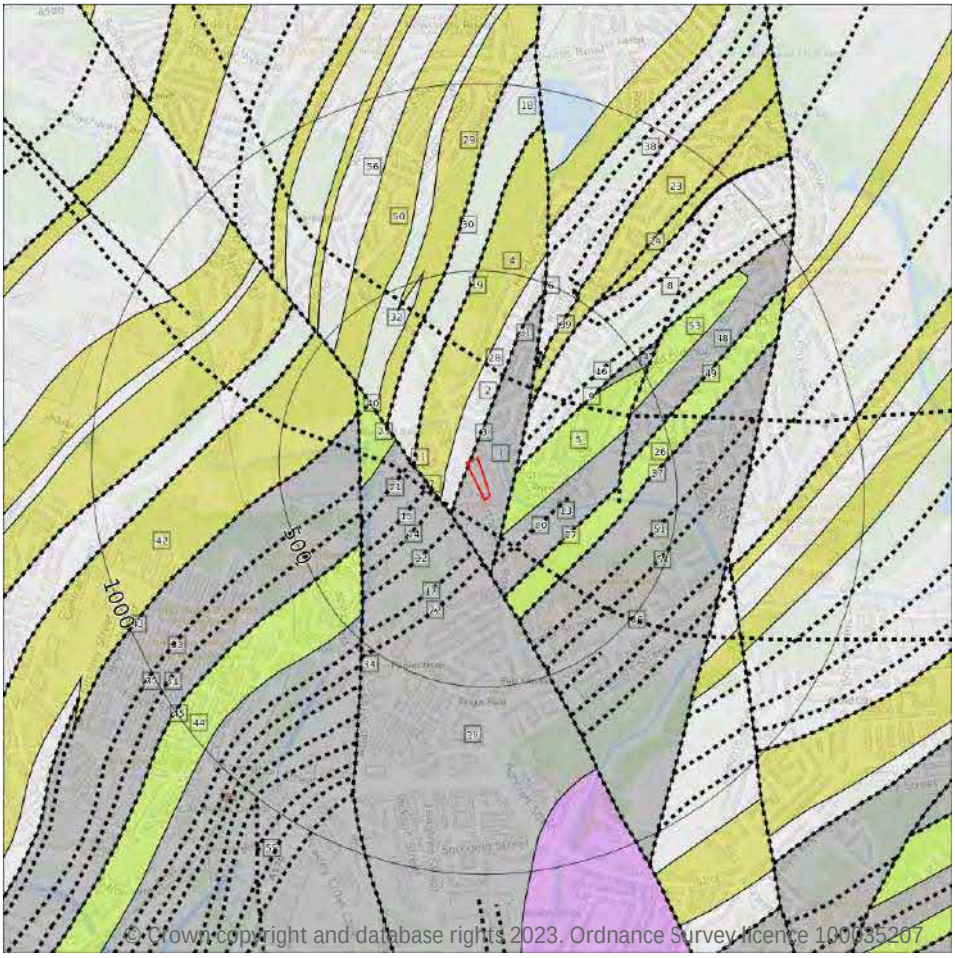
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	24

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on page 98 >

ID	Location	LEX Code	Description	Rock age
1	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	On site	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN
4	48m NW	RHR-SDST	RAVENHEAD ROCK - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
5	53m SE	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
8	87m E	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN
10	96m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	101m SE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
18	138m W	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN
23	183m NE	RHR-SDST	RAVENHEAD ROCK - SANDSTONE	WESTPHALIAN
25	198m NW	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
26	220m SE	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
29	234m NW	RHR-SDST	RAVENHEAD ROCK - SANDSTONE	WESTPHALIAN
32	279m NW	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN
33	284m W	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
36	289m SE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
38	291m NE	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN
42	318m NW	RHR-SDST	RAVENHEAD ROCK - SANDSTONE	WESTPHALIAN
44	345m SW	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
47	347m NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
48	354m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
50	362m NW	RHR-SDST	RAVENHEAD ROCK - SANDSTONE	WESTPHALIAN
53	419m E	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
55	446m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
56	457m NW	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	3

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low
On site	Fracture	Low	Low
48m NW	Fracture	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	33

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on page 98 >

ID	Location	Category	Description
3	On site	ROCK	Coal seam, inferred
6	53m SE	FAULT	Fault, inferred
7	64m S	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley
9	87m E	ROCK	Coal seam, inferred
11	96m SW	FAULT	Fault, inferred
12	97m SW	ROCK	Coal seam, inferred
14	110m SW	ROCK	Coal seam, inferred
15	116m W	ROCK	Coal seam, inferred
16	121m NE	ROCK	Coal seam, inferred
17	134m S	ROCK	Coal seam, inferred
19	138m W	ROCK	Coal seam, inferred
20	145m SE	ROCK	Coal seam, inferred

