

Report No: UK99/A1421

Date: July 1999

**INTEGRATED POLLUTION
PREVENTION AND CONTROL PRE-
AUTHORISATION DESK STUDY
of
CONTRACT CHEMICALS LIMITED
PENRHYN ROAD
KNOWSLEY BUSINESS PARK
PRESCOT
MERSEYSIDE**

**Prepared For
CONTRACT CHEMICALS LIMITED
KNOWSLEY**

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**Project Quality Assurance
Information Sheet**

***Integrated Pollution Prevention and Control Pre-Authorisation Desk Study
CONTRACT CHEMICALS, PENRHYN ROAD, KNOWSLEY BUSINESS
PARK, PRESCOT, MERSEYSIDE***

Report Number : UK99/A1421

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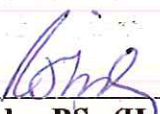
Survey Date : July 1999

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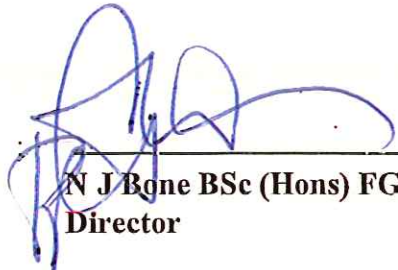

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Director

TABLE OF CONTENTS

1. INTRODUCTION	1
2. SITE DESCRIPTION	2
2.1 Site Location	2
2.2 Site Layout and Landuse	2
2.3 Adjacent Land Use	3
3. ENVIRONMENTAL SETTING	3
3.1 Geology	3
3.2 Hydrogeology	4
3.3 Hydrology	5
3.4 Landfill	5
3.5 Radon	5
3.6 Prescribed Processes	6
4. SITE HISTORY	7
5. PREVIOUS GROUND INVESTIGATIONS AND REMEDIAL WORKS	8
5.1 Introduction	8
5.2 Cremer and Warner Investigation	8
5.3 Sub Soil Surveys Limited Investigation	9
5.4 CCL Investigations	10
5.5 Remediation Works	10
6. CONCLUSIONS AND RECOMMENDATIONS	11

APPENDICES

Appendix A	-	Drawings
Appendix B	-	Landmark Information Group Ltd 'Site Check' Report'
Appendix C	-	British Geological Survey Borehole Logs
Appendix D	-	Previous Ground Investigation Reports
Appendix E	-	Remediation Works Method Statement

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1. INTRODUCTION

- 1.1 AIG Consultants Limited (AIGC) have been commissioned to complete a desk study report of Contract Chemicals Limited (CCL), Penrhyn Road, Knowsley Business Park, Prescot, Merseyside. This report has been prepared for the benefit of CCL to determine site conditions in relation to soil and groundwater contamination issues/liabilities at their Knowsley facility and recommendations for further site investigations.
- 1.2 This study is being carried out by CCL to assist with their application for an Integrated Pollution Prevention and Control (IPPC) Authorisation. The EU Directive on Integrated Pollution Prevention and Control, (Directive 96/61), has to be implemented by 31 October 1999. Current information from the Environment Agency and Department of the Environment Transport and the Regions suggests that the IPPC Regulations will be in force by that date or mid-November at the latest. As a chemical production installation, CCL will be subject to these Regulations. Indeed CCL are taking a pro-active approach to implementation of the IPPC regulations, acting as a 'pilot' scheme for their implementation with the assistance and advice of the Environment Agency (EA).
- 1.3 A specific requirement of the IPPC Directive is that "the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site to a satisfactory state". CCL wish to address this element of the Directive and the purpose of this report is to assist with this.
- 1.4 The specific requirements of the Directive in respect of returning the site to a satisfactory state are not finalised. However, current guidance from the 3rd Phase consultation on the IPPC Directive and EA current understandings are that the site will need to be returned to the ground conditions that were present prior to IPPC operations commencing.
- 1.5 The purpose of this report is thus to provide a 'Phase I' desk study of site conditions prior to the CCL Knowsley site applying for its IPPC permit. The conclusions and recommendations of this report discuss the necessity for any further investigations at the site as part of the IPPC application process and the interrelationships between the requirements under the IPPC regime and other forthcoming legislation, in particular Part II of the Environment Act relating to contaminated land.

1.6 The specific objectives of the desk study are summarised below:

- to assess the historical land uses at and near to the site.
- to determine the environmental setting of the study site with reference to geology, hydrogeology and hydrology, specifically identifying pollution sources, pathways and targets.
- to assess the degree of soil and groundwater pollution risk associated with the site and recommend any further ground investigation which might be needed to comment on the suitability of the site with respect to Articles 3 and 6 of the EU Directive 96/61.

1.7 The study consisted of an examination of data held by AIGC, historical and geological records from the Ordnance Survey and British Geological Survey (BGS) and information provided from a site check report by Landmark Information Group Plc. Information in the Landmark report is a compilation of data provided by the Environment Agency, Institute of Hydrology, Ordnance Survey, BGS and the National Radiological Protection Board.

1.8 This report presents the observations and findings of the desk study. The conclusions and recommendations given in this report are limited to those which can be based on the findings of the information in the desk study. AIGC reserve the right to amend their conclusions and recommendations in the light of further or more detailed information which may become available.

2. SITE DESCRIPTION

2.1 Site Location

2.1.1 The CCL Knowsley site is located along the southern edge of the A580 East Lancashire Road which in turn is located on the northern outskirts of Knowsley Village. The CCL facility is approximately 8 km west of St Helens town centre at National Grid Reference 343032, 396683.

2.1.2 Access to the CCL facility is gained from Penrhyn Road which runs along the southern boundary of the site. The site covers an area of approximately 40,000 square metres and is at an elevation of approximately 30 m above sea level. A site location map is provided in Appendix A, Drawing No. A1421/1 of this report.

2.2 Site Layout and Landuse

2.2.1 The site is currently occupied by CCL for the manufacture of intermediate chemicals and performance products using the processes of amination, bromination, cyanation and Friedel-Crafts chemistry. All products produced are supplied to major industries including pharmaceutical, agrochemical, photographic and textile sectors. CCL have been based at their Knowsley site since 1983.

2.2.2 The layout of the facility consists of an irregular square shaped plot possessing an area of approximately 40,000 m². The premises comprise of an administration/office block, raw material/product warehouse, flammable store, bonner storage, various bunded tank stores, cooling towers, surfactant hall and workshops. The majority of the buildings are estimated to be approximately 8 - 10 years old. A detailed site layout plan is located in Appendix A, Drawing No. A1421/2 of this report.

2.3 Adjacent Land Use

2.3.1 The site is bounded to the north by the East Lancashire Road which passes in an east-west direction. Beyond the A580 East Lancashire Road is the YMI Yorkshire Metals facility which is used for the manufacture of copper tubing. The Yorkshire Metals facility forms part of the Knowsley Industrial Estate.

2.3.2 Adjacent to the western boundary of the site is the McGregor Cory warehouse which is used for the packaging and distribution of processed food products. To the immediate east of the site is the Kelco Bio Specialities Ltd facility which is used for the manufacture of the 'NutraSweet' products and other alternative sugar products.

2.3.3 Penrhyn Road is located along the southern boundary of the site, beyond which is a car park currently utilised by CCL and further still to the south are undeveloped industrial plots within Knowsley Business Park.

3. ENVIRONMENTAL SETTING

3.1 Geology

3.1.1 The underlying geology of the site has been determined through inspection of the BGS 1:50,000 solid and drift edition and 1:10,560 solid and drift edition (sheets 84 and 100 SW respectively). A copy of the geological map extract is located in Appendix A, Drawing No. A1421/3 of this report.

3.1.2 According to the BGS maps, the site is underlain by both drift and solid strata. The superficial drift deposits underlying the site are sandy clay soils which overlie stiff glacial boulder clay. Solid strata comprises of Permian and Triassic strata principally comprising the Sherwood Sandstone Group.

3.1.3 The Landmark Site Check report which can be found in Appendix B, identified several BGS surveyed boreholes within a 1 km radius of the site. Further

consultation with the BGS revealed that these boreholes were drilled during the construction of the Knowsley Business Park.

3.1.4 According to the BGS boreholes for the CCL, Knowsley site which were located on the CCL site prior to its development the geology comprises of red sand and gravel and stiff boulder clay drift deposits underlain by weathered sandstone and marl before reaching the Sherwood Sandstone bedrock. Copies of the BGS borehole logs can be found in Appendix C of this report and their locations are depicted in Appendix B and on Drawing No. A1412/3 in Appendix A.

3.1.5 Additional site specific geological information is presented in Appendix D in the form of a previously carried out ground investigation performed by SubSoil Surveys Limited in February 1997 (also see Section 5).

3.2 Hydrogeology

3.2.1 The underlying Triassic and Permian sandstone (Sherwood Sandstone Group) are classified by the EA as a 'major aquifer'. These are highly permeable formations usually with a known or probable presence of significant fracturing. These deposits are generally highly productive and able to support large abstractions to public water supply.

3.2.2 The Landmark 'Site Check' report has revealed one licensed groundwater abstraction approximately 1 km west of the CCL facility at national grid reference 344000, 397100. North West Water Limited (NWW) are licensed to abstract 1,659,326 cubic metres of water per annum for private water supplies (domestic) from this abstraction under Licence No. 2569031016. The source of the groundwater is from the underlying Sherwood Sandstone Group.

3.2.3 Further consultation with the EA Groundwater Resource Section, North West Region has revealed that the CCL facility is in a Zone II groundwater source protection zone. The proximity of an activity to a groundwater abstraction is one of the most important factors in assessing the risk to an existing groundwater resource. In order to protect any springs, wells or boreholes in the groundwater the following protection zones are recognised:

- Zone I (Inner Source Protection)
- Zone II (Outer Source Protection)
- Zone III (Source Catchment)

3.2.4 Zone II is an area defined by a 400 day travel time from any point below the water table to the source (abstraction). The travel time is based upon that required to provide delay and attenuation of slowly degrading pollutants.

3.2.5 The BGS borehole logs presented in Appendix C suggests that groundwater may be located at very shallow depths within drift strata in the vicinity of the CCL site. This is also partially confirmed by borehole records presented in the SubSoil Surveys Limited ground investigation presented in Appendix D.

3.3 Hydrology

- 3.3.1 The nearest surface water course to the CCL facility is Knowsley Brook, which is a culverted water course located directly underneath the southern area of the CCL facility. Inspection of the Ordnance Survey plans for this area indicate that Knowsley Brook enters its culvert approximately 700 m east of CCL and emerges from culvert approximately 400 m to the west.
- 3.3.2 A second unnamed water course has been observed approximately 300 m south of CCL, which flows into Knowsley Brook west of the CCL facility.
- 3.3.3 Knowsley Brook has been classified as River Quality E ('poor') with respect to the General Quality Assessment (GQA) Scheme 1997. The unnamed watercourse has not been classified with respect to the GQA scheme. CCL do not operate any consents to abstract or discharge water at surface water locations.
- 3.3.4 Further consultation with the EA has revealed a number of surface water pollution incidents within a 1 km radius of the site. The nearest of these pollution incidents was located 280 m south-east of the site at National Grid reference 343300, 396600 within a plot of land adjacent to the News International Limited building. The above was classed as a 'Category 3' (minor pollution) incident being an accidental spillage of fuel oil into Knowsley Brook. None of the above pollution incidents have been directly associated with the CCL facility.

3.4 Landfill

- 3.4.1 Reference to the Landmark 'Site Check' report and consultation with the EA have revealed no active or former licenced landfill sites within a 1 km radius of the site. However, it is understood that CCL previously held a Waste Management Licence (reference 442/01) for a Waste Transfer Station located within the grounds of the site near to the present office block. The Waste Management Licence was operated in conjunction with CCL's temporary storage of solid and liquid special wastes produced on site. It is understood that CCL no longer operate this waste transfer station and have surrendered their Waste Management Licence to the EA.
- 3.4.2 No details have been provided by CCL on the terms and conditions of their Waste Management Licence surrender especially with regard to contaminated land testing.

3.5 Radon

- 3.5.1 The site is not within a 'Radon Affected Area' as designated by the National Radiological Protection Board 'Radon Atlas of England NRPB R290, 1966'

3.6 Prescribed Processes

- 3.6.1 Prescribed processes are described under the Environmental Protection Act 1990: Section 1: Integrated Pollution Control and Air Pollution Control. A brief description of elements of the Act are discussed below:

Part A: Integrated Pollution Control (IPC): Part A industries are generally regarded as causing the most pollution and covers approximately 105 'prescribed processes' which must be registered with the Environment Agency. An IPC authorisation covers emissions to air, land and water. Any new companies which fall into the 'prescribed processes' category must apply for an authorisation.

Part B: Air Pollution Control (APC): These are the less polluting industries and cover approximately 60 designated processes. These must be registered with the relevant Local Authority. APC authorisation cover air emissions only.

All Part A processes are monitored by the Environment Agency and Part B processes by the relevant Local Authority.

- 3.6.2 At present CCL operate a total of 7 Part A IPC authorisations, with a further 2 IPC applications which have met the requirements for the authorisation (but not yet authorised). The following table details CCL's current IPC obligations.

Table 1: CCL Prescribed Process Part A IPC Authorisations

Authorisation Reference	Process Description	Date Issued
AF7096	Chlorination using thionylchloride	17.10.92
AF9650	Amine Diols	2.11.92
AK3129	Organic Esters and Acids	23.12.93
AL9220	Small processes <250 tonnes per year	14.06.94
A27505	Sodium Cyanate	01.01.98
BA9827	Use of designated acylate	05.08.98
BC2149	Bromination of organic chemicals	19.02.99
BA6119	Organic chemicals	Not yet issued
BA9509	Inorganic chemicals	Not yet issued

No further Part A IPC authorisations are located within a 1 km radius of the CCL facility according to EA and Landmark records.

- 3.6.3 No processes are currently undertaken at CCL which require authorisations with respect to the Local Authority Air Pollution Control (LAAPC) System. The nearest LAAPC authorised facility is located approximately 660 m north of CCL and is

operated by Tilcon Ltd. Tilcon currently hold the authorisation for PG3/7 Exfoliation of vermiculite and expansion of perlite.

4. SITE HISTORY

- 4.1 In order to investigate the development history of the site and immediate surrounding area, extracts from County Series Plans and Ordnance Survey plans dated 1850 to 1990 have been provided within the Landmark "Site Check" report and inspected. Copies of these historical maps are located in Appendix B of this report, along with the relevant map details eg scale, map sheet and date.
- 4.2 The following information is a summary of the salient points relating to the history of the site. It is not the intention of this report to describe in detail all changes which have occurred on or adjacent to the site only those that are relevant to this desk study.
- 4.3 The earliest edition map of 1850 showed the site to be situated in agricultural land approximately 850 m north of Knowsley Village. Knowsley Brook passed through the location of the site flowing in an east-west direction. Sandstone extraction by quarrying is shown to have occurred at Knowsley quarry approximately 900 m west of the site. Possible (earlier) quarry workings closer to the CCL site area are depicted by potential disused water filled quarry pits at 'Penrhyn Pits' and 'Hikling Pits' located approximately 300 and 400 m to the south and south-east respectively. The majority of the adjacent land use comprised mixed evergreen/deciduous trees/plantations and agricultural land.
- 4.4 No further significant changes had occurred up until 1928. This map depicts the former Knowsley Sandstone Quarry as a boating lake with further residential development occurring around Knowsley Village. The site, however, is shown to have remained undeveloped at this time.
- 4.5 By 1937 the A580 East Lancashire Road had been constructed along the approximate northern boundary of the site. No further significant changes are depicted.
- 4.6 In 1956 a large area of residential properties is shown to have been constructed just north of Knowsley Village, at an approximate distance of 150 m south of the CCL site. It is understood that these residential properties comprised pre-fabricated buildings constructed immediately post second world war.
- 4.7 The Yorkshire Metals facility located along the East Lancashire Road approximately 250 m north of the CCL site, is detailed on the 1966 map. Further industrial development had also occurred approximately 750 m north-west of the site and 400 m to the west. The 1966 map also shows the construction of three large factories adjacent to the residential area of Southdene. The boating lake at the previous Knowsley sandstone quarry is no longer depicted suggesting that the former quarry/lake had been filled by this time by unknown materials.

- 4.8 The 1978 plan now shows the development of the majority of Knowsley Business Park, although the CCL facility is not depicted. Knowsley Brook is shown to have been culverted and enclosed across the length of the business park. The large area of residential properties previously depicted to have been located 200 m south of the business park are shown in the 1978 map to have been removed, further suggesting that these residential properties were constructed for a post-war temporary housing measure. This map also shows the construction of the McGregor-Cory food packaging warehouse adjacent to the west of the CCL site. Further industrial development is also shown approximately 600 south-west incorporating units, offices and warehouses.
- 4.9 The 1990 OS map suggests that the CCL facility had been partially developed at this time showing the administration block, surfactant hall and laboratory building. The Kelco facility adjacent to the east of the site is shown on the plan and resembles its present layout. No further significant changes are shown to have occurred.
- 4.10 It is understood from information supplied by CCL personnel that the original occupants of the site were Tate and Lyle, manufacturers of sugar based products. CCL purchased part of the site in 1983 with Kelco Bio Specialities Ltd purchasing the remainder. There has been no other historical occupants at the site and detailed in the activities carried by Tate and Lyle between approximately 1979 and 1983 are not known.

5. PREVIOUS GROUND INVESTIGATIONS AND REMEDIAL WORKS

5.1 Introduction

- 5.1.1 It is understood that two ground investigations have been carried out on the CCL site in recent years for both geotechnical and environmental purposes.
- 5.1.2 These two investigations were carried out, firstly by Cremer and Warner in 1992 within western areas of the CCL site and adjoining land occupied by McGregor Cory Limited. A later investigation was carried out in 1997 by SubSoil Surveys Ltd for geotechnical parameters with regard to the proposed construction of the Bonner Building in the north-western corner of the site.
- 5.1.3 An extract of the Cremer and Warner report and the complete SubSoil Surveys Ltd report are presented in Appendix D and are summarised in the sections below.

5.2 Cremer and Warner Investigation

- 5.2.1 The Cremer and Warner investigation comprised the excavation of eight trial pits and one borehole. Four of these trial pits were located on the CCL site and the remainder were located on the adjacent McGregor Cory Ltd site. The location of the borehole is unknown.

5.2.2 Full details of the exact findings and reasons for this investigation have not been presented although it is understood that the investigation was commissioned in the light of visual contamination being detected on adjoining land. Extracts of this report are presented in Appendix D and suggest the following were identified during the investigation.

- Significant contamination of soils were noted in the four trial pits located in the western area of the CCL site (up to 15 m from the boundary fence). Details of the contaminants are not presented in the report extract.
- Aromatic organic compounds were detected in soils on the McGregor Cory site at unknown concentrations.
- Contamination was generally restricted to the top 0.5 m of the soil sequence above a layer of natural clay.
- Conclusions made suggest that contaminants had migrated from the CCL site to adjacent land primarily by surface run off from CCL storage areas but had been restricted from migrating vertically by natural low permeability strata.

5.3 Sub Soil Surveys Limited Investigation

5.3.1 The Sub Soil Surveys Limited investigation comprised the drilling of 3 boreholes to a maximum depth of 12.15 m in the area of the proposed Bonner Building in February 1997. ✓

5.3.2 This investigation identified up to 2.6 m of made ground materials comprising clay, stones, brick and ash. This material was underlain by gravely sands and, in turn, underlain by very stiff gravely glacial clays. Sandstone and mudstone strata were encountered at depths of between 6.6 and 10.9 m below ground level. ✓

5.3.3 Groundwater was encountered in only one of the three boreholes during drilling at approximately 6.3 m within the base of the glacial clay. Subsequent water levels of between 5.7 m and 6.3 m below ground level were recorded in all 3 boreholes within the glacial clay strata. ✓

5.3.4 It is understood that subsequent to carrying out appropriate geotechnical tests, selected samples (4 No.) of made ground were tested a suite of chemical determinands which possessed concentrations all below the lowest 'threshold trigger values' presented by the Interdepartmental Committee on the Redevelopment of Contamination Land (ICRCL guidance note 59/83, 2nd edition 1987), ✓

5.3.5 It is, however, noted that Sub Soil Surveys Limited in their letter appended to their report made reference to elevated nickel and phenol concentrations which are not ✓

apparent in the chemical test results discussed above and it is not known to which soil tests this comment is directed.