ID	Location	Category	Description
21	148m W	ROCK	Coal seam, inferred
22	171m S	ROCK	Coal seam, inferred
24	183m NE	FAULT	Fault, inferred
27	220m SE	ROCK	Coal seam, inferred
28	228m N	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley
30	234m NW	ROCK	Coal seam, inferred
31	265m N	ROCK	Coal seam, observed
34	284m W	FAULT	Fault, inferred
35	286m W	ROCK	Coal seam, inferred
37	289m SE	ROCK	Coal seam, inferred
39	291m NE	ROCK	Coal seam, observed
40	304m NW	ROCK	Coal seam, inferred
41	311m W	ROCK	Coal seam, inferred
43	318m NW	ROCK	Coal seam, inferred
45	345m SW	ROCK	Coal seam, inferred
46	346m E	FAULT	Fault, inferred
49	354m E	ROCK	Coal seam, inferred
51	377m SE	ROCK	Coal seam, inferred
52	403m N	ROCK	Coal seam, inferred
54	435m SE	ROCK	Coal seam, inferred
57	474m NE	ROCK	Coal seam, observed

This data is sourced from the British Geological Survey.

16 Boreholes

16.1 BGS Boreholes

Records within 250m	0

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

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays

Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	1

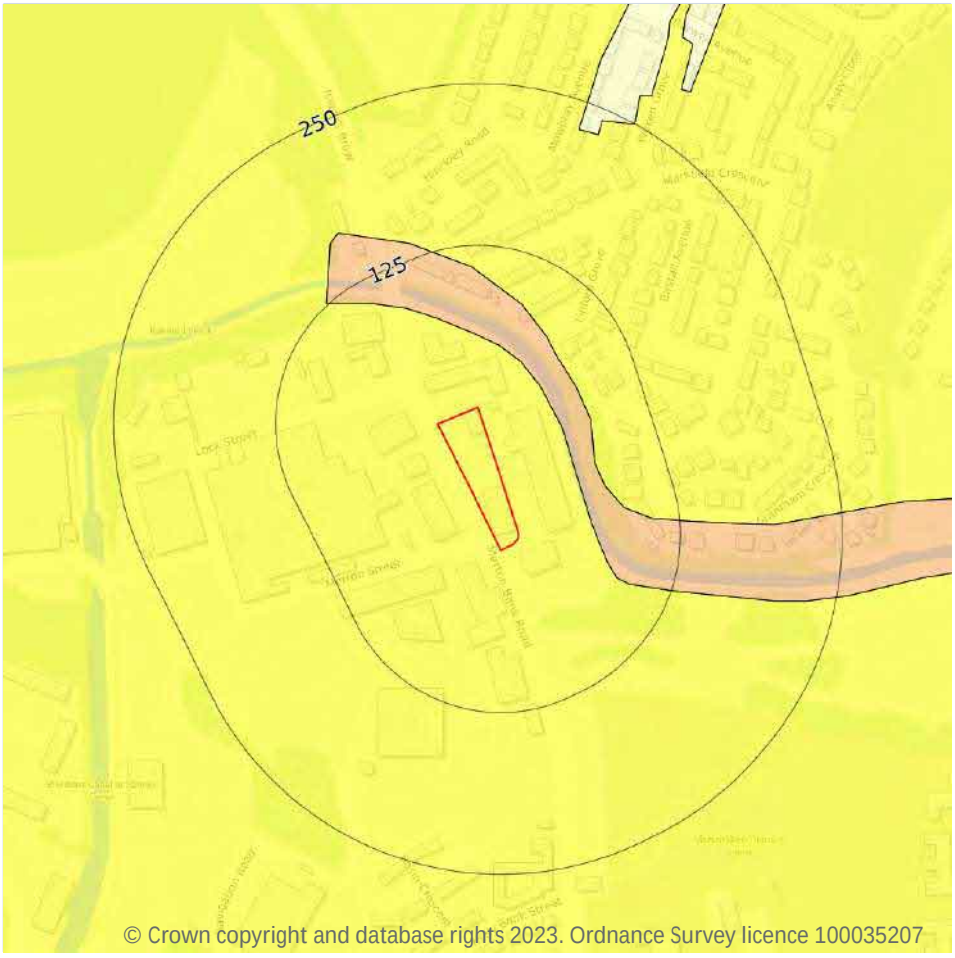
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on page 103 >

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	2

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

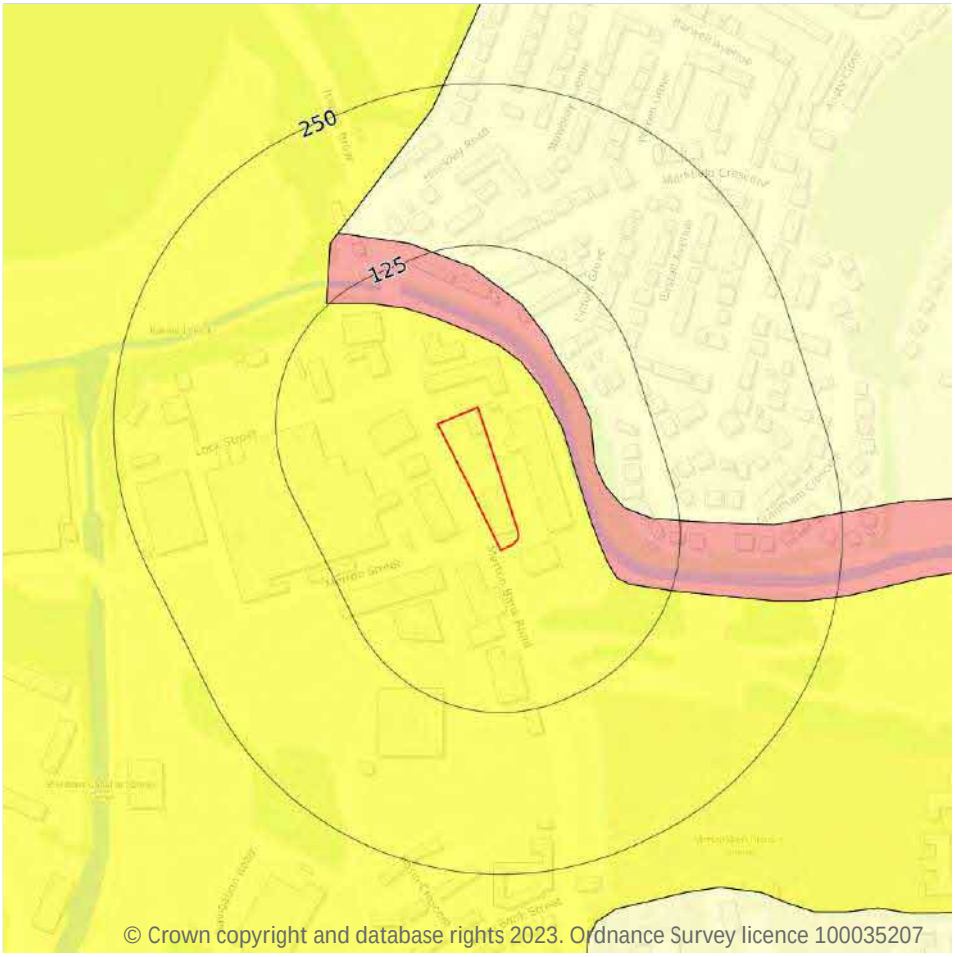
Features are displayed on the Natural ground subsidence - Running sands map on page 104 >

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

Location	Hazard rating	Details
48m NE	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	2

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

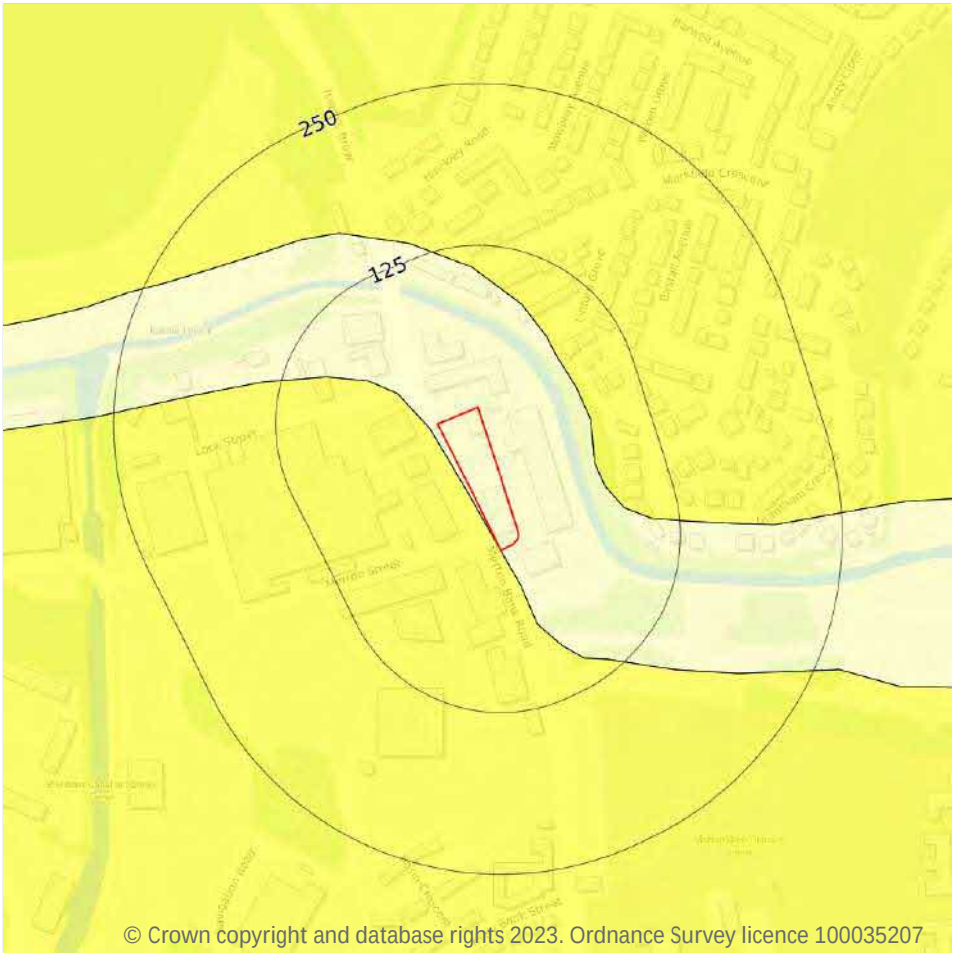
Features are displayed on the Natural ground subsidence - Compressible deposits map on page 106 >

Location	Hazard rating	Details
On site	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.