5.4 CCL Investigations

5.4.1 In addition to the investigations noted above CCL have carried out additional soil sampling and testing in the following areas:

- Bonner Building - 4 samples obtained at 0.2 m - 0.3 m depth prior to building construction (February 1997).
- Flammable Store - 3 samples obtained at shallow depth prior to building construction (July 1997).

The above sampling was carried out as a requirement of CCL's Environmental Management System 14001 quality statement and the results are presented in Appendix D.

5.4.2 The chemical analysis of fill samples in the area of the proposed Bonner Building suggest that there was no significant contamination present with regard to the proposed use of this part of the site. Furthermore, the chemical analysis equated to that analysis carried out by Sub Soil Surveys Limited in the same part of the site (see Section 5.3 above).

5.4.3 The chemical analysis of the 3 samples obtained from the flammable store area also confirmed that the shallow soils/made ground were also uncontaminated with regard to the proposed site use and appropriate ICRL threshold trigger values.

5.5 Remediation Works

5.5.1 In response to the findings presented in the Cremer and Warner site investigation report, remedial action was instigated by CCL. Such works initially comprised the removal of all stored materials from the affected area.

5.5.2 CCL subsequently commissioned Robinson Fletcher Consultants Ltd (now AIGC) to design appropriate surface water control systems and soil restoration works in the area investigated by Cremer and Warner.

5.5.3 In November 1993 appropriate specifications and method statements were prepared by Robinson Fletcher Consultants Ltd and the surface water control and soil remediation works were carried out by an approved contractor in 1994 under the supervision and validation of Robinson Fletcher Consultants Ltd. A copy of the design method statement for the above works is presented in Appendix E of this report.

5.5.4 The contaminated soils noted by Cremer and Warner were excavated from site and disposed of at a suitably licensed landfill site (approximate volume 250m³). Inert

clean materials were imported from an approved source and placed to an engineered standard in the resultant voids.

5.5.5 The works were carried out to the full satisfaction of McGregor Cory and CCL.

6. CONCLUSIONS AND RECOMMENDATIONS

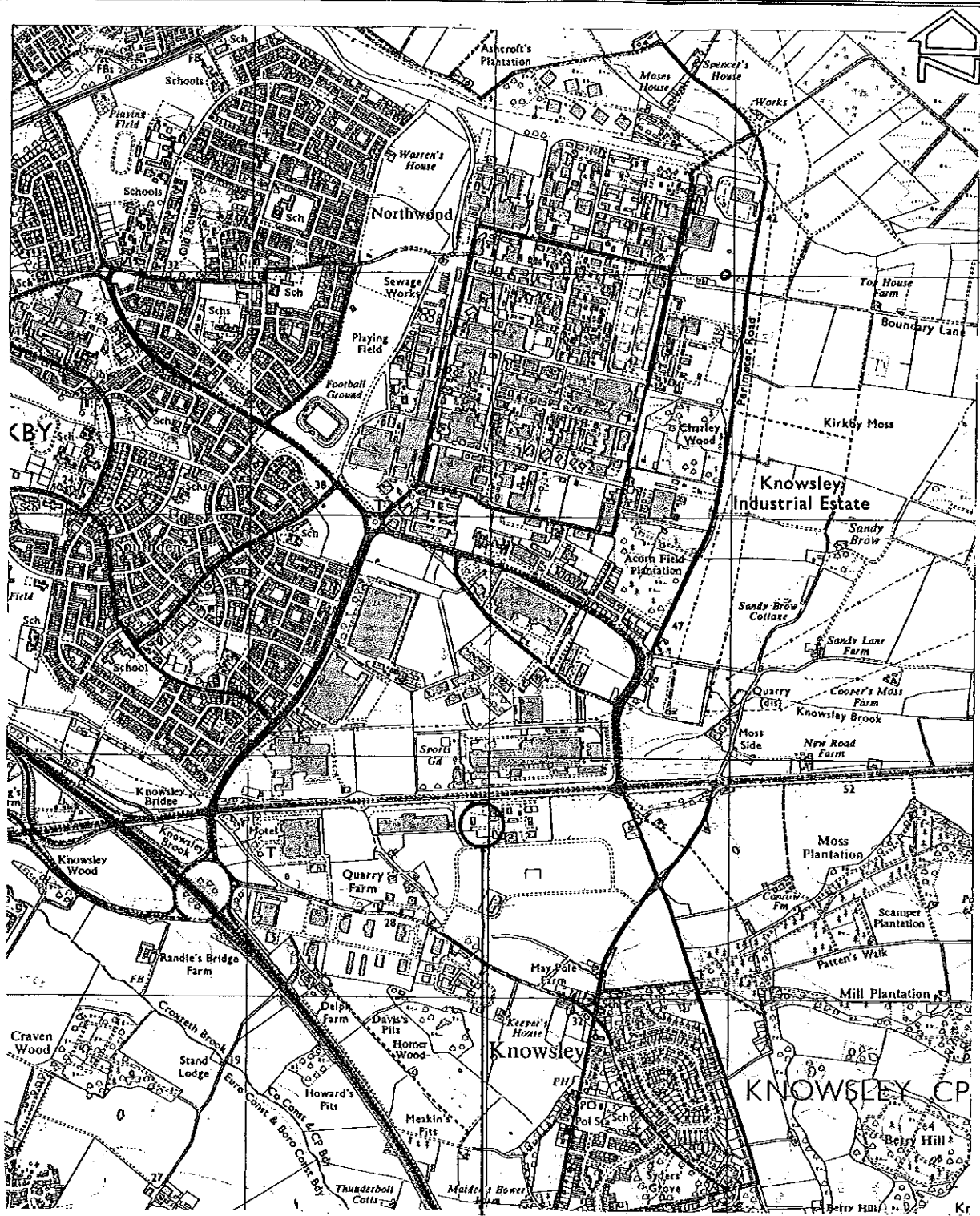
- 6.1 AIGC have been commissioned to complete an environmental desk study of CCL, Penryhn Road, Knowsley Business Park, Prescot, Merseyside.
- 6.2 CCL's principle operations comprise the production of intermediate chemicals and performance products for the pharmaceutical, agrochemical, photographic and textile sectors. CCL have been based at their Knowsley site since 1983. The facility is in a low/moderate environmentally sensitive area with respect adjacent land use being located in an industrial area with the nearest residential properties being some 800 m south-east.
- 6.3 Published geological information shows the site to be underlain by drift deposits of sandy clay soils overlying stiff glacial boulder clay and solid strata of Sherwood Sandstone. This underlying solid geology has been classified as a 'major aquifer' with one recognised public water supply borehole operated by North West Water Limited 1 km west of CCL. The CCL facility is located within a Zone II groundwater protection zone, however the underlying boulder clay is likely to allow some protection to the major aquifer from any vertical migration of on site contaminants. Groundwater is, however, expected to be located at shallow depths as indicated by BGS borehole records and as depicted in historical Ordnance Survey maps as water in shallow quarries and sand pits.
- 6.4 With regard to surface water courses, the nearest hydrological feature is the Knowsley Brook, a culverted watercourse located directly underneath the southern area of the CCL facility. Knowsley Brook has been classified as River Quality E ('poor') with respect to the GQA Scheme 1997. However, it is thought unlikely that any processes from the CCL facility will adversely effect this water course, although details of the culvert construction are not known.
- 6.5 No landfill sites are known located within a 1 km radius. However, historical maps show the occurrence of sand quarries and pits which would appear to have been infilled in more recent years by unknown materials.
- 6.6 At present CCL operate a total of 7 IPC authorisations, with a further 2 IPC applications which have met the requirements for the authorisation (but not yet authorised). No concerns have been expressed by the Environment Agency with regard to breaches of the above IPC authorisations.
- 6.7 It is understood from information supplied by CCL personnel that the original occupants of the site were Tate and Lyle, for the manufacture of sugar based

products. CCL purchased part of the site in 1983 with Kelco Bio Specialities Ltd purchasing the remainder. There has been no other historical occupants at the site.

- 6.8 A series of ground investigations have been carried out at the CCL in recent years. Investigations carried out prior to the construction of the Bonner Building and Flammable Store suggest that the made ground materials in these areas are uncontaminated and present no obvious risks to site users and/or ground water. However, organic contamination is understood to have been identified on land adjacent to the CCL site probably arising from contaminated surface run off from storage areas. This contaminated area was subsequently remedied by the removal of contaminated soils from site and their replacement by clean inert imported materials. In addition, appropriate surface water management systems were constructed within this area to prevent future off site surface water runoff.
- 6.9 A requirement of the IPPC Directive is that IPPC installations will need to have a good understanding of the state of ground conditions on their site prior to being issued with an IPPC permit, otherwise sites could be required to 'clean up' any contamination that may have existed of the facility prior to the IPPC permit being issued. Therefore it is considered important for the operator of a potential IPPC facility to assess ground conditions in a thorough manner in order to prevent a more onerous clean-up than what might have been required otherwise.
- 6.10 In effect this means that in the future, clean up at IPPC installations (under the requirements of an IPPC permit) is going to be on a different basis to that required under the proposed Part IIA Environmental Protection Act 1990 (EPA) contaminated land regime in that a process of 'hazard management' will be used with any clean up required to return the site to its pre-IPPC state.
- 6.11 In addition to the clean up measures specified under the IPPC Directive, IPPC sites will still be subject to Part IIA (the contaminated land requirements) of the EPA 1990. In its third consultation paper on IPPC the DETR has said that the initial site report will serve additionally to identify whether action is required at the site, to bring it up to a condition which is 'suitable for use' under Part IIA of the EPA.
- 6.12 Reports produced as part of the application will also have to be deposited on the public register.
- 6.13 There are a range of implications for the CCL Knowsley site from this.
- As one of the initial users of the facility and the only obvious potential polluter CCL will also be responsible for any site remediation required under the proposed EPA Part IIA Contaminated Land regime. This could commence at IPPC permit application time, when deposition of site investigation reports on the site could require the facility to remediate (if contamination was found) to make the facility fit for purpose. Such requirements will also be on the facility if redevelopment at later dates is carried out.

- The site investigation reports will be on a public register and CCL could come under public scrutiny if contamination is found but no action is (or is required to be) taken.
- 6.14 In view of the above therefore, it is recommended that a brief, yet thorough, ground investigation is carried out over the entire site. This investigation should aim to identify the following issues:
- Soil contamination in targeted high risk areas e.g. liquid and fuel storage areas, special waste storage areas, former transfer station area.
 - Soil contamination over the site generally.
 - Groundwater characteristics and quality.
 - Physical soil properties.
- 6.15 It is considered that the above investigation could be carried out, in view of the likely restrictions on access, by conventional window sampling techniques over a 2 or 3 day period supplemented by trial pits in areas presenting adequate access. Any subsequent interpretative site investigation report should consider appropriate hazard - pathway - target assessments of any contaminants found in either soil or groundwater with regard to the type and nature of contaminants and soil types identified.

APPENDIX A DRAWINGS



THE SITE



AIG CONSULTANTS

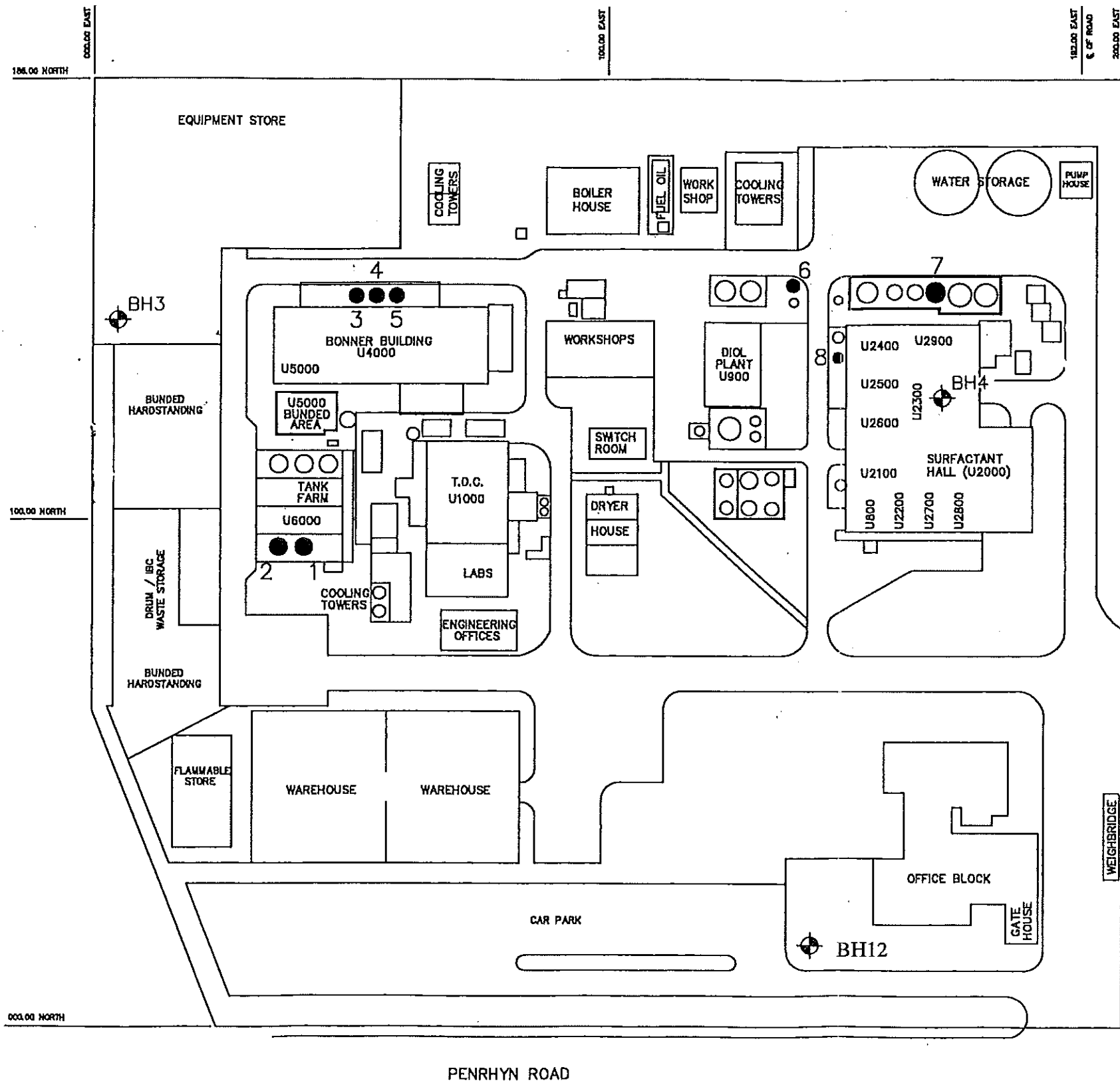
TEL: 01942 824406
FAX: 01942 824030

CLIENT
CONTRACT CHEMICALS LTD, KNOWSLEY

JOB TITLE
IPPC DESK STUDY

DRAWING TITLE
SITE LOCATION MAP

DRAWN BY RJT	SIGNATURE	DATE 1/7/99	STATUS FINAL
APPROVED AJA	SIGNATURE	DATE 1/7/99	SCALE 1: 25,000
			DRG No. A1421/1



SITE WASTE STORAGE

- KEY**
- 1). HCL ACIDIC WASTE 50000 L (T8011)
 - 2). SO₂ ABSORBER WASTE 50000 L (6010)
 - 3). SAFENER ACID WASTE 29500 L (V4029)
 - 4). PROVISIONAL ALKALINE WASTE 29500 L
 - 5). PROVISIONAL SOLVENT WASTE 29500 L
 - 6). DIOL HEAVY RESIDUES 20000 L (V932)
 - 7). AMMONIUM SULPHATE WITH 3% H₂SO₄ 40000 L
 - 8). DIOL ACIDIC SCRUBBER WASTE 32000 L (V946)

KEY

BGS Borehole Location Points

AIG
CONSULTANTS
 LIMITED
 PIER HOUSE WALLGATE WIGAN LANCASHIRE WN9 4AL
 TEL: 01942 824406 FAX: 01942 824030

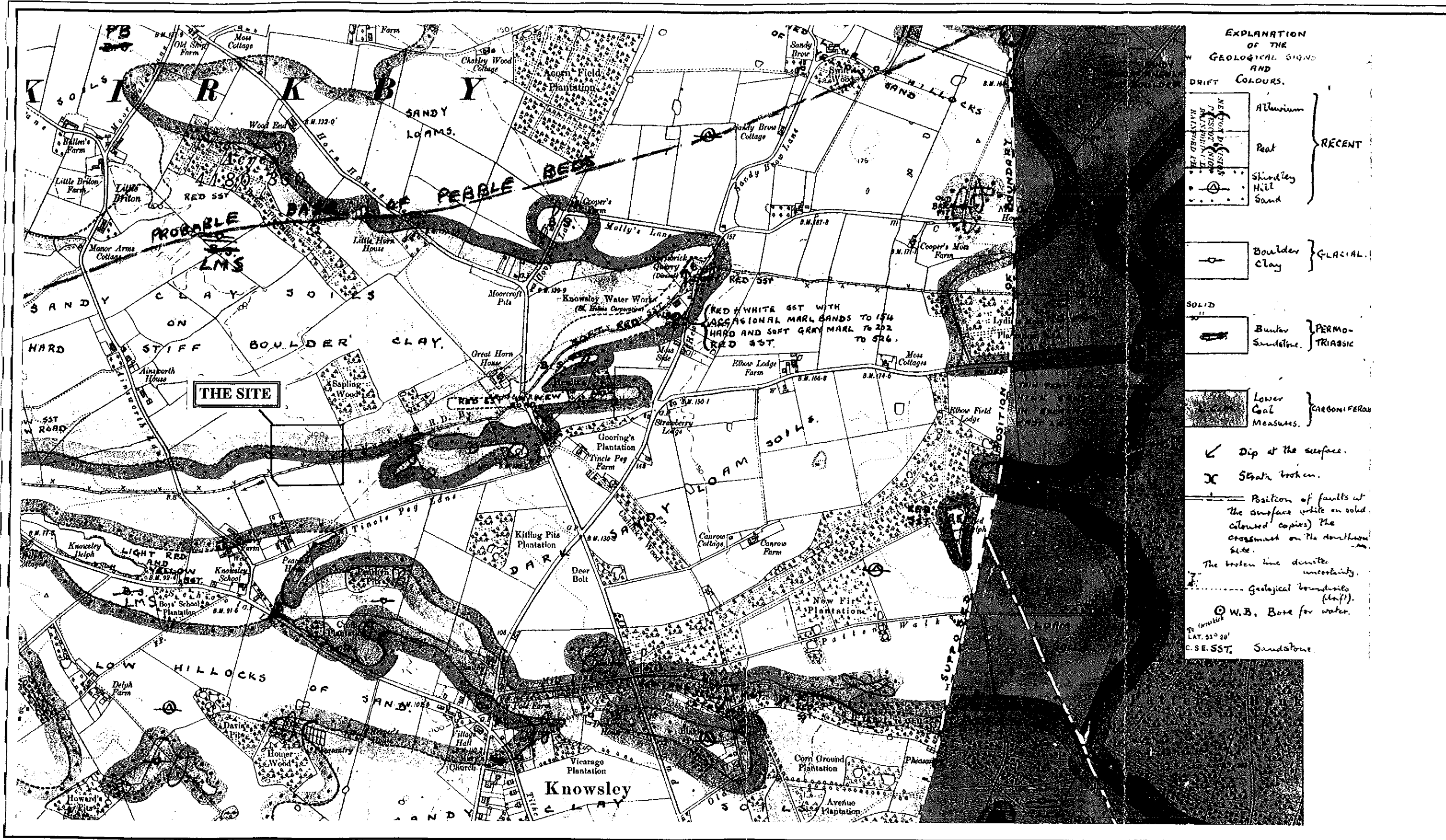
CONTRACT
CHEMICALS
LIMITED,
KNOWSLEY

JOB TITLE
 IPPC
 DESK STUDY

DRAWING TITLE
 SITE
 LAYOUT
 PLAN

STATUS FINAL		
DRAWN BY R.J.T.	SIGNATURE	DATE 01/07/99
APPROVED A.J.A.	SIGNATURE	DATE 01/07/99
SCALE 1:1000		DRG No. A1421/2

A3 border 396 X 229



 AIG CONSULTANTS LIMITED PIER HOUSE WALLGATE WIGAN LANCASHIRE WN3 4AL TEL: 01942 824406 FAX: 01942 824030	CONTRACT CHEMICALS LIMITED, KNOWSLEY	JOB TITLE IPPC DESK STUDY	DRAWING TITLE GEOLOGICAL MAP EXTRACT	STATUS FINAL		
				DRAWN BY R.J.T.	SIGNATURE	DATE 01/07/99
				APPROVED A.J.A.	SIGNATURE	DATE 01/07/99
				SCALE 1:10560		DRG No. A1421/3

A3 border 396 X 229

APPENDIX B
LANDMARK SITE CHECK REPORT

**EnviroCheck Report on:**

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside
L34 9HY

National Grid Reference :

343032, 396683

Prepared For :

AIG Consultants Limited
PIER HOUSE
WALLGATE
WIGAN
WN3 4AL

Your Reference :

Robert Tinsley



Summary

Environmental Setting

Industrial Setting

Useful Contacts

BGS Borehole Order Form

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does to the potential sources of contamination. For this reason, Landmark's Site Sensitivity Data Sheet places great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from English Nature (and the Scottish and Welsh equivalents), the Environment Agency (and the Scottish equivalent) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The data sheet is produced by querying the legend database to 1km from a single point provided by the client.