Location	Hazard rating	Details
48m NE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	2

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

Features are displayed on the Natural ground subsidence - Collapsible deposits map on page 108 >

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides

Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

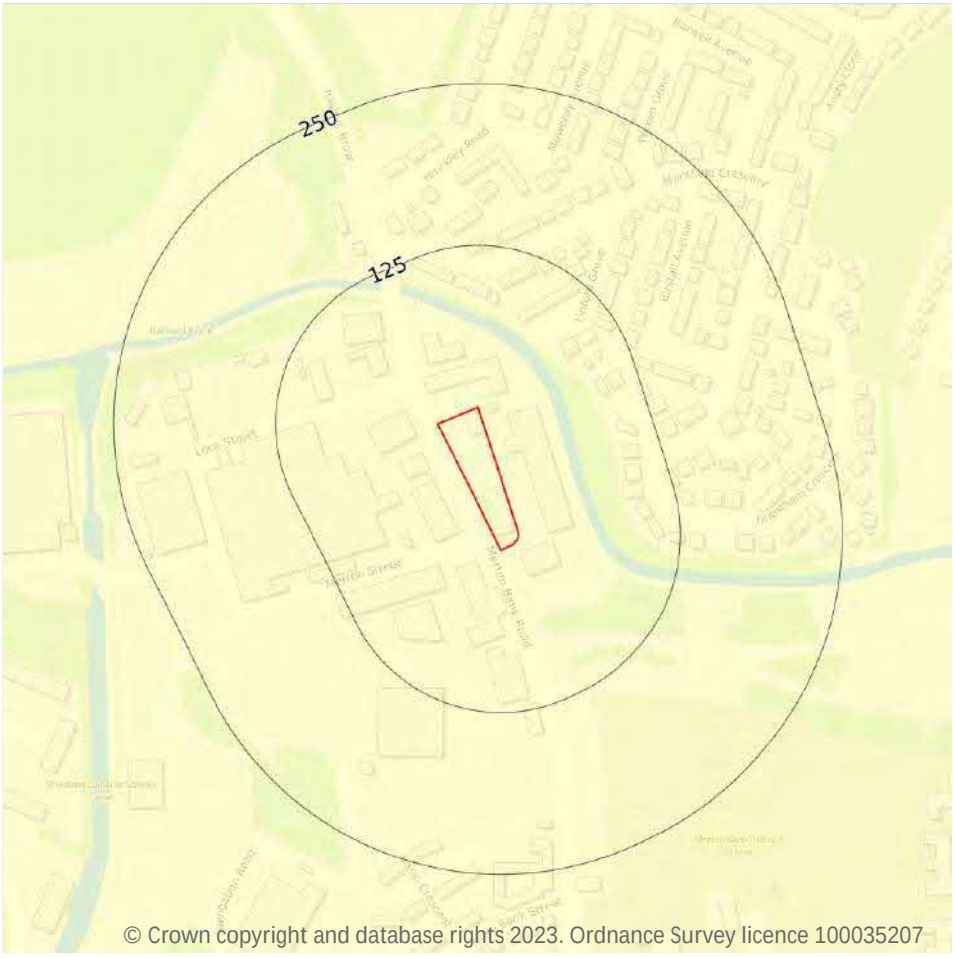
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on page 109 >

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

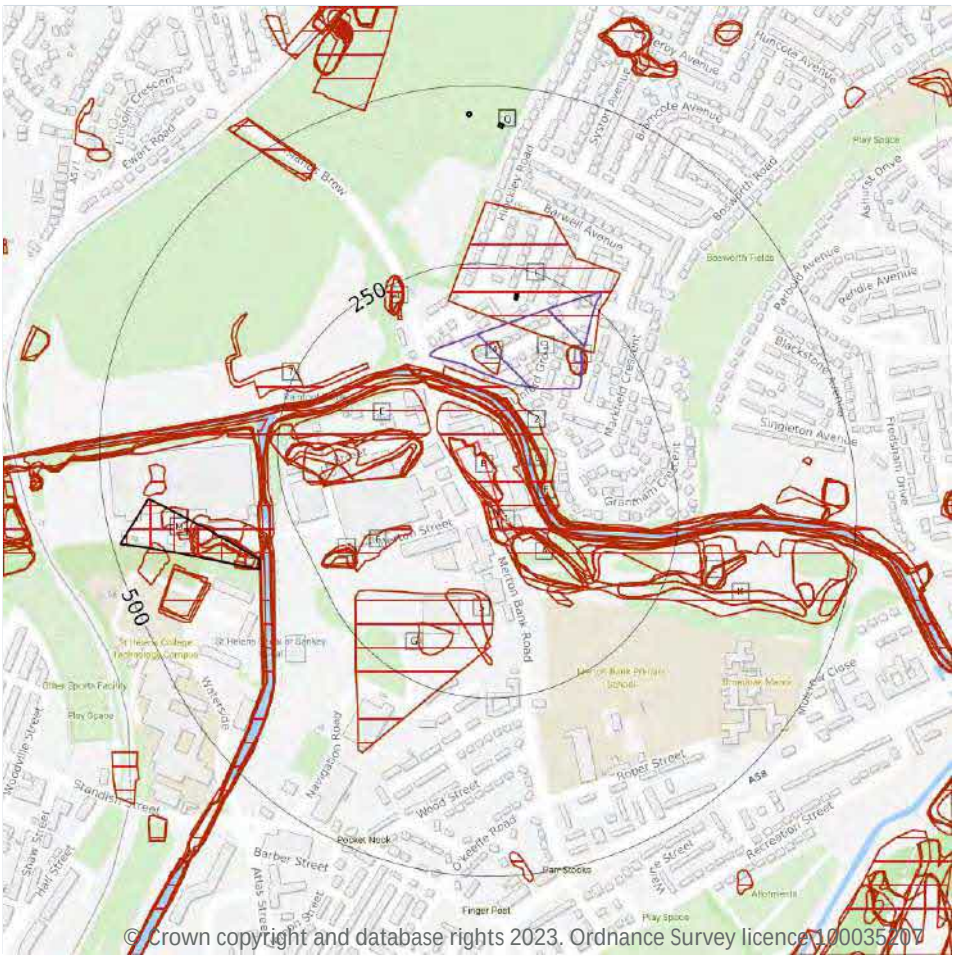
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on page 110 >

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	62

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

Features are displayed on the Mining and ground workings map on page 112 >

ID	Location	Land Use	Year of mapping	Mapping scale
1	On site	Unspecified Pit	1955	1:10560
A	On site	Unspecified Heap	1892	1:10560
A	On site	Unspecified Ground Workings	1938	1:10560
A	On site	Unspecified Ground Workings	1938	1:10560
B	On site	Pond	1938	1:10560
B	On site	Pond	1926	1:10560
B	On site	Pond	1938	1:10560
C	On site	Water Body	1851	1:10560
C	36m SE	Unspecified Heap	1955	1:10560
C	37m SE	Unspecified Ground Workings	1965	1:10560
A	39m SE	Unspecified Heap	1938	1:10560
A	39m SE	Unspecified Heap	1926	1:10560
A	39m SE	Unspecified Heap	1906	1:10560
D	42m NE	Canal	1938	1:10560
D	44m N	Unspecified Wharf	1948	1:10560
E	44m NW	Pond	1851	1:10560
D	45m NE	Canal	1938	1:10560
D	45m NE	Canal	1926	1:10560
D	45m NE	Canal	1906	1:10560
D	45m NE	Canal	1892	1:10560
E	47m NW	Unspecified Heap	1938	1:10560
E	47m NW	Unspecified Heap	1926	1:10560
E	47m NW	Unspecified Ground Workings	1938	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
E	47m NW	Unspecified Ground Workings	1938	1:10560
E	47m NW	Unspecified Ground Workings	1948	1:10560
E	47m NW	Unspecified Heaps	1955	1:10560
D	48m NE	Canal	1955	1:10560
D	51m NE	Disused Canal	1965	1:10560
F	53m N	Disused Canal	1979	1:10000
F	53m N	Disused Canal	1990	1:10000
2	63m NE	Unspecified Pit	1965	1:10560
A	72m SE	Pond	1965	1:10560
4	98m N	Unspecified Pit	1965	1:10560
5	102m S	Unspecified Heap	1965	1:10560
6	105m SW	Unspecified Pit	1892	1:10560
G	106m S	Unspecified Heap	1948	1:10560
C	122m SE	Unspecified Heap	1926	1:10560
C	122m SE	Unspecified Heap	1906	1:10560
C	122m SE	Unspecified Heap	1892	1:10560
H	165m NE	Pond	1938	1:10560
H	165m NE	Pond	1938	1:10560
H	165m NE	Pond	1926	1:10560
H	165m NE	Pond	1906	1:10560
E	167m W	Unspecified Heap	1965	1:10560
G	167m S	Unspecified Heap	1965	1:10560
7	169m NW	Unspecified Ground Workings	1892	1:10560
I	171m N	Colliery	1851	1:10560
J	188m SW	Unspecified Heap	1955	1:10560
J	191m SW	Unspecified Pit	1948	1:10560
J	193m SW	Unspecified Pit	1938	1:10560
J	193m SW	Unspecified Pit	1926	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
J	193m SW	Unspecified Pit	1906	1:10560
J	195m SW	Unspecified Pit	1938	1:10560
J	195m SW	Unspecified Pit	1938	1:10560
K	196m SE	Pond	1938	1:10560
K	196m SE	Pond	1926	1:10560
K	196m SE	Pond	1906	1:10560
L	199m NW	Pond	1892	1:10560
L	208m NW	Pond	1938	1:10560
L	208m NW	Pond	1926	1:10560
L	208m NW	Pond	1938	1:10560
L	212m NW	Pond	1955	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	14