Landmark has geocoded and plotted the data to 1m accuracy where possible. Where this isn't the case, data is geocoded to +/- 100m accuracy. In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 100m in accordance with Landmark's agreements with a number of Data Suppliers.

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Data Type	50m	250m	500m	1000m
Water				
Water Abstractions				
Discharge Consents			✓ 1	✓ 3
Red List Discharge Consents				
Prosecutions relating to Controlled Waters				
Pollution Incidents to Controlled Waters			✓ 2	✓ 22
Nearest Surface Water Feature		✓		
Waste				
Landfill Sites				
BGS Recorded Landfill Sites				
Waste Treatment or Disposal Sites				
Waste Transfer Sites	✓ 1			
IPC Registered Waste Sites				
Statutory / Authorisation				
Integrated Pollution Controls	✓ 23	✓ 2		✓ 1
Air Pollution Controls			✓ 2	✓ 7
Registered Radioactive Substances		✓ 2		✓ 5
Prosecutions relating to Authorised Processes				
Enforcement and Prohibition Notices				
Planning Hazardous Substance Consents			✓ 2	
Planning Hazardous Substance Enforcements				
Other				
Planning Applications (of possible contaminative uses)		✓ 2	✓ 1	✓ 5
BGS Recorded Mineral Sites				
BGS Boreholes	✓ 1	✓ 9	✓ 22	✓ 18
Sites of Special Scientific Interest				
Potentially Contaminative Industrial Use			✓ 2	✓ 3

Water Abstractions identified, whose centres are more than 1000 metres (but less than 2000 metres) from the centre of the site: 1



Map ID	Details	Estimated Distance from Site	Source	NGR
-	Water Abstraction Operator North West Water Ltd., Licence No 2569031016 Location Knowsley Ps, Kirkby Abstraction Private Water Supplies (Domestic) Source Groundwater Daily Rate 7500 cubic metres Yearly Rate 1659326 cubic metres Details Well Borehole And Wells And Boreholes (2)	1050	EA	344000 397100
-	Groundwater Vulnerability Geological Classification Major Aquifer (Highly permeable) - These are highly permeable formations usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public water supply and other purposes Soil Classification Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Drift Deposit None Map Sheet Derived from Sheet 16 West Cheshire Scale 1:100,000	-	EA	343000 396700
-	Radon Affected Area Less than 1% of homes are above the Action Level	-	NRPB	-
1	Discharge Consent Operator Knowsley M B C Property Type Not Given Location Mersey Control Systems Ltd , 765 Knowsley Lane , Knowsley Catchment Area Not Given Discharge Reference 016991396 Issued Not Given Discharge Type Sewage Treatment Works - Final Effluent Discharge Freshwater Stream/River Environment Received Water Not Given	690	EA	343400 396100
1	Discharge Consent Operator Mersey Systems Property Type Not Given Location Location Description Not Available Catchment Area Not Given Discharge Reference 016991396B Issued Not Given Discharge Type Surface Water Discharge Freshwater Stream/River Environment Received Water C/Deemed1; Outlet; Dog Beck; Licence Status: Revoked	690	EA	343400 396100
1	Discharge Consent Operator Mersey Systems Property Type Not Given Location Location Description Not Available Catchment Area Not Given Discharge Reference 016991396A Issued Not Given Discharge Type Tank and filter Discharge Freshwater Stream/River Environment Received Water C/Deemed1; Outlet; Dog Beck; Licence Status: Revoked	690	EA	343400 396100
2	Discharge Consent Operator Yardley Plastics Ltd Property Type Not Given Location Yardley Plastics Ltd, Caddick Road, Knowsley Ind Est Catchment Area Upper Mersey Discharge Reference 016990269 Issued 1st April 1991 Discharge Type Trade Cooling Water Effluent: Plastic & Rubber Manufacture Discharge Freshwater Stream/River Environment Received Water Croxteth Brook Trib	380	EA	342700 396500



Map ID	Details	Estimated Distance from Site	Source	NGR
25	BGS Borehole BGS Reference SJ49NW 171 Drilled Length n/a Bore Name KIRKBY 275KV SUB STN TP A	990	BGS	343800 397300
25	BGS Borehole BGS Reference SJ49NW 172 Drilled Length n/a Bore Name KIRKBY 275KV SUB STN TP B	990	BGS	343800 397300
25	BGS Borehole BGS Reference SJ49NW 173 Drilled Length n/a Bore Name KIRKBY 275KV SUB STN TP C	990	BGS	343800 397300
25	BGS Borehole BGS Reference SJ49NW 174 Drilled Length n/a Bore Name KIRKBY 275KV SUB STN TP D	990	BGS	343800 397300
25	BGS Borehole BGS Reference SJ49NW 175 Drilled Length n/a Bore Name KIRKBY 275KV SUB STN TP E	990	BGS	343800 397300
26	BGS Borehole BGS Reference SJ49NW 165 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 36	670	BGS	343500 396200
27	BGS Borehole BGS Reference SJ49NW 166 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 37	710	BGS	342800 396000
28	BGS Borehole BGS Reference SJ49NW 167 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 38	660	BGS	342900 396000
29	BGS Borehole BGS Reference SJ49NW 168 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 39	640	BGS	343100 396000
30	BGS Borehole BGS Reference SJ49NW 169 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 40	660	BGS	343200 396100
31	BGS Borehole BGS Reference SJ49NW 158 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 28	570	BGS	343500 396400
32	BGS Borehole BGS Reference SJ49NW 159 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 29	580	BGS	342700 396200
33	BGS Borehole BGS Reference SJ49NW 160 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 30	520	BGS	342900 396200
34	BGS Borehole BGS Reference SJ49NW 161 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 31	490	BGS	343100 396200
35	BGS Borehole BGS Reference SJ49NW 162 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 32	490	BGS	343100 396200
36	BGS Borehole BGS Reference SJ49NW 163 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 33	510	BGS	343200 396200



Map ID	Details	Estimated Distance from Site	Source	NGR
37	BGS Borehole BGS Reference SJ49NW 164 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 34	590	BGS	343300 396200
38	BGS Borehole BGS Reference SJ49NW 151 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 21	640	BGS	343600 396500
39	BGS Borehole BGS Reference SJ49NW 152 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 22	400	BGS	342800 396400
40	BGS Borehole BGS Reference SJ49NW 153 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 23	370	BGS	342900 396300
41	BGS Borehole BGS Reference SJ49NW 154 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 24	390	BGS	343000 396300
42	BGS Borehole BGS Reference SJ49NW 155 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 25	340	BGS	343000 396300
43	BGS Borehole BGS Reference SJ49NW 156 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 26	370	BGS	343200 396400
44	BGS Borehole BGS Reference SJ49NW 157 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 27	450	BGS	343300 396400
45	BGS Borehole BGS Reference SJ49NW 148 Drilled Length 5.49 metres Bore Name KNOWSLEY IND ESTATE BH 18	240	BGS	343200 396500
46	BGS Borehole BGS Reference SJ49NW 149 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 19	350	BGS	343300 396500
47	BGS Borehole BGS Reference SJ49NW 150 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 20	490	BGS	343500 396500
48	BGS Borehole BGS Reference SJ49NW 142 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 12	30	BGS	343000 396700
49	BGS Borehole BGS Reference SJ49NW 143 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 13	150	BGS	343200 396700
50	BGS Borehole BGS Reference SJ49NW 144 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 14	300	BGS	343300 396700
51	BGS Borehole BGS Reference SJ49NW 145 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 15	460	BGS	343500 396700
52	BGS Borehole BGS Reference SJ49NW 146 Drilled Length 3.66 metres Bore Name KNOWSLEY IND ESTATE BH 16	240	BGS	342900 396500



Map ID	Details	Estimated Distance from Site	Source	NGR
53	BGS Borehole BGS Reference SJ49NW 147 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 17	190	BGS	343000 396500
54	BGS Borehole BGS Reference SJ49NW 135 Drilled Length 4.88 metres Bore Name KNOWSLEY IND ESTATE BH 6	310	BGS	343300 396800
55	BGS Borehole BGS Reference SJ49NW 136 Drilled Length 3.05 metres Bore Name KNOWSLEY IND ESTATE BH 6A	370	BGS	343400 396800
56	BGS Borehole BGS Reference SJ49NW 137 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 7	440	BGS	343500 396800
57	BGS Borehole BGS Reference SJ49NW 138 Drilled Length 3.66 metres Bore Name KNOWSLEY IND ESTATE BH 8	480	BGS	343500 396800
58	BGS Borehole BGS Reference SJ49NW 139 Drilled Length 3.66 metres Bore Name KNOWSLEY IND ESTATE BH 9	470	BGS	342600 396600
59	BGS Borehole BGS Reference SJ49NW 140 Drilled Length 4.57 metres Bore Name KNOWSLEY IND ESTATE BH 10	310	BGS	342700 396600
60	BGS Borehole BGS Reference SJ49NW 141 Drilled Length 5.49 metres Bore Name KNOWSLEY IND ESTATE BH 11	160	BGS	342900 396600
61	BGS Borehole BGS Reference SJ49NW 134 Drilled Length 5.18 metres Bore Name KNOWSLEY IND ESTATE BH 5	190	BGS	343200 396800
62	BGS Borehole BGS Reference SJ49NW 132 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 3	180	BGS	342900 396800
63	BGS Borehole BGS Reference SJ49NW 133 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 4	90	BGS	343000 396800
64	BGS Borehole BGS Reference SJ49NW 130 Drilled Length 6.1 metres Bore Name KNOWSLEY IND ESTATE BH 1	470	BGS	342600 396700
65	BGS Borehole BGS Reference SJ49NW 131 Drilled Length 4.57 metres Bore Name KNOWSLEY IND ESTATE BH 2	320	BGS	342700 396800
66	BGS Borehole BGS Reference SJ49NW 7 Drilled Length -1 metres Bore Name LIVERPOOL CORP. SHALLOW BORES	470	BGS	342600 396800
67	BGS Borehole BGS Reference SJ49NW 8 Drilled Length -1 metres Bore Name LIVERPOOL CORP. SHALLOW BORES	160	BGS	343000 396800
68	BGS Borehole BGS Reference SJ49NW 9 Drilled Length -1 metres Bore Name LIVERPOOL CORP. SHALLOW BORES	360	BGS	343300 396900



Map ID	Details		Estimated Distance from Site	Source	NGR
69	BGS Borehole		850	BGS	343700 397200
	BGS Reference	SJ49NW 11			
	Drilled Length	-1 metres			
	Bore Name	SIMONSWOOD TE. LIVERPOOL			
70	BGS Borehole		830	BGS	342200 396800
	BGS Reference	SJ49NW 6			
	Drilled Length	-1 metres			
	Bore Name	LIVERPOOL CORP. SHALLOW BORES			



Map ID	Details	Estimated Distance from Site	Source	NGR
3	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Other Oil Note: Knowsley Brook; Oil & Waste Water Incident Date: 8th December 1992 Incident Reference: 92450031 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 3 - Minor Incident	940	EA	342100 396600
4	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Miscellaneous - Colour Note: Knowsley Brook Incident Date: 13th August 1991 Incident Reference: 91440062 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 3 - Minor Incident	930	EA	342100 396700
5	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Other Oil Note: Knowsley Brook; Oil Film Incident Date: 26th June 1992 Incident Reference: 92440078 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 3 - Minor Incident	540	EA	342500 396600
5	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Knowsley Brook Incident Date: 23rd August 1994 Incident Reference: 94440121 Catchment Area: Alt Received Water: Not Given Cause: Other Incident/Unknown Severity: Category 2 - Significant Incident	540	EA	342500 396600
6	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Waste Oil Note: Knowsley Brook Incident Date: 11th December 1992 Incident Reference: 92450030 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 2 - Significant Incident	980	EA	342500 397500



Map ID	Details	Estimated Distance from Site	Source	NGR
7	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Miscellaneous - Other Note: Knowsley Brook; Cross Connections Incident Date: 7th August 1992 Incident Reference: 92440107 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 2 - Significant Incident	830	EA	343500 396000
8	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Miscellaneous - Unknown Note: Knowsley/Mill Brook Incident Date: 30th April 1993 Incident Reference: 93450054 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 3 - Minor Incident	750	EA	343500 396100
9	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Knowsley Brook Incident Date: 4th November 1993 Incident Reference: 93450132 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 2 - Significant Incident	580	EA	343600 396800
10	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Spillage; Accident - Static Site Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Chemicals - Paints / Dyes Note: Tributary Croxteth Bk; Food Dye Incident Date: 20th January 1992 Incident Reference: 92440006 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 3 - Minor Incident	680	EA	343000 396000
11	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Industrial Effluent Note: Knowsley Brook; Starch Solution Incident Date: 19th August 1993 Incident Reference: 93450108 Catchment Area: Alt Received Water: Not Given Cause: Unknown Severity: Category 2 - Significant Incident	900	EA	342300 397200



Map ID	Details	Estimated Distance from Site	Source	NGR
12	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Chemicals - Other Organic Note: Knowsley Brook; Starch Incident Date: 29th January 1994 Incident Reference: 94440013 Catchment Area: Alt Received Water: Not Given Cause: Mechanical Failure Severity: Category 2 - Significant Incident	960	EA	342300 397300
13	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Croxeth Brook Incident Date: 12th April 1994 Incident Reference: 94740672 Catchment Area: Alt Received Water: Not Given Cause: Accidental Spillage/Leakage Severity: Category 3 - Minor Incident	870	EA	342500 396000
14	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Spillage; Accident - Static Site Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Given Incident Date: 26th November 1994 Incident Reference: 94440163 Catchment Area: Alt Received Water: Not Given Cause: Accidental Spillage/Leakage Severity: Category 3 - Minor Incident	810	EA	343400 397400
15	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Spillage; Accident In Transit Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Other Chemicals Note: Knowsley Brook; Photographic Liquid Incident Date: 9th September 1995 Incident Reference: 95440151 Catchment Area: Alt Received Water: Not Given Cause: Accidental Spillage/Leakage Severity: Category 3 - Minor Incident	520	EA	343000 397200
16	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Merseyside Authority: Environment Agency North West Region Pollutant: Oils - Other Fuel Oil Note: Knowsley Brook; Oil Incident Date: 30th August 1996 Incident Reference: 96440127 Catchment Area: Winster Received Water: Not Given Cause: Accidental Spillage/Leakage Severity: Category 3 - Minor Incident	280	EA	343300 396600



Map ID	Details	Estimated Distance from Site	Source	NGR
17	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Merseyside Authority: Environment Agency North West Region Pollutant: Chemicals - Other Organic Note: Knowsley Brook; Maize Starch Washing Incident Date: 14th August 1996 Incident Reference: 96440113 Catchment Area: Alt Received Water: Not Given Cause: Treatment System Failure Severity: Category 3 - Minor Incident	980	EA	342200 397200
18	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Merseyside Authority: Environment Agency North West Region Pollutant: Chemicals - Other Inorganic Note: Knowsley Brook; Glass Cutting And Grind Incident Date: 14th August 1996 Incident Reference: 96440114 Catchment Area: Alt Received Water: Not Given Cause: Not Given Severity: Category 3 - Minor Incident	720	EA	343400 397300
19	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Not Given Location: Merseyside Authority: Environment Agency North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Knowsley Brook; Oil Incident Date: 22nd January 1996 Incident Reference: 96440010 Catchment Area: Alt Received Water: Not Given Cause: Not Given Severity: Category 3 - Minor Incident	820	EA	343100 397500
20	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Industrial Premises Location: Rear Of Caddick Road, Knowsley Authority: Environment Agency North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Tributary Croxteth Br; Bits Of Plastic Incident Date: 20th February 1997 Incident Reference: 97440033 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: Land Runoff Severity: Category 3 - Minor Incident	850	EA	342700 395900
21	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Construction Location: At Culvert Up Stream End, Mill Brook, Knowsley Authority: Environment Agency North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Knowsley Brook/Mill Brook; Inert Solids/Silt Incident Date: 4th March 1997 Incident Reference: 97440035 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: In River Works Severity: Category 3 - Minor Incident	510	EA	343200 396200



Map ID	Details	Estimated Distance from Site	Source	NGR
22	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Garage Premises Location: C Site Authority: Environment Agency North West Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Knowsley Bk; Vehicle Washings Incident Date: 17th January 1997 Incident Reference: 97440011 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: Deliberate Disposal To Drain Severity: Category 2 - Significant Incident	900	EA	343400 397500
22	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Garage Premises Location: Oil From East Lancs Outfall Authority: Environment Agency North West Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Knowsley Bk; Vehicle Washings Incident Date: 17th January 1997 Incident Reference: 97440012 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: Deliberate Disposal To Drain Severity: Category 2 - Significant Incident	900	EA	343400 397500
22	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Garage Premises Location: East Lancashire Road Authority: Environment Agency North West Region Pollutant: Oils - Other Oil Note: Outfall; Knowsley Brook; Oil Incident Date: 16th January 1997 Incident Reference: 97440010 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: Unknown Severity: Category 2 - Significant Incident	900	EA	343400 397500
23	Pollution Incident to Controlled Waters Name: Unknown Operator Property Type: Unknown Location: Rear Of News International Authority: Environment Agency North West Region Pollutant: Oils - Unknown Note: Not Given Incident Date: 24th September 1998 Incident Reference: CE980965 Catchment Area: Alt Received Water: Freshwater Stream/River Cause: Unknown Severity: Category 3 - Minor Incident	430	EA	342600 396700
24	Waste Transfer Site Licence Holder: Contract Chemicals (knowsley) Ltd Licence Reference: 442/01 Site: Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Operator: 14 Bold St, Warrington, Cheshire WA1 1DL Authority: Environment Agency - North West Region South Area Site Category: Transfer Licence Status: No valid licence (ie surrender/return/expiry/revocation/lapse of CoPA licence or planning) Waste types on Site: Authorised waste: Solid Special W.Prod.On Site Max.Stor Max.Waste Permitted By Licence Liquid Special W.Prod.On Site Max.Stor	40	EA	343100 396700
71	Air Pollution Control Name: Otis Plc Location: Liverpool Works, Moorgate Road, Liverpool, Merseyside L33 7XW Authority: Knowsley Metropolitan Borough Council Permit Reference: B3/0992/6.5/05 Permit Date: 1st September 1992 Process Type: Local Authority Air Pollution Control Description: PG6/23 Coating of metal and plastic Status: Application has been authorised and any conditions apply to the operator	870	LA	342400 397200