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

Features are displayed on the Mining and ground workings map on page 112 >

ID	Location	Land Use	Year of mapping	Mapping scale
I	206m N	Unspecified Old Shaft	1938	1:10560
I	206m N	Unspecified Old Shaft	1926	1:10560
I	206m N	Unspecified Old Shaft	1906	1:10560
I	206m N	Unspecified Old Shaft	1892	1:10560
I	210m N	Unspecified Old Shaft	1949	1:10560
M	315m W	Colliery	1906	1:10560
Q	442m N	Unspecified Old Shafts	1938	1:10560
Q	442m N	Unspecified Old Shafts	1926	1:10560
Q	442m N	Unspecified Old Shafts	1906	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
Q	442m N	Unspecified Old Shafts	1892	1:10560
Q	457m N	Unspecified Old Shafts	1938	1:10560
Q	457m N	Unspecified Old Shafts	1926	1:10560
Q	457m N	Unspecified Old Shafts	1906	1:10560
-	887m E	Unspecified Shaft	1892	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

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

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	1

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

Features are displayed on the Mining and ground workings map on page 112 >

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
3	93m N	Islands Brow pottery	Clay	Surface mineral working	Application	Not available

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	1

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

and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on page 112 >

ID	Location	Name	Commodity	Class	Likelihood
-	783m SE	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	1

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

Location	Details
On site	In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

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

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

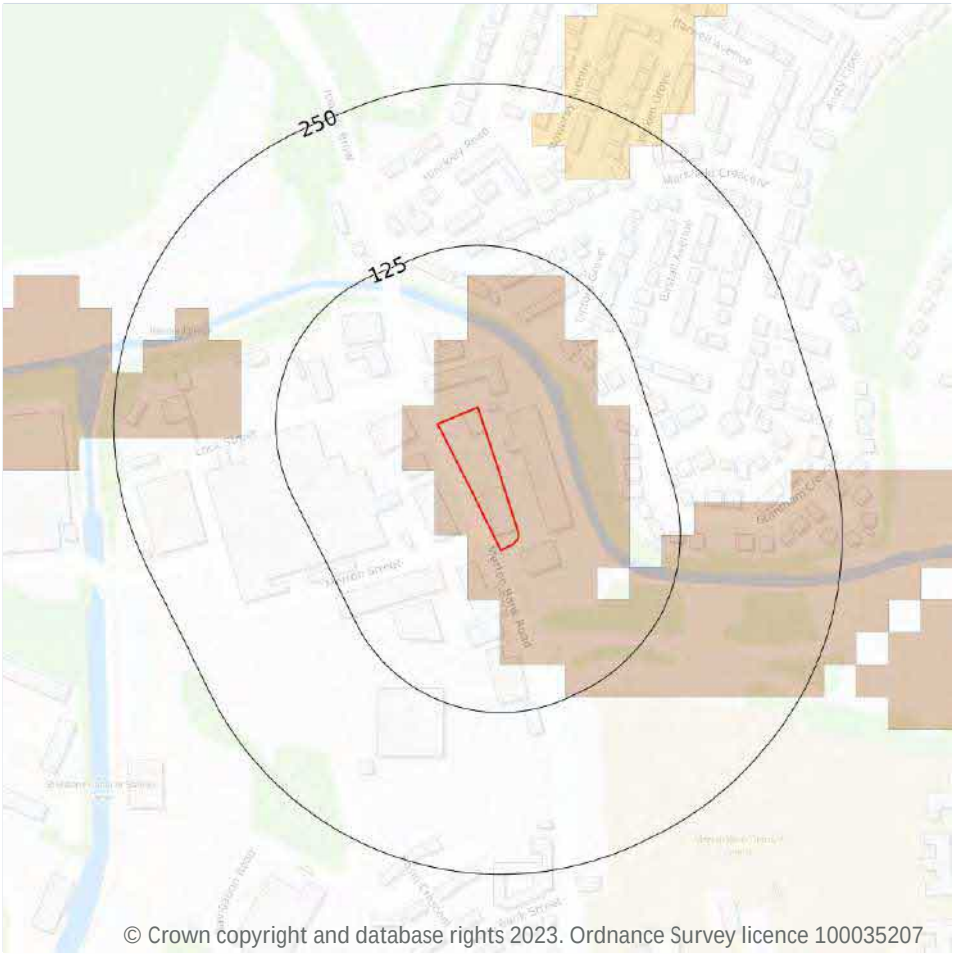
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



20.1 Radon

Records on site	1

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

Features are displayed on the Radon map on page 122 >

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 10% and 30%	Full

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	4

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
21m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
26m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

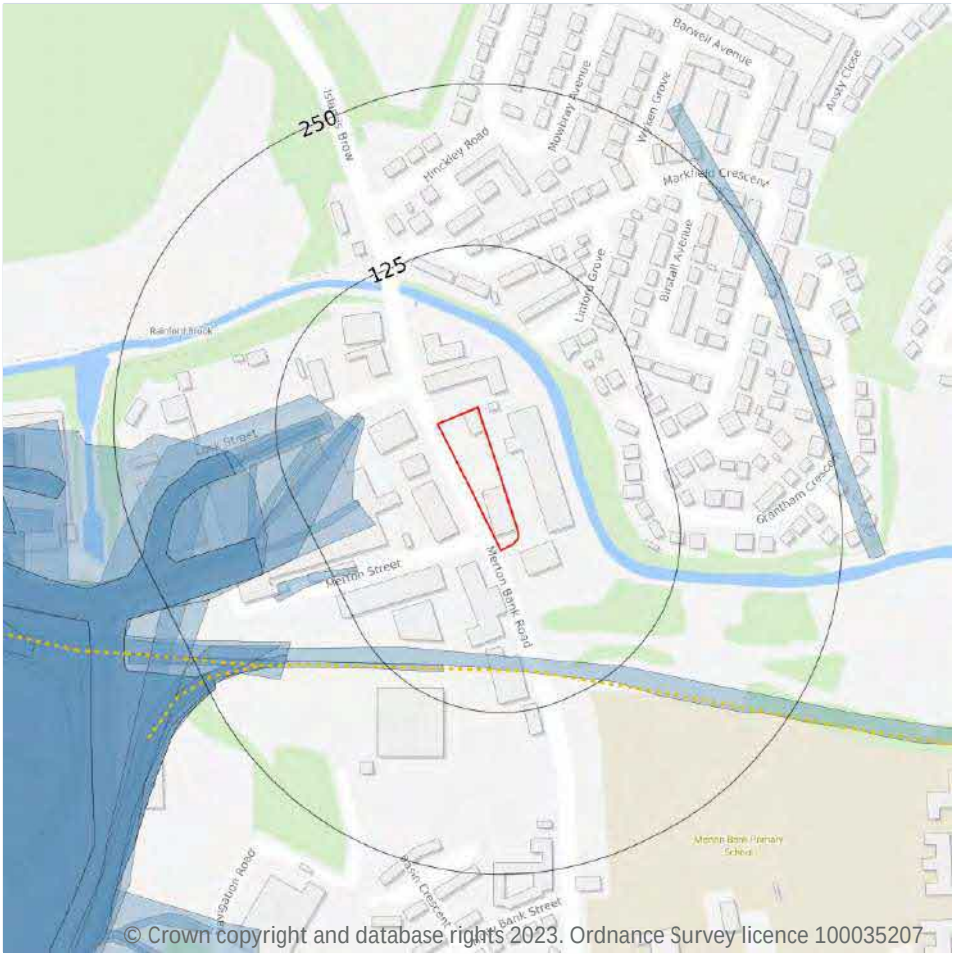
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	14

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

Features are displayed on the Railway infrastructure and projects map on page 126 >

Location	Land Use	Year of mapping	Mapping scale
56m NW	Railway Sidings	1906	10560
57m NW	Railway Sidings	1908	2500
61m W	Railway Sidings	1892	10560
81m S	Railway Sidings	1955	10560
88m W	Railway Sidings	1894	2500
99m S	Railway Sidings	1928	2500
106m SW	Railway Sidings	1894	2500
149m W	Railway Sidings	1938	10560
161m W	Railway Sidings	1938	10560
161m W	Railway Sidings	1926	10560
185m SW	Railway Sidings	1948	10560
185m SW	Railway Sidings	1965	10560
219m SW	Railway Sidings	1892	10560
241m NE	Railway Sidings	1851	10560

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	2

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

Features are displayed on the Railway infrastructure and projects map on page 126 >

Location	Description
93m S	Abandoned
204m SW	Abandoned

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

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

The Coal Authority

Consultants

Coal Mining Report

Suregrow Garden Centre
Collins Industrial Estate
Merton Bank Road
St Helens
St Helens
WA9 1HY

Date of enquiry:	20 October 2023
Date enquiry received:	20 October 2023
Issue date:	20 October 2023
Our reference:	51003384625001
Your reference:	23-10-01-01

Consultants

Coal Mining Report

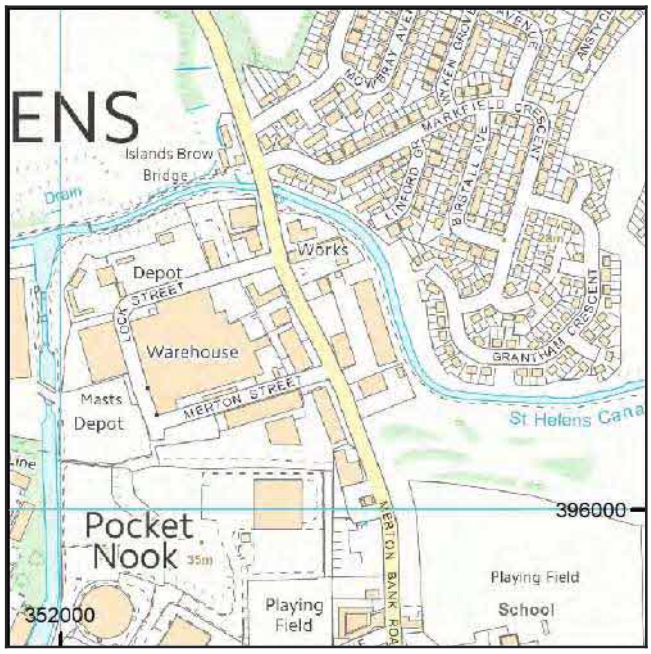
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