Map ID	Details	Estimated Distance from Site	Source	NGR
72	Air Pollution Control Name: Pentre Timber Drums Ltd Location: Unit 50, Randles Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HX Authority: Knowsley Metropolitan Borough Council Permit Reference: B1/0192/6.7/11 Permit Date: 1st January 1992 Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products Status: Application has been authorised and any conditions apply to the operator	780	LA	342400 396200
72	Air Pollution Control Name: Pentre Timber Drums Ltd Location: Unit 50, Randles Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HX Authority: Knowsley Metropolitan Borough Council Permit Reference: B1/0192/6.7/11 Permit Date: 1st January 1992 Process Type: Local Authority Air Pollution Control Description: PG 1/12 Combustion of fuel manufactured from/ or comprised of, solid waste in appliances between 0.4-3MW thermal input Status: Application has been authorised and any conditions apply to the operator	780	LA	342400 396200
73	Air Pollution Control Name: Delco Electronics Location: Moorgate Road, Liverpool, Merseyside L33 7XL Authority: Knowsley Metropolitan Borough Council Permit Reference: B2/0392/2.2/07 Permit Date: 1st March 1992 Process Type: Local Authority Air Pollution Control Description: PG2/4 Iron, steel and non-ferrous metal foundry processes Status: Authorisation either revoked or cancelled	960	LA	342500 397500
74	Air Pollution Control Name: Accident Repair Centre Ltd Location: Unit 5, Britonwood Trading Estate, Abercrombie Road, Liverpool, Merseyside L33 7YN Authority: Knowsley Metropolitan Borough Council Permit Reference: E/0695/6.5/1 Permit Date: 1st June 1995 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles Status: Authorisation revoked	740	LA	342900 397400
75	Air Pollution Control Name: News International Ltd Location: Killing Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HN Authority: Knowsley Metropolitan Borough Council Permit Reference: B3/0992/6.5/09 Permit Date: 1st September 1992 Process Type: Local Authority Air Pollution Control Description: PG6/16 Printworks Status: Authorisation revoked	290	LA	343200 396500
76	Air Pollution Control Name: Tilcon Ltd Location: Unit A1-A2, Britonwood Trading Estate, Hornhouse Lane, Liverpool, Merseyside L33 7YQ Authority: Knowsley Metropolitan Borough Council Permit Reference: B2/0392/3.4/04 Permit Date: 1st March 1992 Process Type: Local Authority Air Pollution Control Description: PG3/7 Exploitation of vermiculite and expansion of perlite Status: Application has been authorised and any conditions apply to the operator	660	LA	343400 397200
77	Air Pollution Control Name: Wentworth Furniture Ltd Location: Randles Road, Knowsley, Merseyside L34 9HX Authority: Knowsley Metropolitan Borough Council Permit Reference: B1/1091/6.7/06 Permit Date: 1st October 1991 Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products Status: Authorisation revoked	720	LA	342500 396200



Map ID	Details	Estimated Distance from Site	Source	NGR
78	Air Pollution Control Name Dawson Colourmatch Ltd Location Ainsworth Lane, Knowsley, Merseyside L34 9EU Authority Knowsley Metropolitan Borough Council Permit Reference B3/1092/6.5/16 Permit Date 1st October 1992 Process Type Local Authority Air Pollution Control Description PG6/18 Paper coating Status Authorisation either revoked or cancelled	460	LA	342600 396500
79	Integrated Pollution Control Name Yardley Plastics Ltd Location Caddick Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HP Authority Environment Agency North West Region Permit Reference AN8704 Dated 22nd July 1994 Process Type Application since found to be exempt from IPC Description 4.5 A (G) Inorganic Chemical processes within the Chemical Industry Status Application since found to be exempt from IPC	710	EA	342800 396000
80	Integrated Pollution Control Name Contract Chemicals (knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BA9827 Dated 30th November 1998 Process Type IPC new application Description 4.2 A (J) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	70	EA	343100 396700
80	Integrated Pollution Control Name Contract Chemicals (knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BE4088 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (J) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	70	EA	343100 396700
81	Integrated Pollution Control Name Contract Chemicals (Knowsley)Ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AN4555 Dated 9th June 1994 Process Type Application since found to be exempt from IPC Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application since found to be exempt from IPC	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AQ8123 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AF9650 Dated 13th April 1995 Process Type IPC new application Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AK3129 Dated 28th June 1995 Process Type IPC application for process that was regulated by HMIP for air releases under previous legislation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700



Map ID	Details	Estimated Distance from Site	Source	NGR
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AQ4772 Dated 28th April 1995 Process Type IPC minor (non-substantial) variation to previous variation Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AR0748 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AM7940 Dated 6th March 1995 Process Type IPC minor (non-substantial) variation to previous variation Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AL9220 Dated 14th March 1996 Process Type IPC new application Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AS0871 Dated 25th September 1995 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AT5496 Dated 9th July 1996 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AF7096 Dated 5th April 1994 Process Type IPC new application Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AV0568 Dated 8th July 1996 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AW0440 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700



Map ID	Details	Estimated Distance from Site	Source	NGR
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AW0458 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AZ7505 Dated 30th November 1998 Process Type IPC new application Description 4.5 A (M) Inorganic Chemical processes within the Chemical Industry Status Authorisation superseded by a substantial or non substantial variation	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (Knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BA6119 Dated 25th February 1998 Process Type IPC new application Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application has met the requirements for authorisation (but not yet authorised)	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (Knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BA9509 Dated 23rd April 1998 Process Type IPC major (substantial) variation Description 4.5 A (M) Inorganic Chemical processes within the Chemical Industry Status Application has met the requirements for authorisation (but not yet authorised)	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BD1326 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BD1130 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BD6352 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley)ltd Location Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BD6379 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700
81	Integrated Pollution Control Name Contract Chemicals (knowsley) Ltd Location Penrhyn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BC2149 Dated 1st March 1999 Process Type IPC new application Description 4.4 A (D) processes involving Halogens within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700



Map ID	Details	Estimated Distance from Site	Source	NGR
81	Integrated Pollution Control Name Contract Chemicals (knowsley) Ltd Location Penryn Road, Knowsley Industrial Park, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference BE1259 Dated 30th November 1998 Process Type IPC minor (non-substantial) variation to previous variation Description 4.5 A (M) Inorganic Chemical processes within the Chemical Industry Status Application has been authorised and any conditions apply to the operator	10	EA	343000 396700
82	Registered Radioactive Substance Name Delco Electronics Overseas Corporation Location Moorgate Road, Liverpool, Merseyside L33 7XL Authority Environment Agency North West Region Permit Reference AC0621 Dated 23rd April 1992 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status Authorisation superseded by a substantial or non substantial variation	960	EA	342500 397500
82	Registered Radioactive Substance Name Delco Electronics Overseas Corporation Location Moorgate Road, Liverpool, Merseyside L33 7XL Authority Environment Agency North West Region Permit Reference AX6575 Dated 25th February 1997 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status Application has been authorised and any conditions apply to the operator	960	EA	342500 397500
83	Registered Radioactive Substance Name Accident Repair Centre Ltd Location Unit 5 Abercrombie Road, Britonwood Trading Estate, Kirkby, Liverpool, Merseyside L33 7YN Authority Environment Agency North West Region Permit Reference AT4341 Dated 25th September 1995 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status Authorisation either revoked or cancelled	750	EA	342900 397400
83	Registered Radioactive Substance Name Accident Repair Centre Ltd Location Unit 5, Abercrombie Road, Britonwood Trading Estate, Liverpool, Merseyside L33 7YN Authority Environment Agency North West Region Permit Reference AX4726 Dated 11th February 1997 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under the Act of an open source which is also the subject of an authorisation Status Application has been authorised and any conditions apply to the operator	750	EA	342900 397400
84	Registered Radioactive Substance Name Makro Self Service Wholesalers Ltd Location Britonwood Trading Estate, Horn House Lane, Kirkby, Liverpool, Merseyside L33 7YQ Authority Environment Agency North West Region Permit Reference AR9362 Dated 4th July 1995 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status Application has been authorised and any conditions apply to the operator	620	EA	343200 397300
85	Registered Radioactive Substance Name Kelco Biospecialities Ltd Location Penryn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority Environment Agency North West Region Permit Reference AS1746 Dated 1st April 1991 Process Type Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status Application has been authorised and any conditions apply to the operator	170	EA	343200 396700



Map ID	Details	Estimated Distance from Site	Source	NGR
85	Registered Radioactive Substance Name: Kelco Biospecialities Ltd Location: Penrhyn Road, Knowsley Industrial Park South, Prescot, Merseyside L34 9HY Authority: Environment Agency North West Region Permit Reference: AS2556 Dated 1st April 1991 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under S7 or S10 RSA for 1 or more closed sources =< 4 Terabecquerels also for storage in transit Status: Application has been authorised and any conditions apply to the operator	170	EA	343200 396700
86	Planning Hazardous Substance Consent Name: Go Gas Co Ltd Location: Ainsworth Lane, Knowsley Industrial Park South, Knowsley, Merseyside L34 9EU Authority: Knowsley Metropolitan Borough Council Application Ref.: KHSC/2 Hazardous Substance: Part C, Flammable Substance (Not in Parts A&B), Liquefied petroleum gas held at >1.4 bar where amount held is greater than or equal to 25 tonnes Amount: 260 tonnes Application Date: 2nd September 1992 Decision: Deemed consent granted between June 1992 and November 1992	430	LA	342600 396600
87	Planning Hazardous Substance Consent Name: Total Gas Location: Ainsworth Lane, Kirby, Prescot, Merseyside L34 9EU Authority: Knowsley Metropolitan Borough Council Application Ref.: HSC/95/00644 Hazardous Substance: Part C, Flammable Substance (Not in Parts A&B), Liquefied petroleum gas held at >1.4 bar where amount held is greater than or equal to 25 tonnes Amount: 360 tonnes Application Date: 2nd November 1995 Decision: 14th June 1996 : New application granted conditionally	440	LA	342600 396600
88	Planning Application (of possible contaminative use) Name: Factory (Extension) Location: Moorgate Road, Kirkby, Liverpool, Merseyside L33 7XL Authority: Knowsley Metropolitan Borough Council Description: Heavy Industrial Application Ref.: 95/564 Dated 14th September 1995 Status: Detailed Plans Submitted Site Area: n/a	970	LA	342500 397500
88	Planning Application (of possible contaminative use) Name: Industrial Units Location: Moorgate Road, Kirkby, Liverpool, Merseyside L33 7XJ Authority: Knowsley Metropolitan Borough Council Description: Light Industrial Application Ref.: APP/97/00285 Dated 11th June 1997 Status: Detailed Plans Submitted Site Area: n/a	970	LA	342500 397500
89	Planning Application (of possible contaminative use) Name: Industrial Location: Penrhyn Road, Knowsley Ind. Estate, Knowsley, Prescot, Merseyside L34 9HY Authority: Knowsley Metropolitan Borough Council Description: Heavy Industrial Application Ref.: APP/96/00196 Dated 15th April 1996 Status: Detailed Plans Submitted Site Area: n/a	80	LA	343100 396700
90	Planning Application (of possible contaminative use) Name: Light Industrial(Extension) Location: North West Cables Ltd, School Lane, Knowsley, Prescot, Merseyside L34 9HD Authority: Knowsley Metropolitan Borough Council Description: Light Industrial Application Ref.: APP/95/00281 Dated 22nd May 1995 Status: Detailed Plans Submitted Site Area: 1.00 hectares	830	LA	342300 396300
91	Planning Application (of possible contaminative use) Name: Industrial (Extension) Location: Randles Road, Knowsley Business Park, Prescot, Merseyside L34 9EZ Authority: Knowsley Metropolitan Borough Council Description: Light Industrial Application Ref.: 98/00014 Dated 5th March 1998 Status: Detailed Plans Submitted Site Area: 5.00 hectares	970	LA	342100 396400



Map ID	Details	Estimated Distance from Site	Source	NGR
92	Planning Application (of possible contaminative use) Name: Factory (Extension) Location: Nutrasweet Leco Co, Penrhyn Road, Knowsley, Prescot, Merseyside L34 9HY Authority: Knowsley Metropolitan Borough Council Description: Heavy Industrial Application Ref: 97/00066 Dated 20th February 1997 Status: Detailed Plans Submitted Site Area: n/a	180	LA	343200 396700
93	Planning Application (of possible contaminative use) Name: Industrial Location: Kitling Road, Knowsley Business Park, Prescot, Merseyside L34 Authority: Knowsley Metropolitan Borough Council Description: Factories/Spec Ind Application Ref: 98/00570 Dated 19th October 1998 Status: Detailed Plans Submitted Site Area: 1.00 hectares	340	LA	343000 396300
94	Planning Application (of possible contaminative use) Name: Sub-Station Location: Caddick Road, Knowsley Business Park, Prescot, Merseyside L34 9 Authority: Knowsley Metropolitan Borough Council Description: Power/Sub Stations Application Ref: 98/00599 Dated 12th November 1998 Status: Detailed Plans Submitted Site Area: n/a	570	LA	342800 396200
95	Potentially Contaminative Industrial Use Name: Totalgaz Location: Ainsworth Lane, Knowsley, Prescot, Merseyside L34 9EU Classification: Gas manufacture & distribution	430	Thomsons Trade Directory 1997	342600 396600
96	Potentially Contaminative Industrial Use Name: Colormatrix Uk Ltd Location: 9 Unity Grove, Knowsley Ind Park South, Prescot, Merseyside L34 9GT Classification: Paints, varnishes, printing inks, mastics & sealants [manufacture]	600	Thomsons Trade Directory 1995	342500 396500
97	Potentially Contaminative Industrial Use Name: Wallis Manufacturing Chemists Location: Randles Road, Knowsley Ind Park South, Prescot, Merseyside L34 9HX Classification: Pharmaceuticals manufacturing	790	Thomsons Trade Directory 1995	342400 396200
98	Potentially Contaminative Industrial Use Name: Dawson Colourmatch Ltd Location: 19 Ainsworth Lane, Knowsley Ind Park South, Prescot, Merseyside L34 9EU Classification: Paints, varnishes, printing inks, mastics & sealants [manufacture]	380	Thomsons Trade Directory 1995	342800 396400
99	Potentially Contaminative Industrial Use Name: Rotofinish Rosler Location: 1 Unity Grove, School Lane, Knowsley Indust Park, Prescot, Merseyside L34 9GT Classification: Metals: treatment & coating inc. electroplating	680	Thomsons Trade Directory 1997	342400 396500

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Ordnance Survey

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SO16 4GU

Telephone 023 8079 2000
Fax 023 8079 2404

Report Reference: 23807-1**Site Address:** Contract Chemicals Ltd, Penrhyn Road, Knowsley Bus**Company Name:****Grid Reference:** 343032 396683

EA (Water) Prosecutions

The following company(s) have been prosecuted as shown below, however, from the information supplied, Landmark is unable to provide a National Grid Reference for the record(s).

Name	Sterling Colours Limited
Address	Ditton Brook, Greensbridge Lane, Tarbock Green, PRESCOT, Merseyside, L35 1QH
Authority	Environment Agency, North West Region
Details	EA News Release 05/03/99, Caused polluting matter (namely blue dye) to enter Ditton Brook on 4th August 1998.
Hearing Date	05-Mar-99
Verdict	Guilty
Fine	£4,000.00
Costs	£1,120.82

**EnviroCheck Report on:**

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside
L34 9HY

National Grid Reference :

343032, 396683

Prepared For :

AIG Consultants Limited
PIER HOUSE
WALLGATE
WIGAN
WN3 4AL

Your Reference :

Robert Tinsley

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Ordnance Survey County Series Published 1850

County	Mapsheet	Scale	Year
Lancashire And Furness	100_00	1:10,560	1850
Lancashire And Furness	107_00	1:10,560	1850

Ordnance Survey County Series Published 1894

County	Mapsheet	Scale	Year
Lancashire And Furness	100_SW	1:10,560	1894
Lancashire And Furness	107_NW	1:10,560	1894

Ordnance Survey County Series Published 1909

County	Mapsheet	Scale	Year
Lancashire And Furness	100_SW	1:10,560	1909
Lancashire And Furness	107_NW	1:10,560	1909

Ordnance Survey County Series Published 1928

County	Mapsheet	Scale	Year
Lancashire And Furness	100_SW	1:10,560	1928
Lancashire And Furness	107_NW	1:10,560	1928

Ordnance Survey Plan Published 1956

National Grid Series	Mapsheet	Scale	Year
Sheet	SJ49NW	1:10,560	1956

Ordnance Survey Plan Published 1966

National Grid Series	Mapsheet	Scale	Year
Sheet	SJ49NW	1:10,560	1966

Ordnance Survey Plan Published 1978

National Grid Series	Mapsheet	Scale	Year
Sheet	SJ49NW	1:10,000	1978



Ordnance Survey Plan Published 1990

National Grid Series	Mapsheet	Scale	Year
Sheet	SJ49NW	1:10,000	1990

EnviroCheck Report on:

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside
L34 9HY

National Grid Reference :

343032, 396683

Prepared For :

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Your Reference :

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Ordnance Survey County Series Published 1893