DEMETER ENVIRONMENTAL

Enquiry address

Suregrow Garden Centre
Collins Industrial Estate
Merton Bank Road
St Helens
St Helens
WA9 1HY



Approximate position of property

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 –Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	TRENCHERB ONE	Coal	30LT	48	North-West	19.0	South-East	190	1863

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	352396-020	352258 396343	This shaft was located and found to be filled. The shaft was pressure grouted and plugged in 1971 to the then National Coal Board specification by Rock Bolting and Grouting Services Ltd.	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW892	0	NW893
16820	NW138	NW894
13851		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
BOTTOM PIGEON HOUSE	Coal	Yes	Within	N/A	192

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 –Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 –Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 –Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 –Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial –mitigating the impact of existing pollution or Preventative –preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

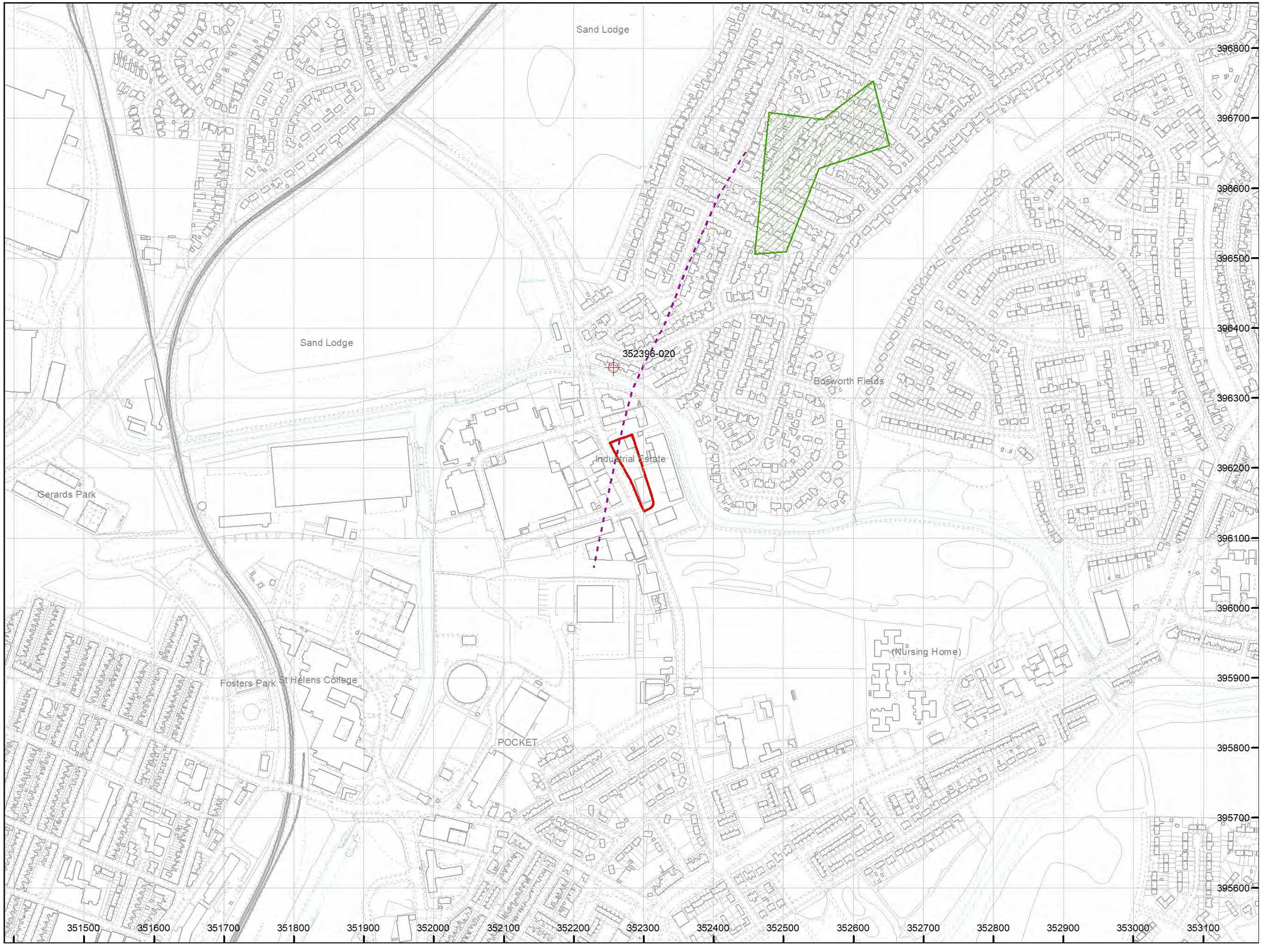
The Coal Authority

Summary of findings

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Disused mine shaft
- Outcrop (Conjectured)
- Unlicensed opencast site



How to contact us
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www.groundstability.com