County	Mapsheet	Scale	Year
Lancashire And Furness	100_13	1:2,500	1893

Ordnance Survey County Series Published 1908

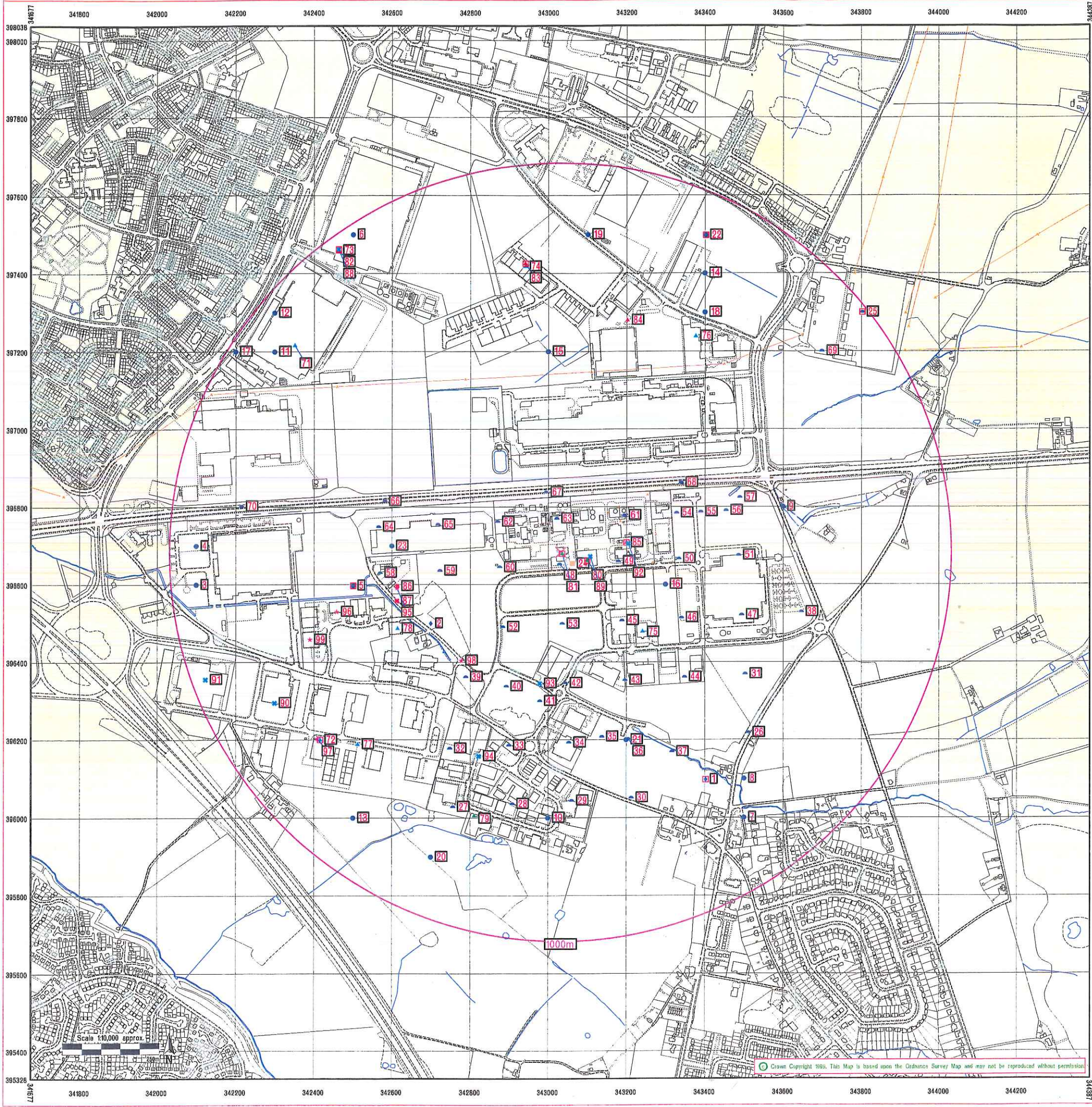
County	Mapsheet	Scale	Year
Lancashire And Furness	100_13	1:2,500	1908

Ordnance Survey County Series Published 1927

County	Mapsheet	Scale	Year
Lancashire And Furness	100_13	1:2,500	1927

Ordnance Survey County Series Published 1937

County	Mapsheet	Scale	Year
Lancashire And Furness	100_13	1:2,500	1937



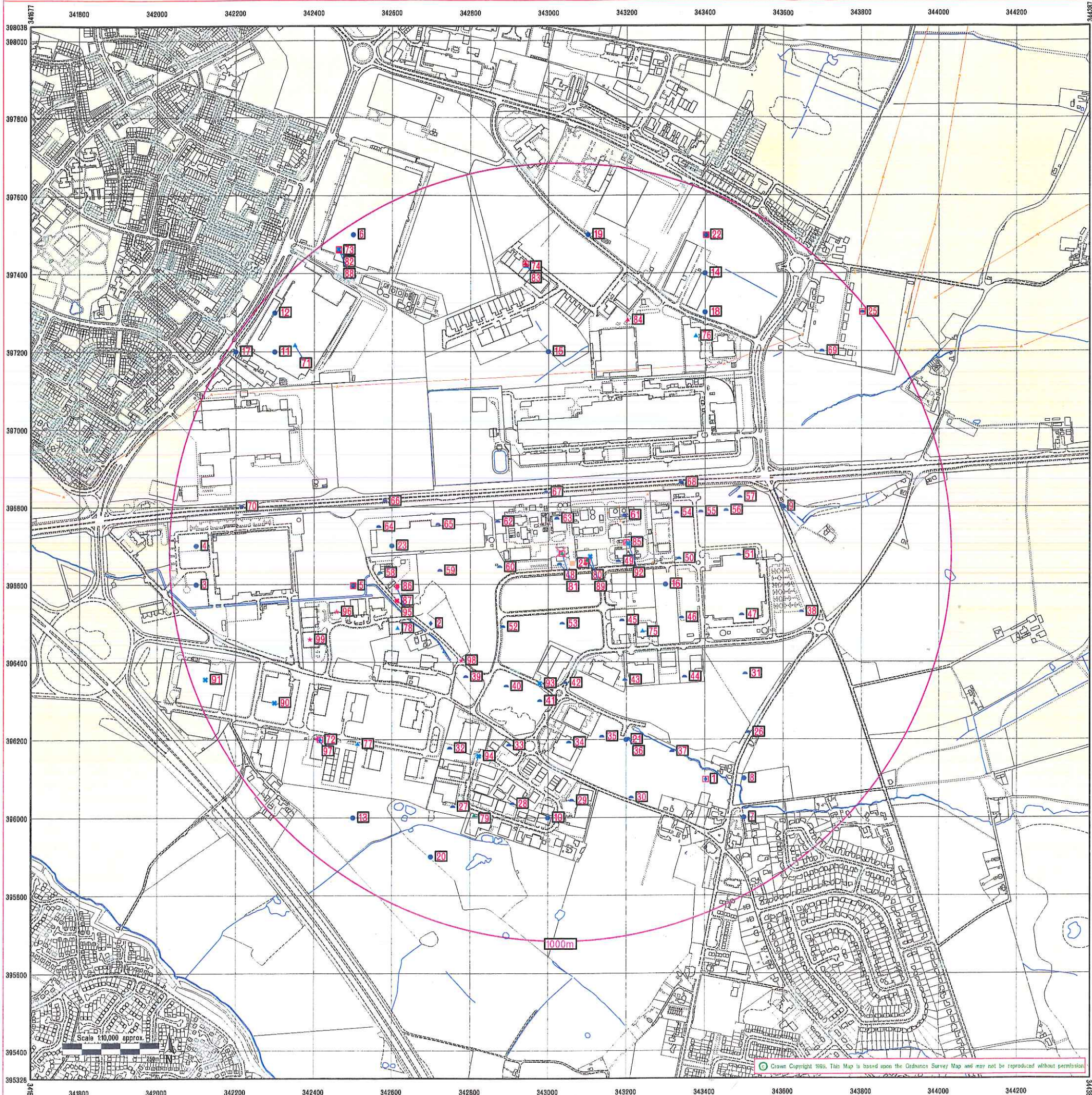
CLIENT DETAILS Order No. ES23807-1
Customer Ref: Robert Tinsley
AIG Consultants Limited
PIER HOUSE WALLGATE
WIGAN
WN3 4AL

SITE DETAILS Grid Reference 343032 396683
Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside L34 9HY

KEY TO THE LEGEND DATABASE

- | SITE SETTING | INDUSTRIAL SETTING |
|---------------------------------------|--|
| × Specified Site | ▲ Integrated Pollution Control |
| ○ Buffer | ▲ Air Pollution Control |
| 8 Reference Number | ◆ Red List Discharge Consent |
| □ Several of Type at Location | ▲ Enforcement or Prohibition Notice |
| ▲ Pylon or Mast | ▲ Prosecution Relating to Authorised Process |
| ENVIRONMENTAL SETTING | |
| ● Landfill | ▲ Registered Radioactive Substance |
| ▼ BGS Recorded Landfill Site | ✕ Planning Application (of Possible Contaminative Use) |
| ▼ BGS Recorded Mineral Site | ■ Waste Treatment or Disposal Site |
| ● BGS Borehole | ■ Waste Transfer Site |
| ~ River Network and Water Feature | ▲ Integrated Pollution Control Registered Waste Site |
| ◆ Water Abstraction | ✕ Planning Hazardous Substance Consent |
| ◆ Discharge Consent | ✕ Planning Hazardous Substance Enforcement |
| ● Site of Special Scientific Interest | ★ Potentially Contaminative Use |
| | ◆ Prosecution Relating to Controlled Waters |
| | ● Pollution Incident Relating to Controlled Waters |

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CLIENT DETAILS Order No. ES23807-1
Customer Ref: Robert Tinsley
AIG Consultants Limited
PIER HOUSE WALLGATE
WIGAN
WN3 4AL

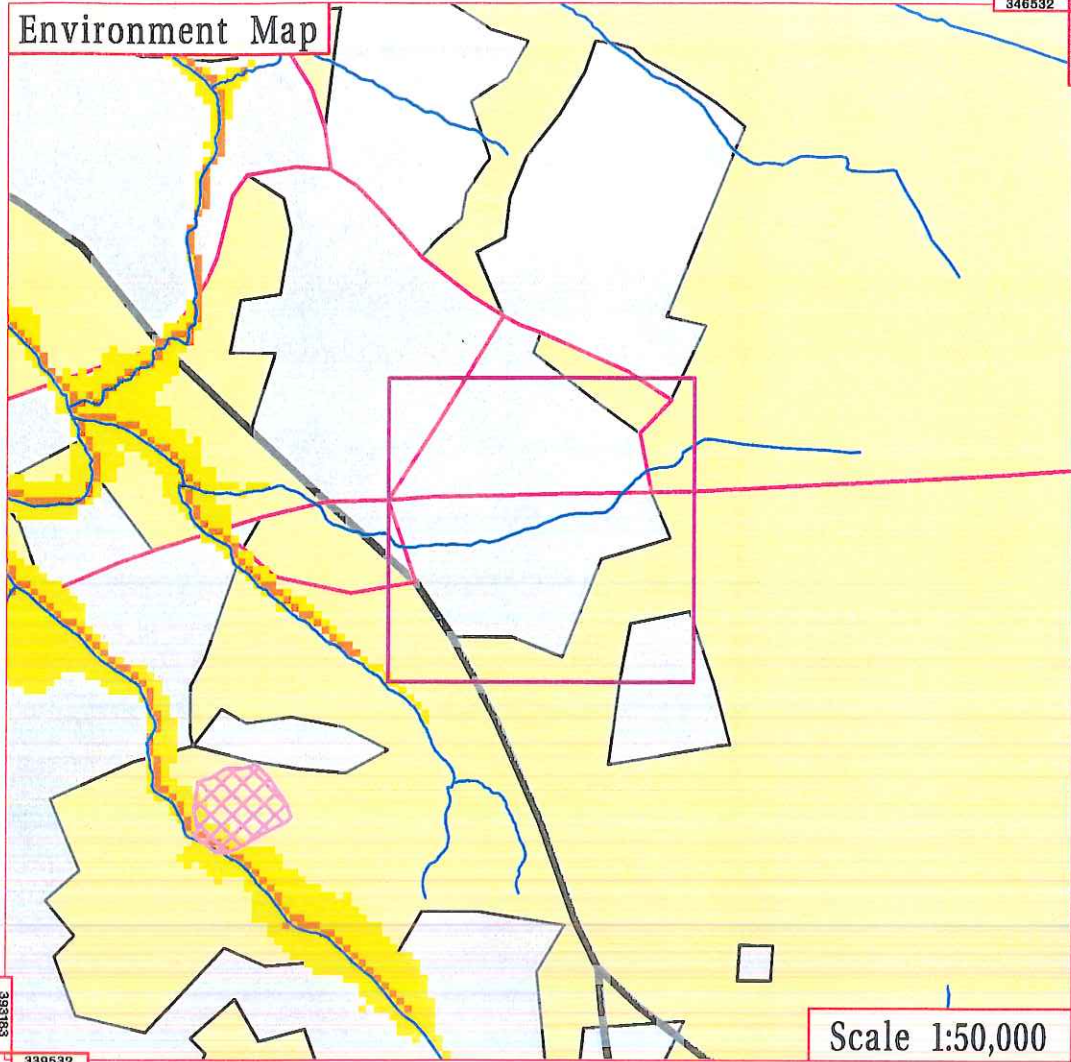
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Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside L34 9HY

KEY TO THE LEGEND DATABASE

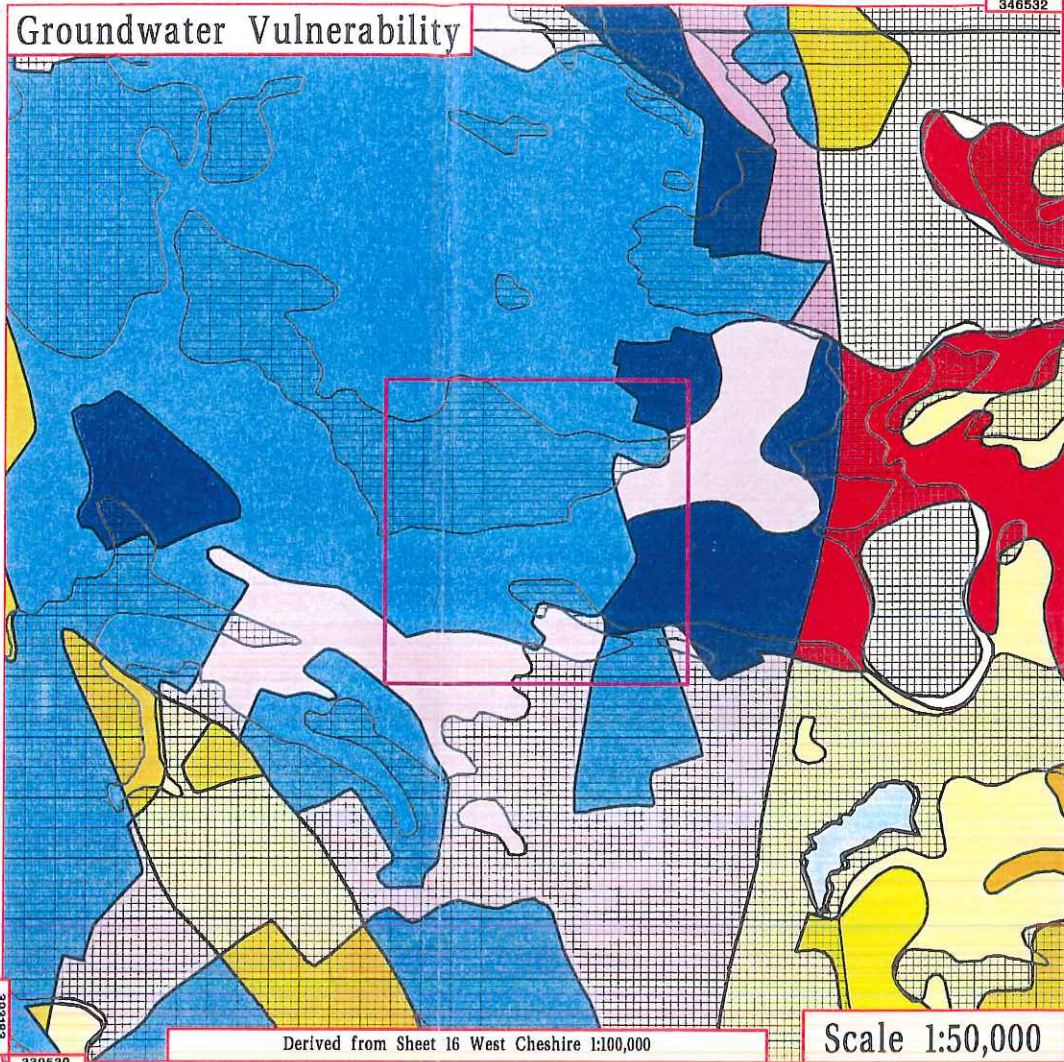
- | SITE SETTING | INDUSTRIAL SETTING |
|---------------------------------------|--|
| × Specified Site | ▲ Integrated Pollution Control |
| ○ Buffer | ▲ Air Pollution Control |
| 8 Reference Number | ◆ Red List Discharge Consent |
| □ Several of Type at Location | ▲ Enforcement or Prohibition Notice |
| ▲ Pylon or Mast | ▲ Prosecution Relating to Authorised Process |
| ENVIRONMENTAL SETTING | |
| ● Landfill | ▲ Registered Radioactive Substance |
| ▼ BGS Recorded Landfill Site | ✕ Planning Application (of Possible Contaminative Use) |
| ▼ BGS Recorded Mineral Site | ■ Waste Treatment or Disposal Site |
| ● BGS Borehole | ■ Waste Transfer Site |
| ~ River Network and Water Feature | ▲ Integrated Pollution Control Registered Waste Site |
| ◆ Water Abstraction | ✕ Planning Hazardous Substance Consent |
| ◆ Discharge Consent | ✕ Planning Hazardous Substance Enforcement |
| ● Site of Special Scientific Interest | ★ Potentially Contaminative Use |
| | ◆ Prosecution Relating to Controlled Waters |
| | ● Pollution Incident Relating to Controlled Waters |

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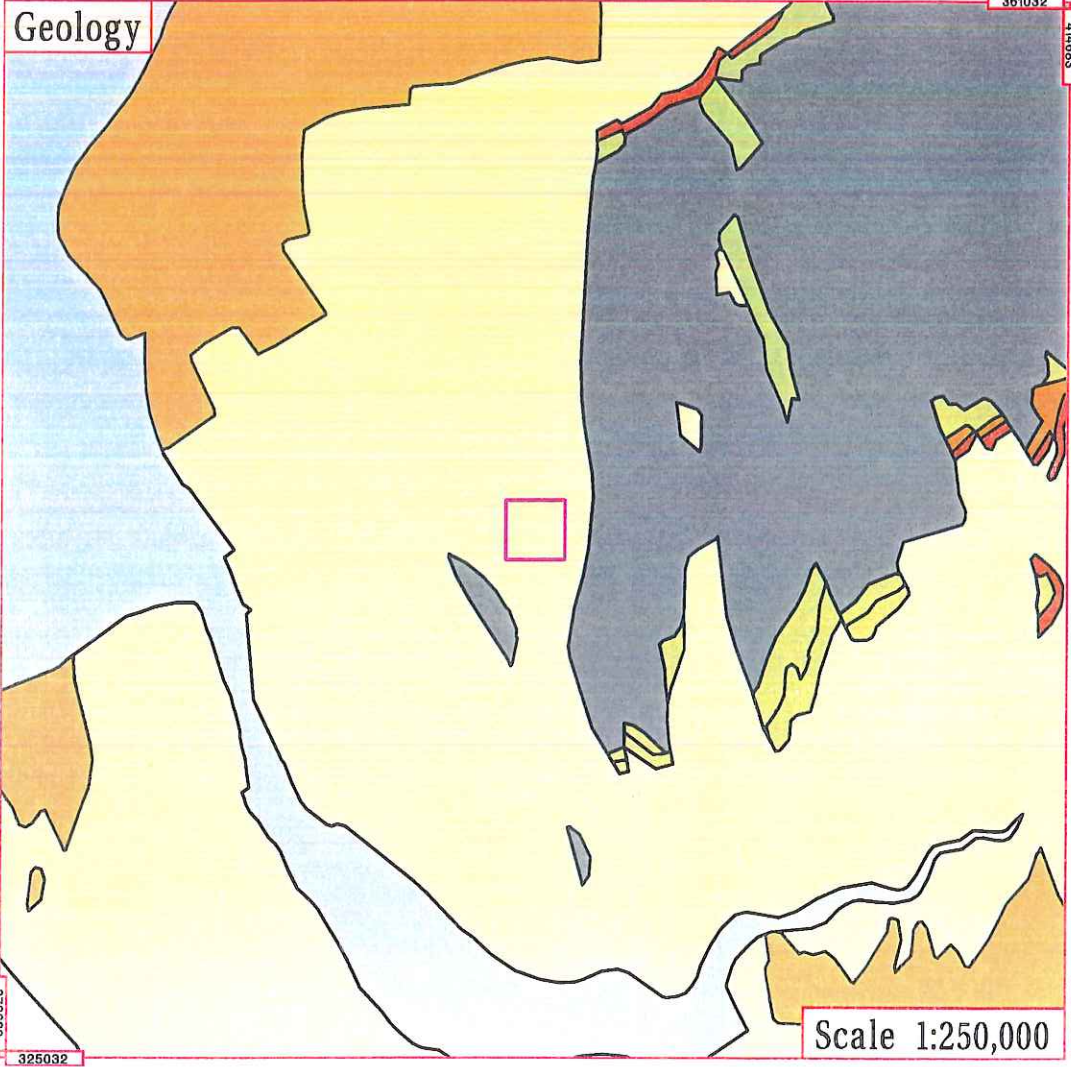
Environment Map



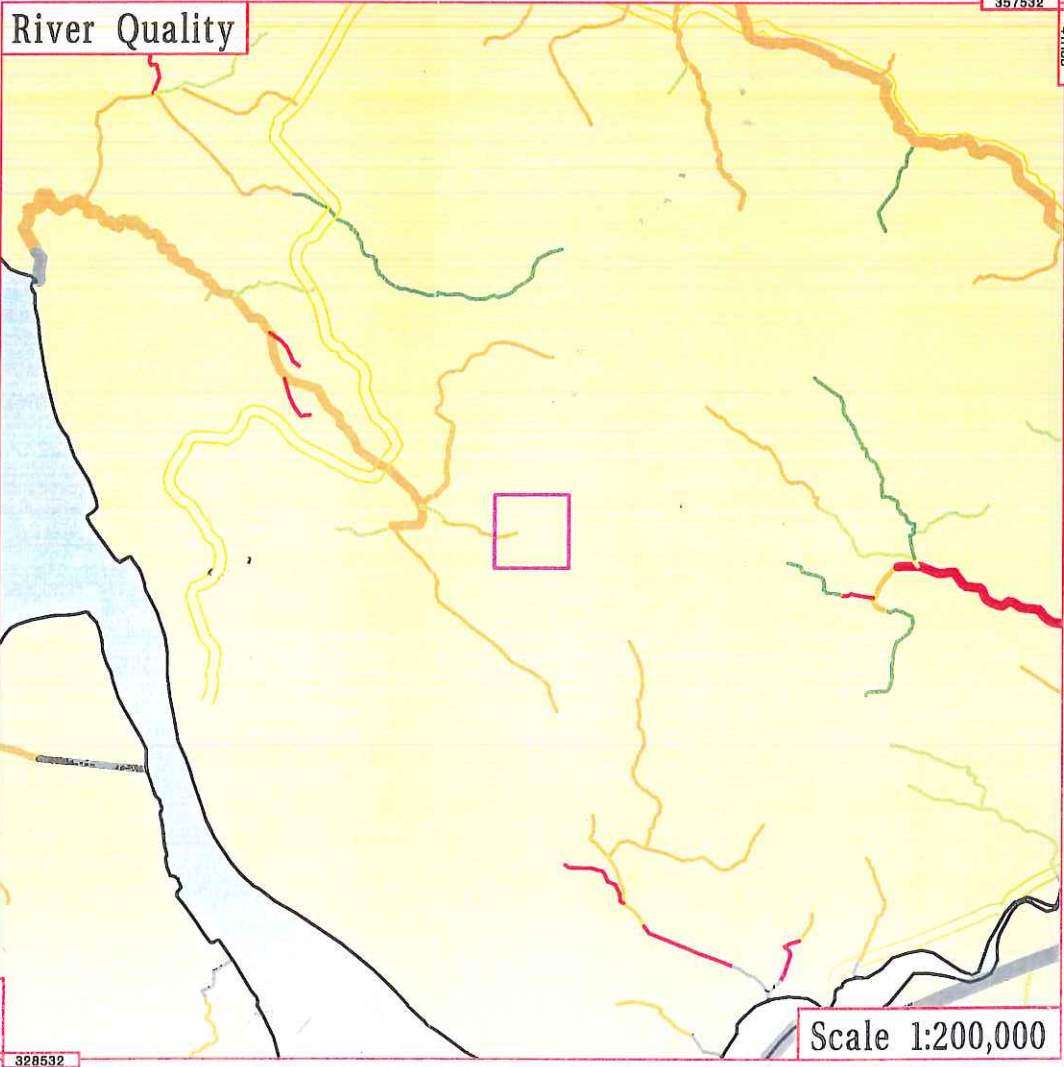
Groundwater Vulnerability



Geology



River Quality



EnviroCheck

Environmental Site Sensitivity Data

CLIENT DETAILS

Order No. ES23807-1

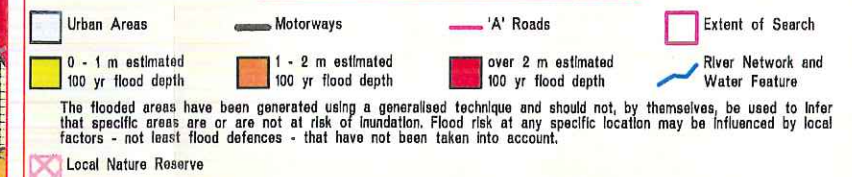
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Guide to the Environment Map

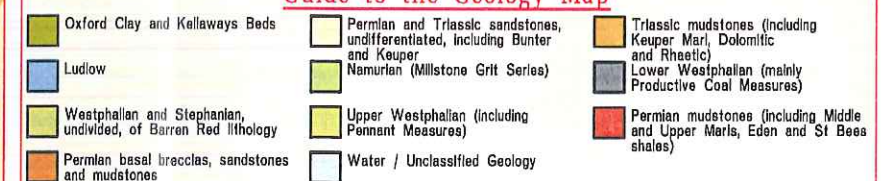


Guide to the Groundwater Vulnerability Map

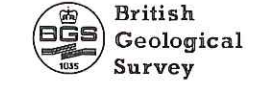
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Guide to the Geology Map



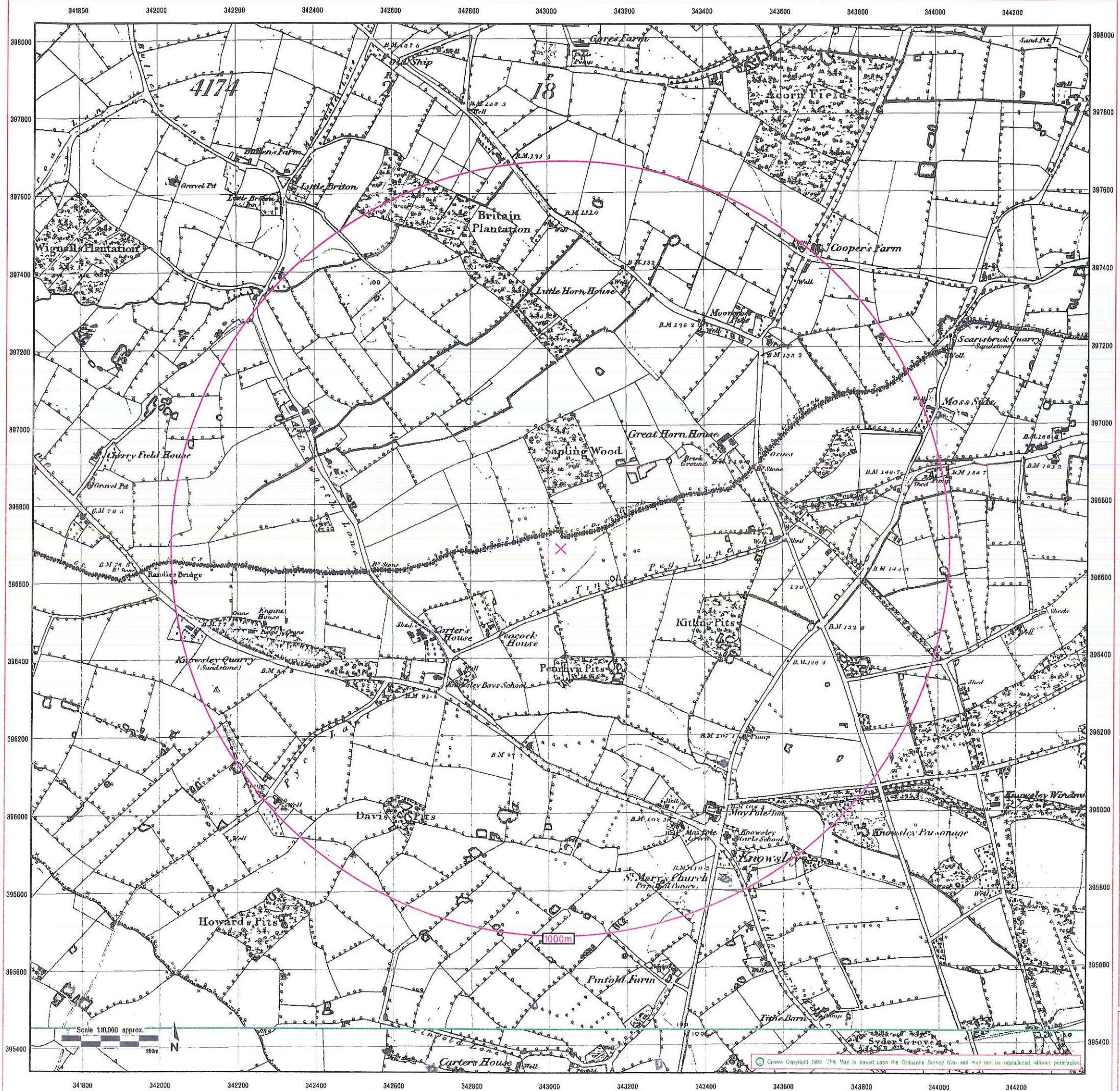
Guide to the River Quality Map



Value Added Reseller

Value Added Reseller

Produced by Landmark Information Group Limited. Tel: 01392 441729 Fax: 01392 441709



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Environmental Site Sensitivity Data

CLIENT DETAILS

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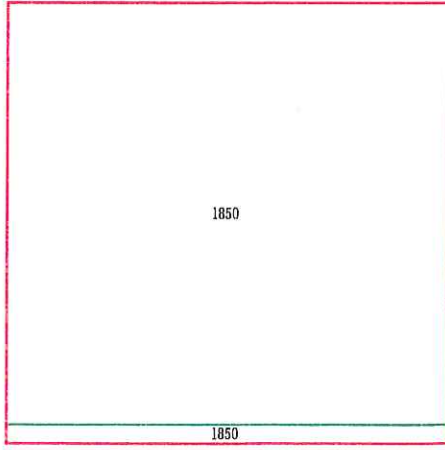
Historical Map Legend

Arrow denotes flow of water

LANCASHIRE AND FURNESS county

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:50,000 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

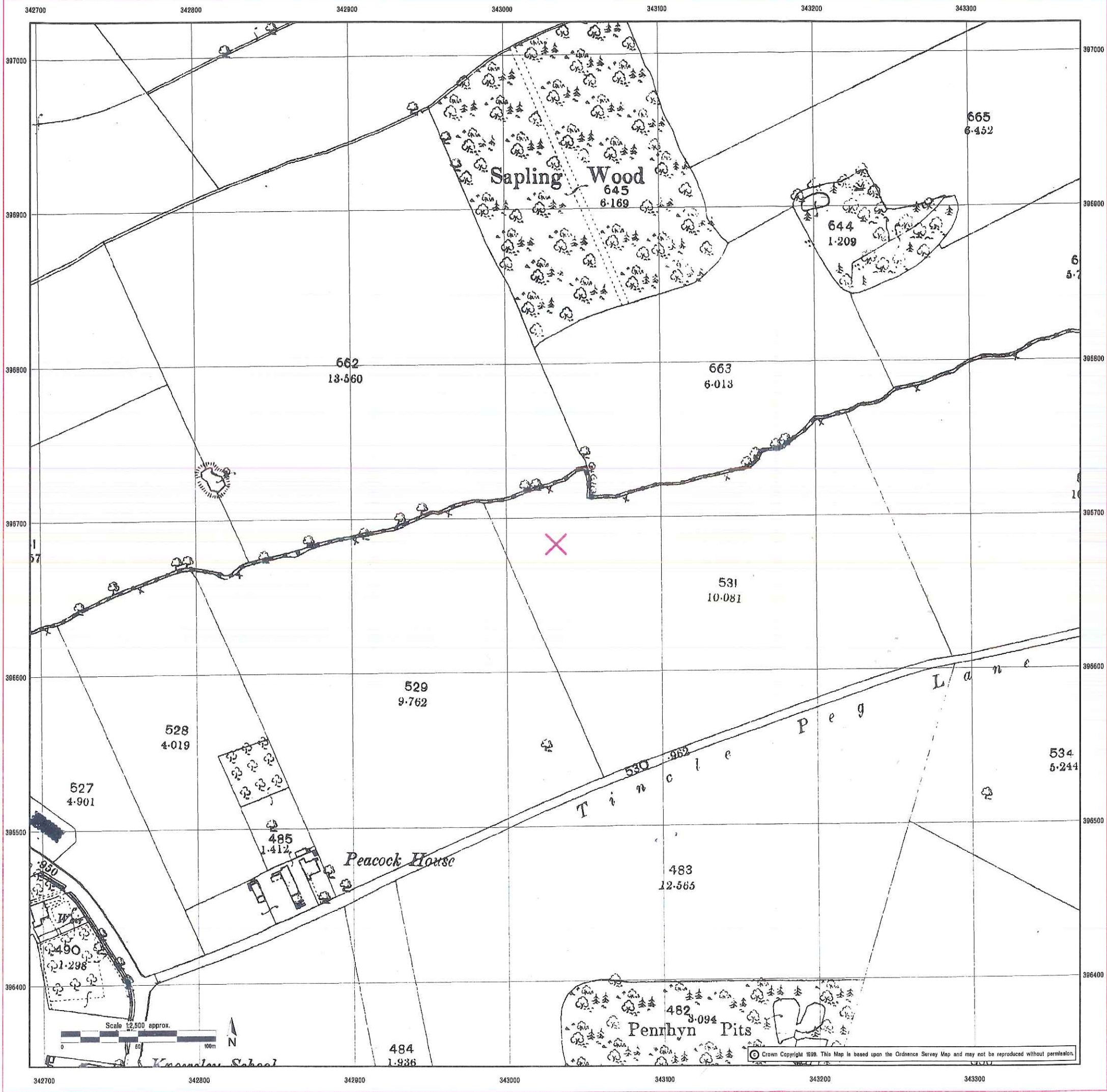
In the late 1940's, a Provisional Edition was produced, which updated the 1:50,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:50,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.



Date(s) of Publication



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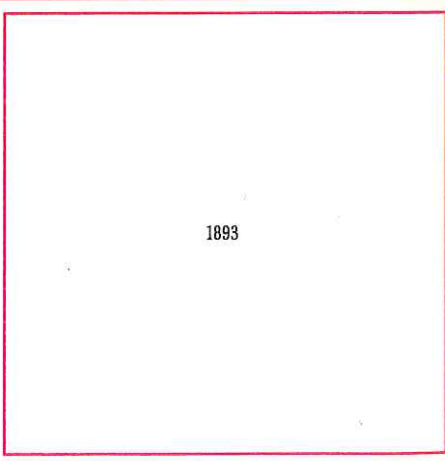
Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
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Historical Map Legend

Quarry	Shingle	Railway over Road	Road over Railway
Gravel Pit	Sand Pit	Level Crossing	Railway over River
Other Pits		Road over River or Canal	Road over Stream
Mixed Wood	Rough Pasture	Road over Stream	
Marsh		Sunken Road	Raised Road
		Sketched Contour	Instrumental Contour
Arrow denotes flow of water			

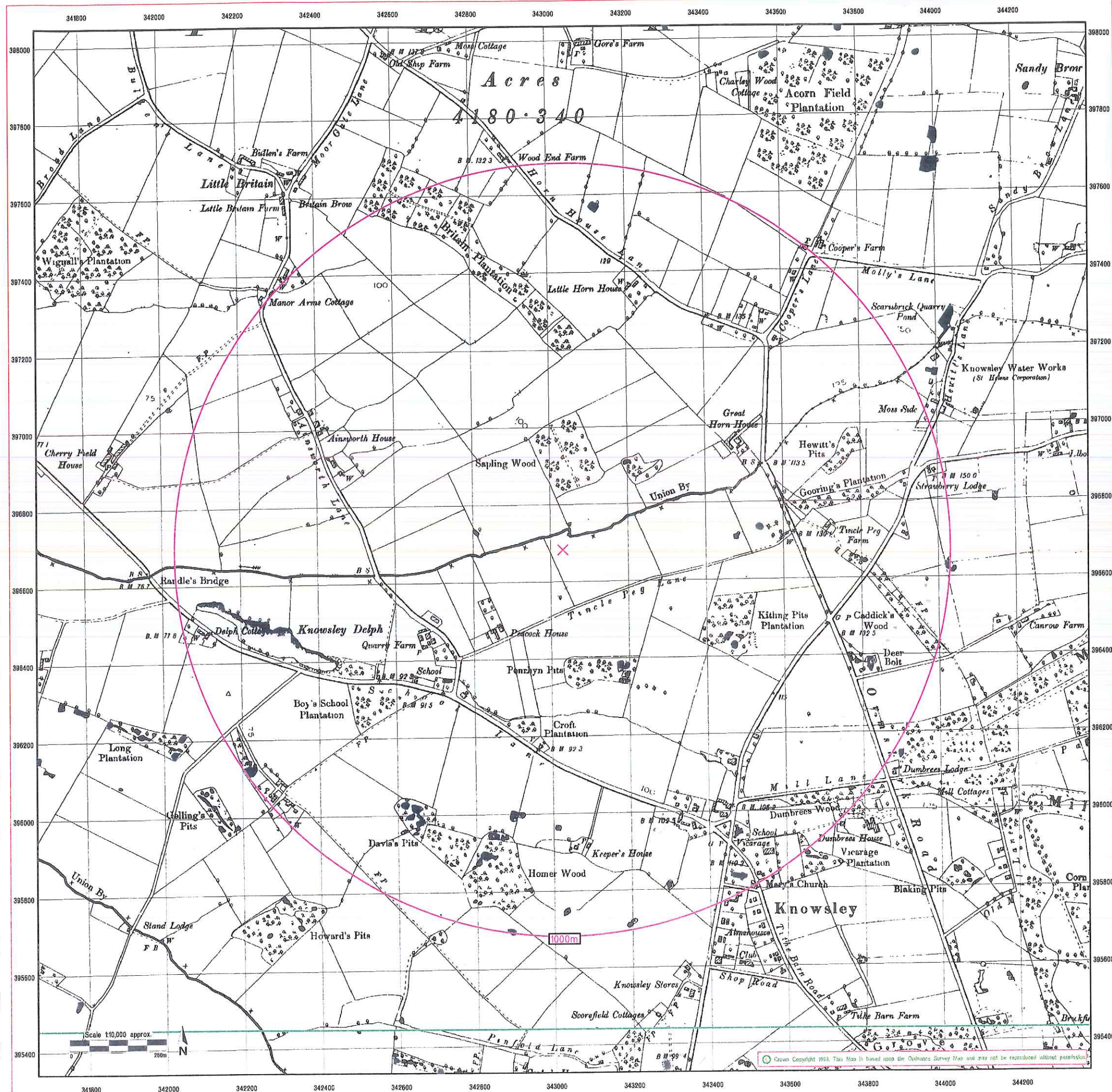
Lancashire And Furness

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1899 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given on the right is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.



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Environmental Site Sensitivity Data

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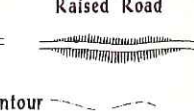
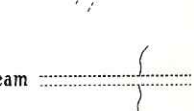
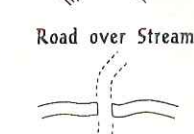
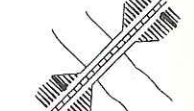
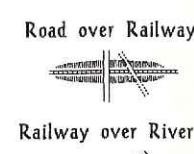
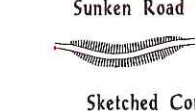
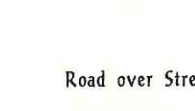
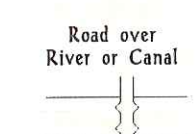
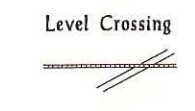
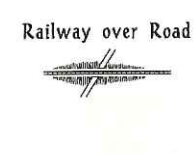
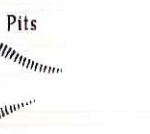
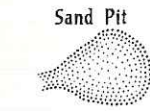
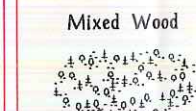
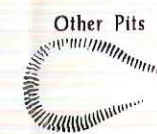
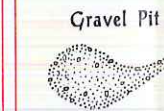
Customer Ref: Robert Tinsley
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WIGAN
WN3 4AL

SITE DETAILS

Grid Reference 343032 396683

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside L34 9HY

Historical Map Legend



LANCASHIRE AND FURNESS county

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:250,000 scale was adopted for mapping urban areas; these maps were used to update the 1:105,600 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

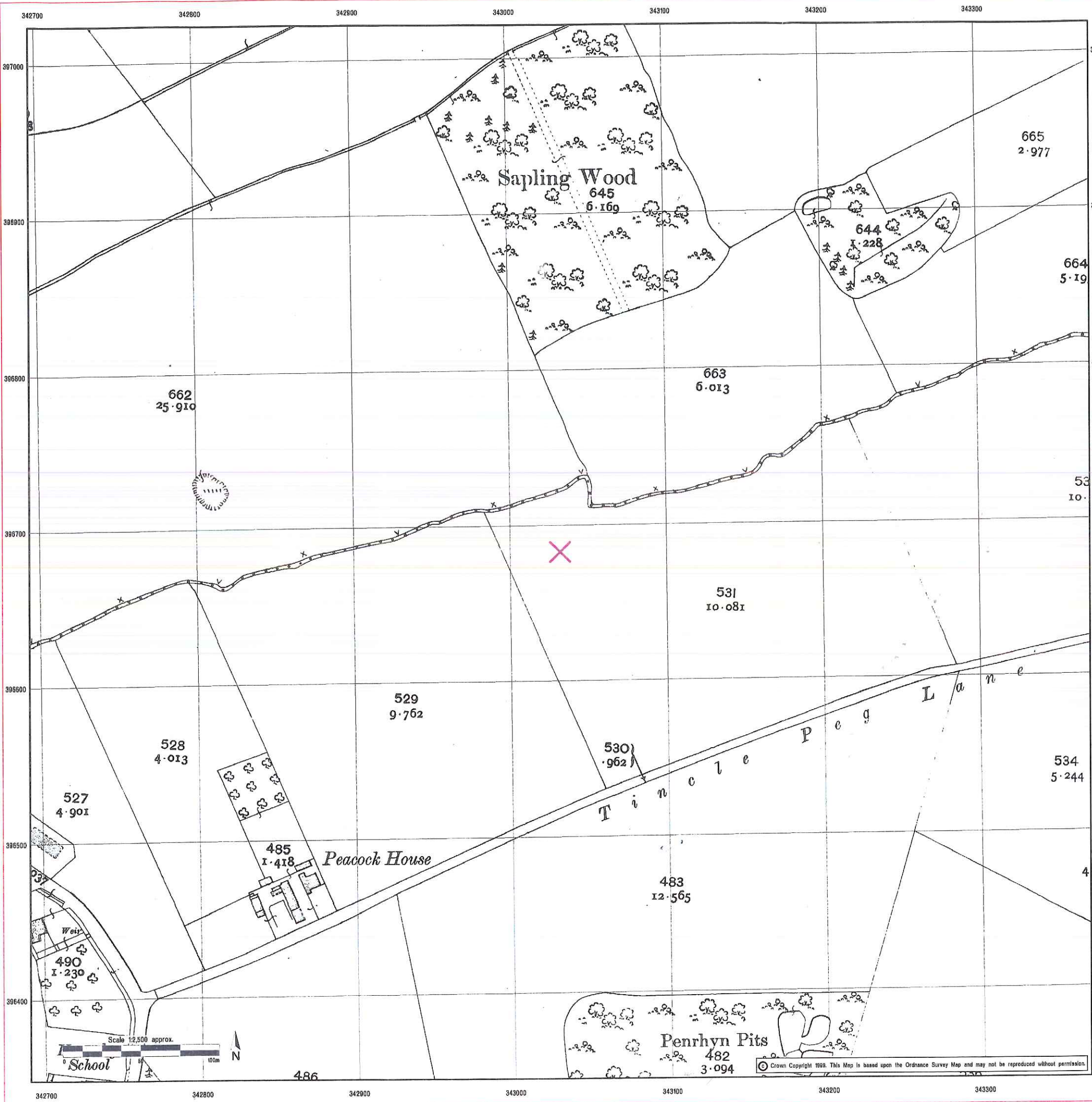
1894

1894

Date(s) of Publication



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Exeter EX2 7HY
Telephone 01392 441729 Fax 01392 441709



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Environmental Site Sensitivity Data

CLIENT DETAILS

Order No. EHA23807_1

Customer Ref: Robert Tinsley
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WIGAN
WN3 4AL

SITE DETAILS

Grid Reference 343032 396683

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
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Merseyside L34 9HY

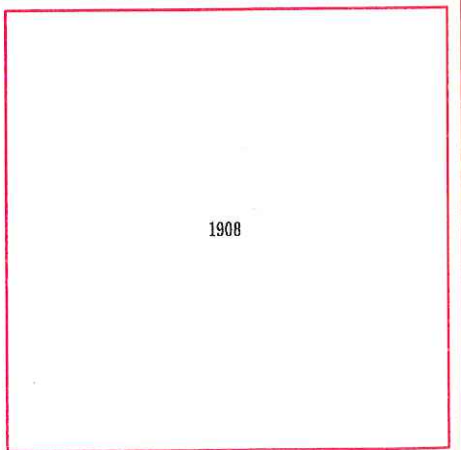
Historical Map Legend

Quarry	Shingle	Railway over Road	Road over Railway
Gravel Pit	Sand Pit	Level Crossing	Railway over River
Other Pits		Road over River or Canal	Road over Stream
Mixed Wood	Rough Pasture	Road over Stream	
Marsh		Sunken Road	Raised Road
		Sketched Contour	Instrumental Contour

++++> Arrow denotes flow of water

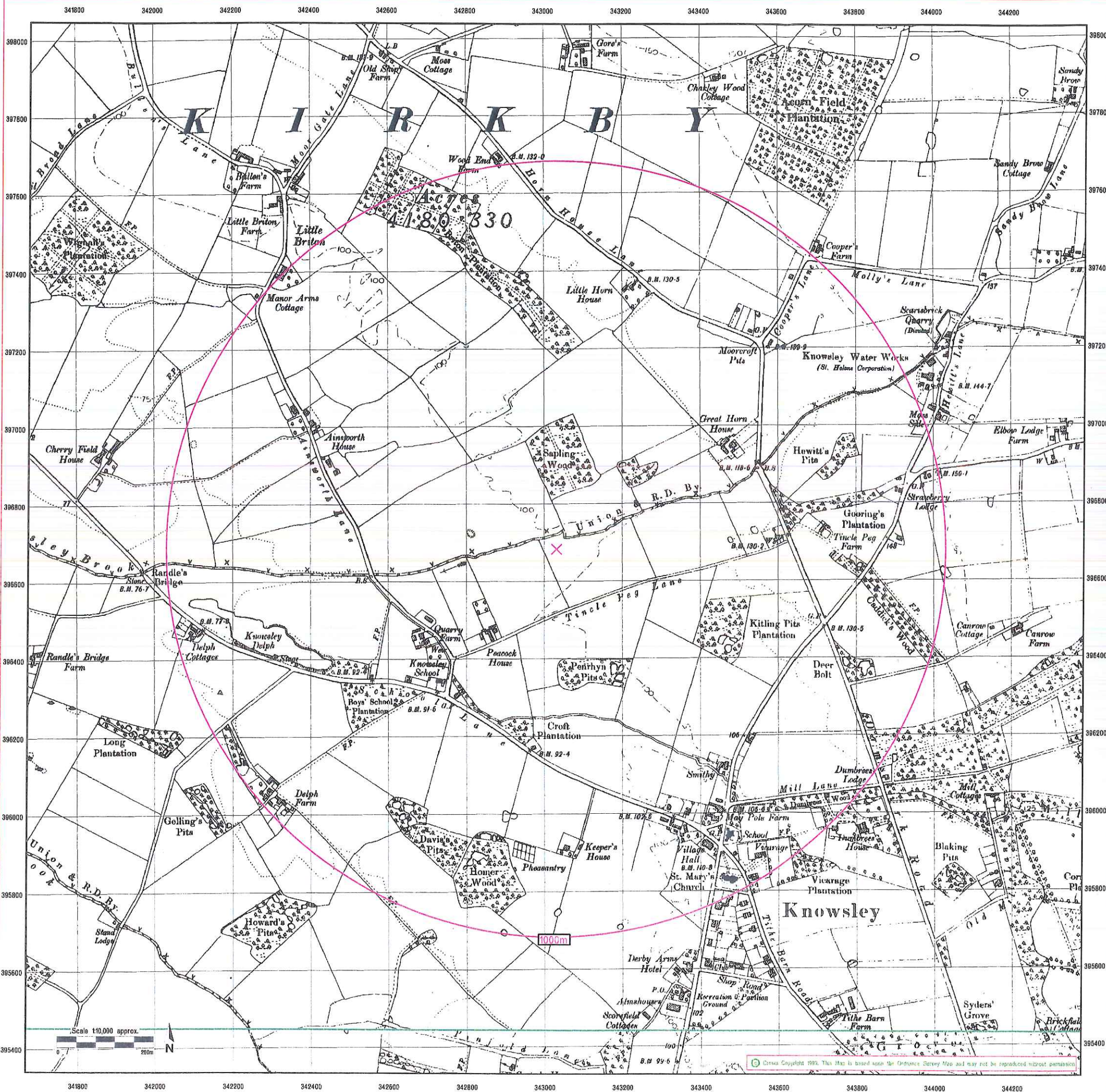
Lancashire And Furness

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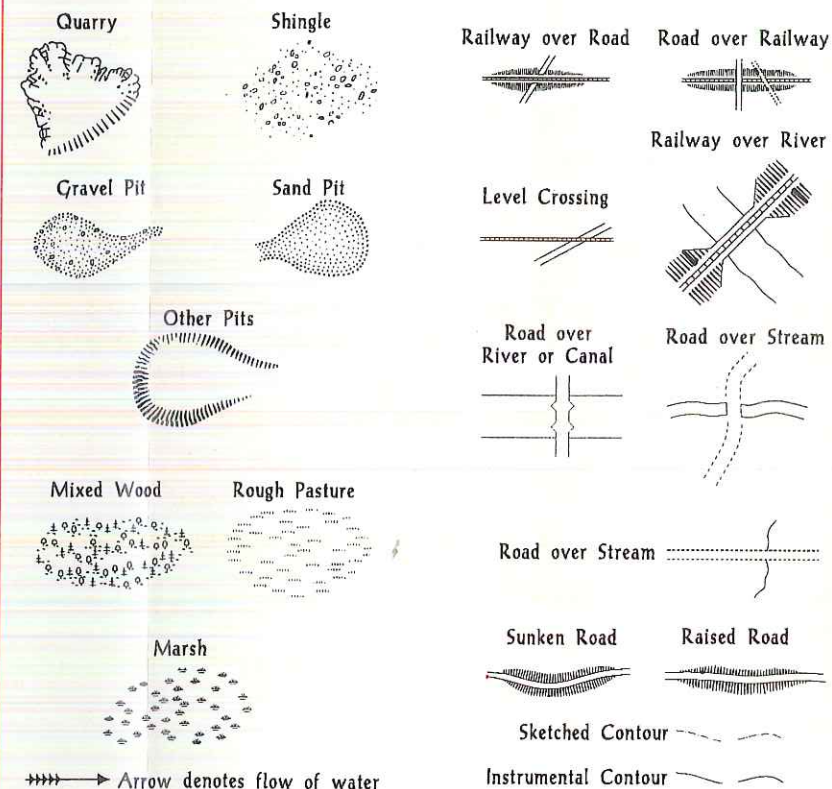
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SITE DETAILS

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Historical Map Legend



LANCASHIRE AND FURNESS county

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1909

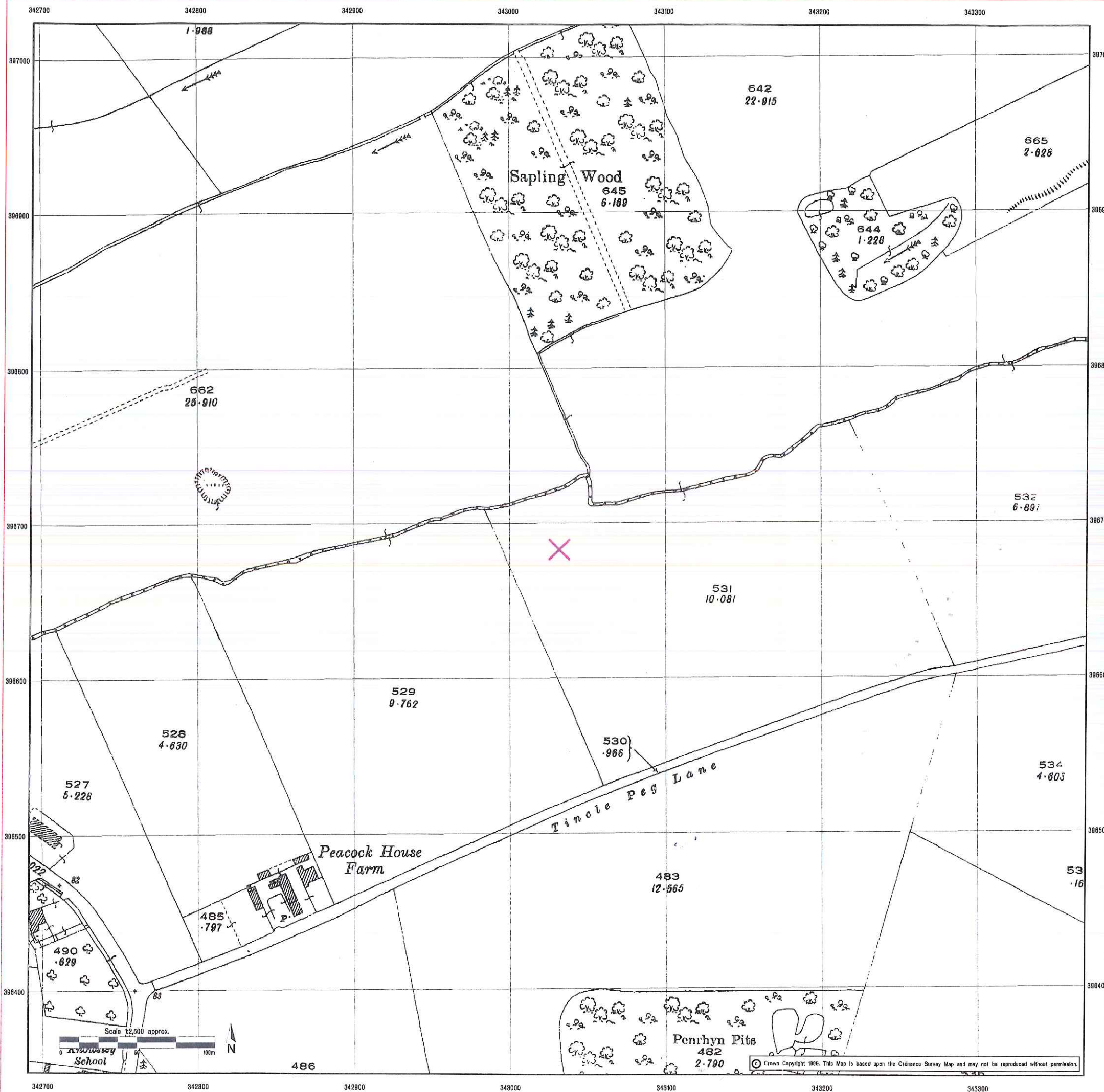
1909

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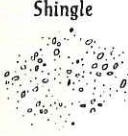
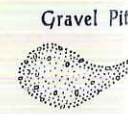
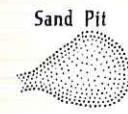
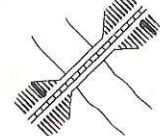
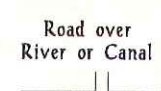
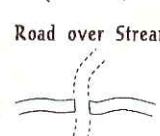
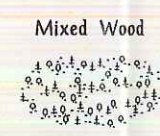
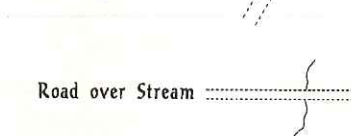
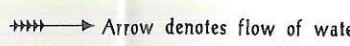
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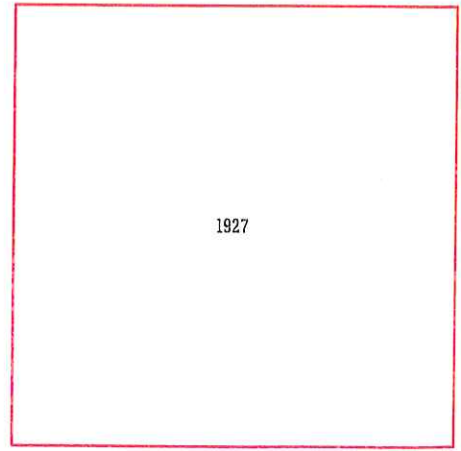
Contract Chemicals Ltd
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Knowsley Business Park
PRESCOT
Merseyside L34 9HY

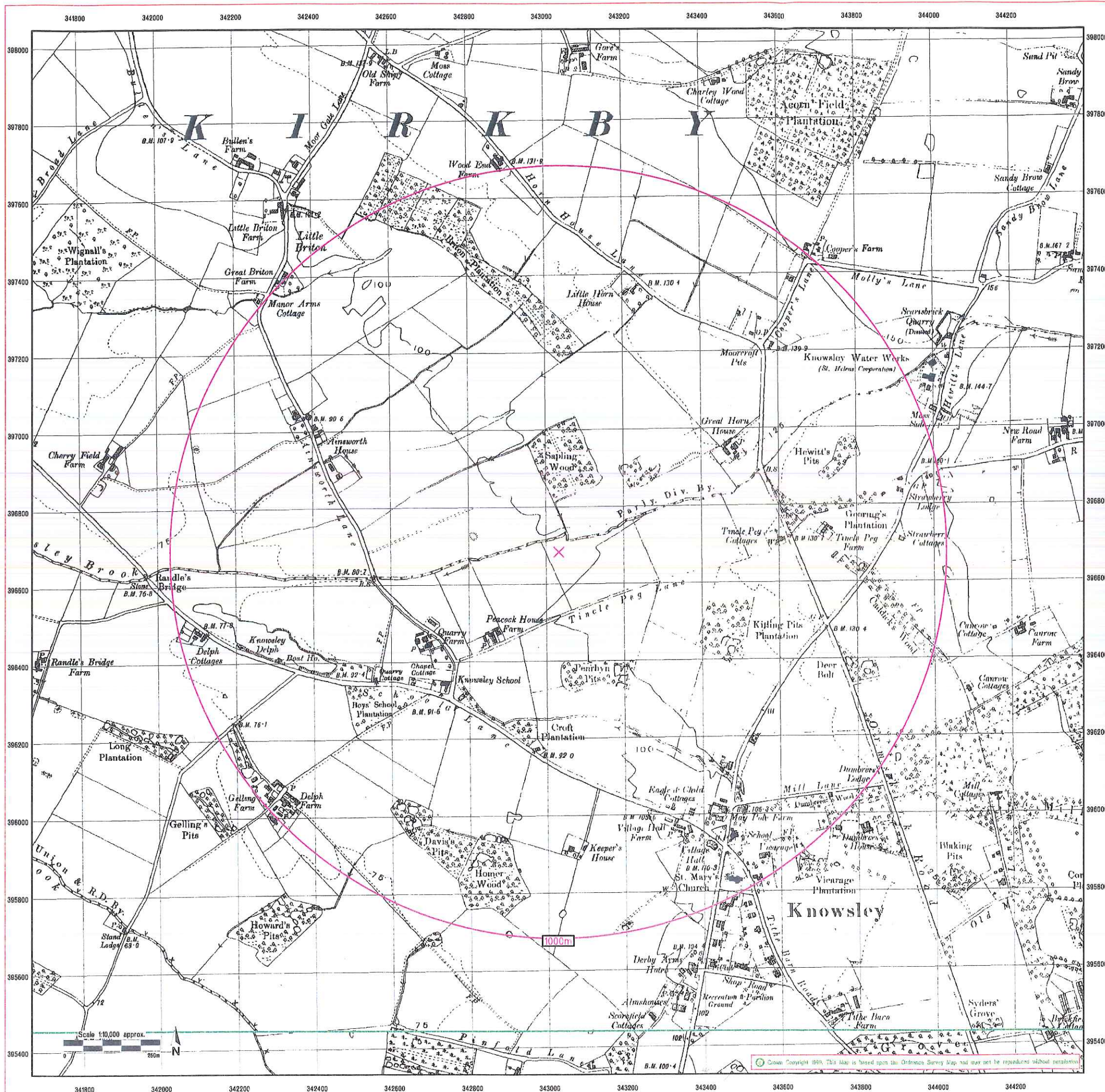
Historical Map Legend

Lancashire And Furness

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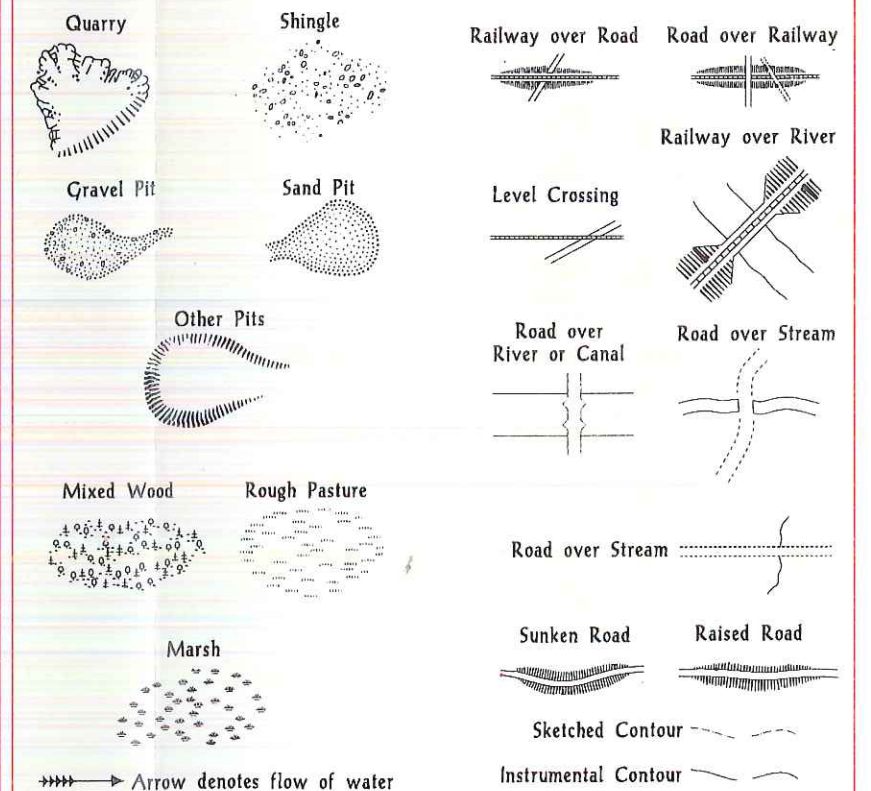
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Historical Map Legend



LANCASHIRE AND FURNESS county

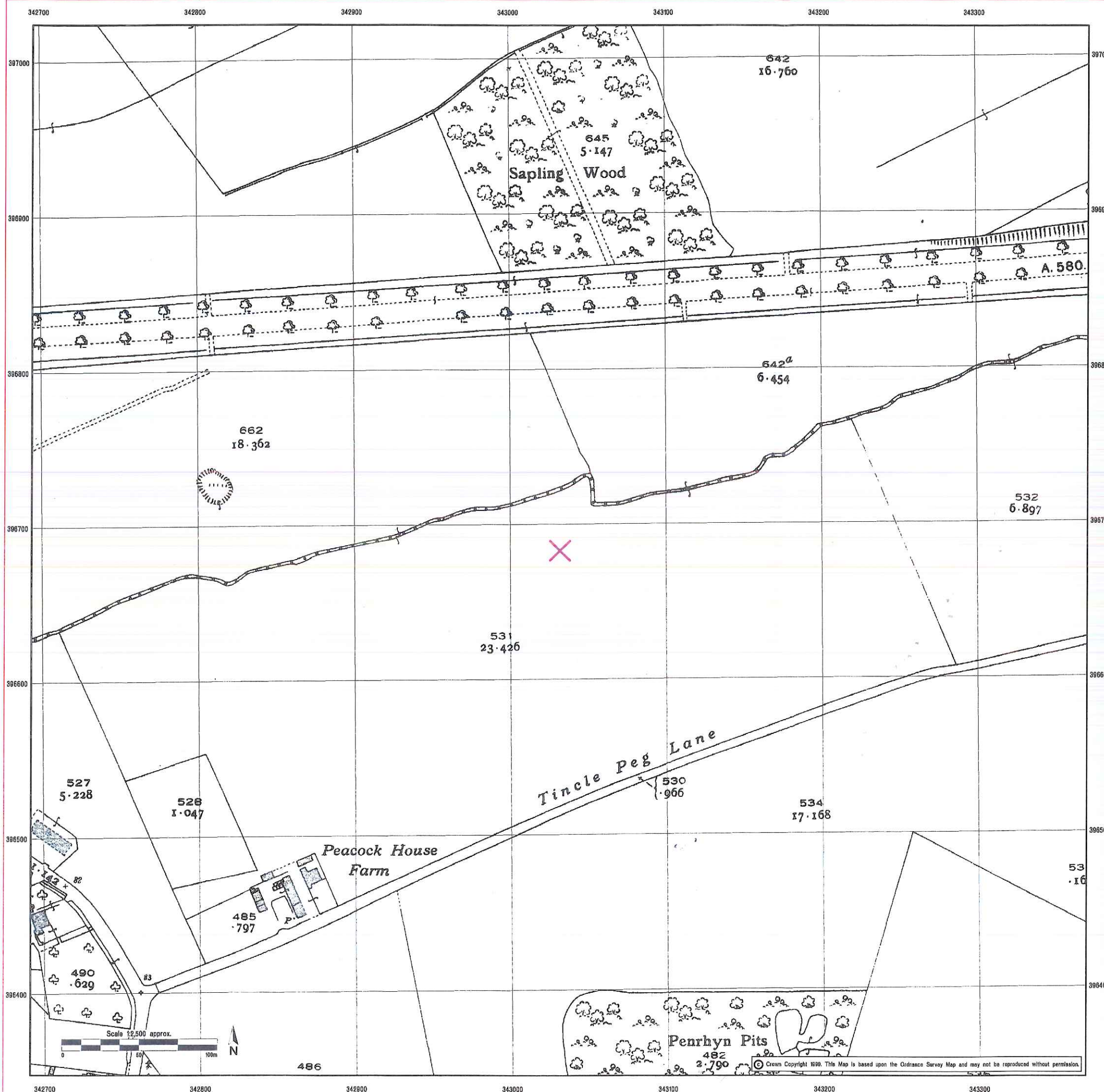
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1928

1928

Date(s) of Publication



EnviroCheck

Environmental Site Sensitivity Data

CLIENT DETAILS

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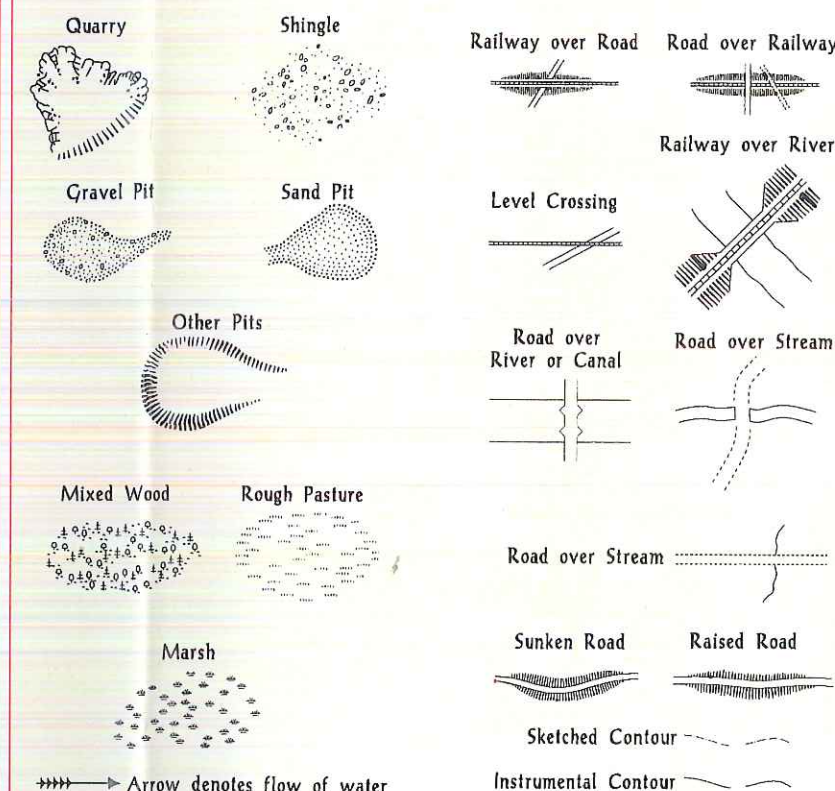
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Historical Map Legend



Lancashire And Furness

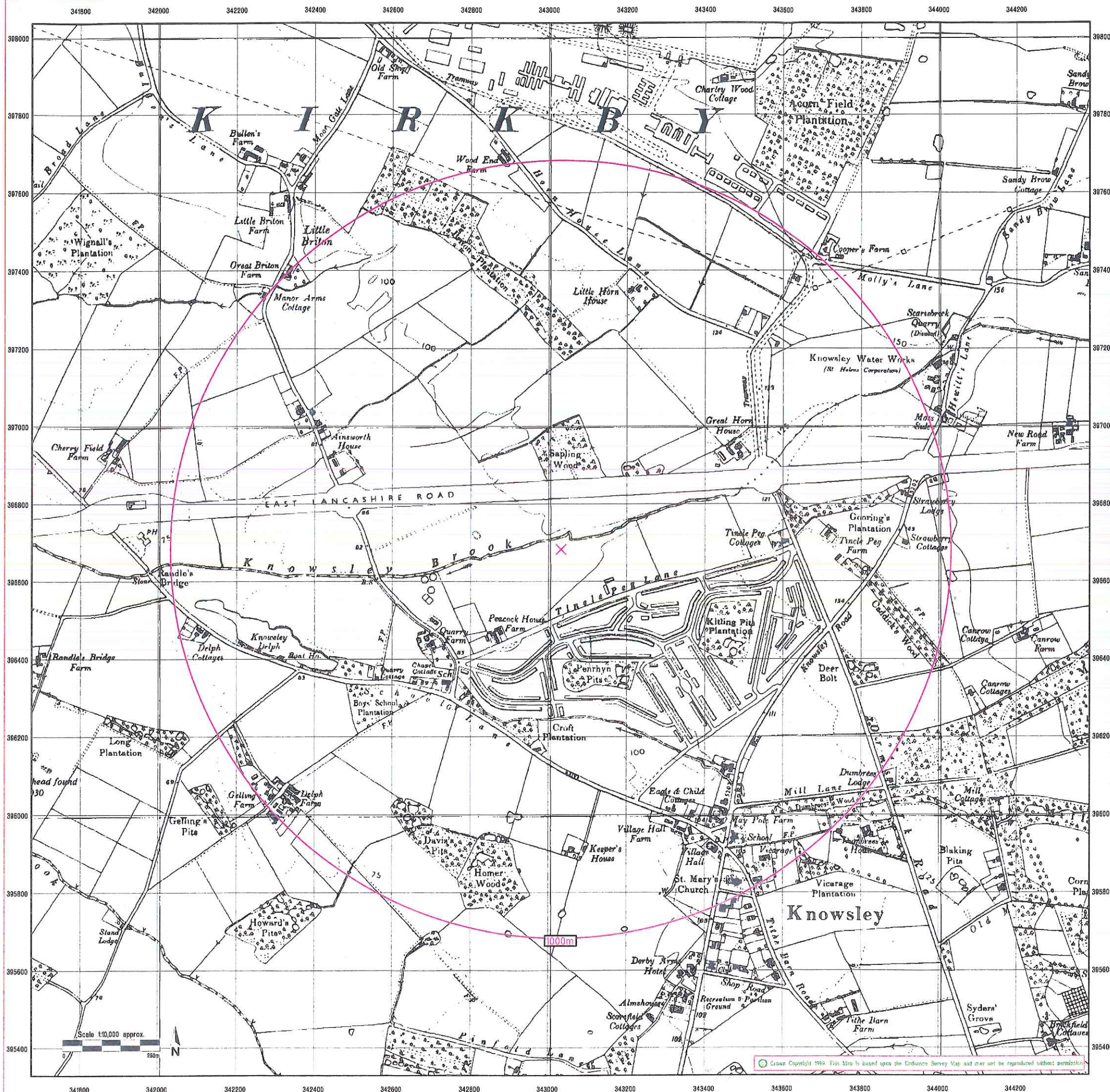
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1937

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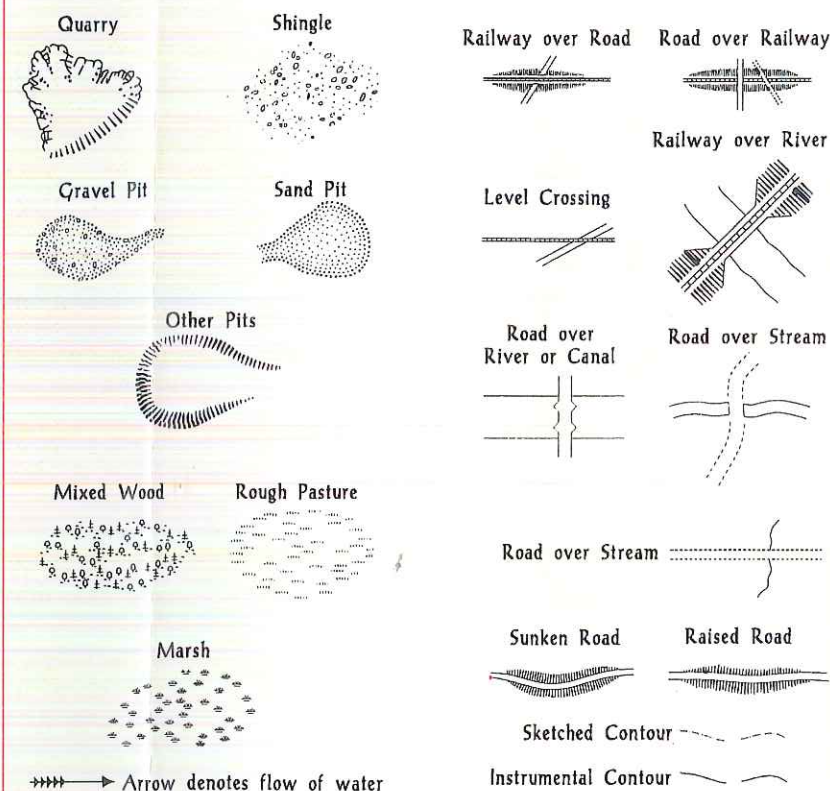
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Historical Map Legend



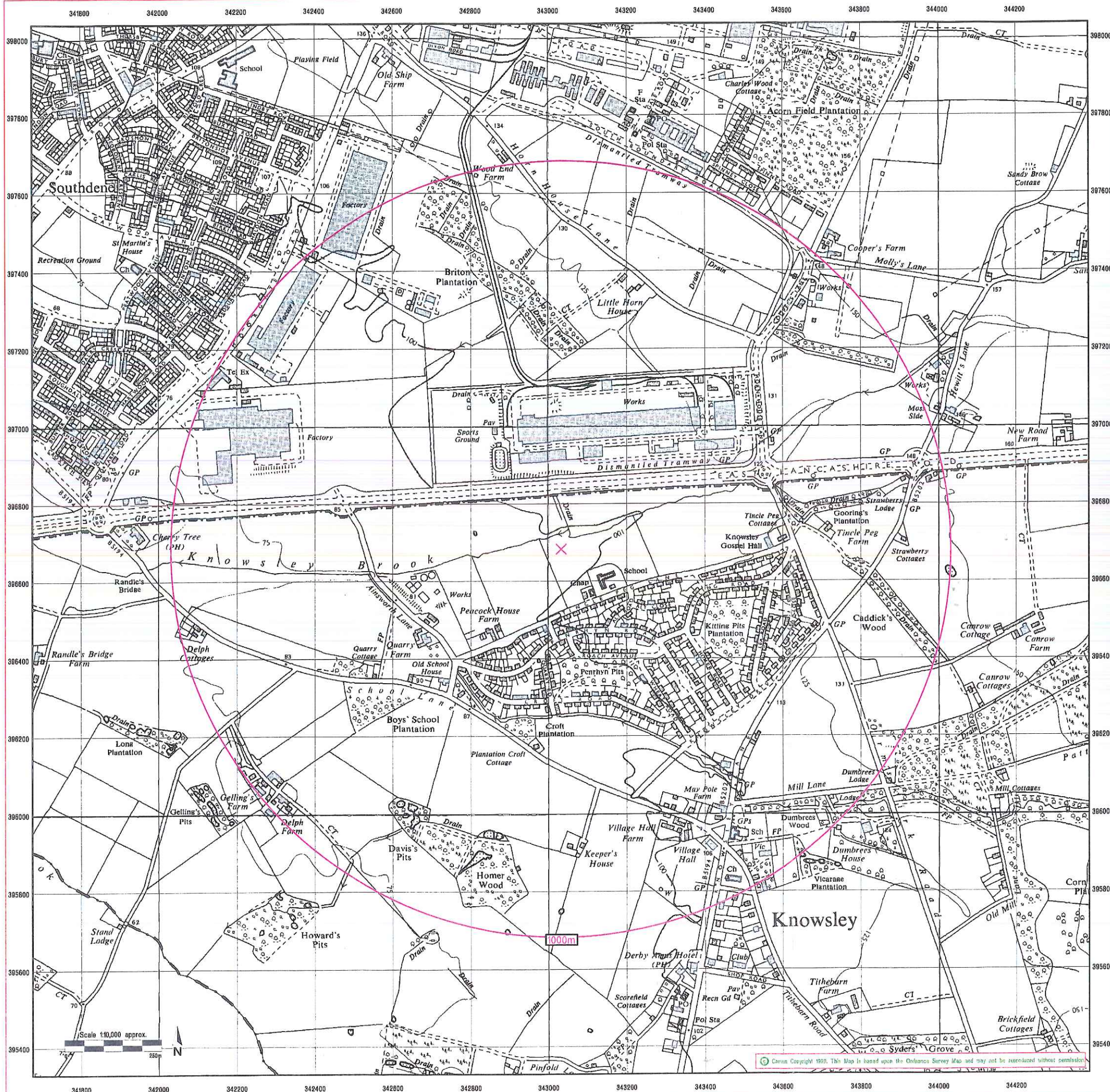
Ordnance Survey Plan

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1956

Date(s) of Publication



EnviroCheck

Environmental Site Sensitivity Data

CLIENT DETAILS

Order No. EH23807-1

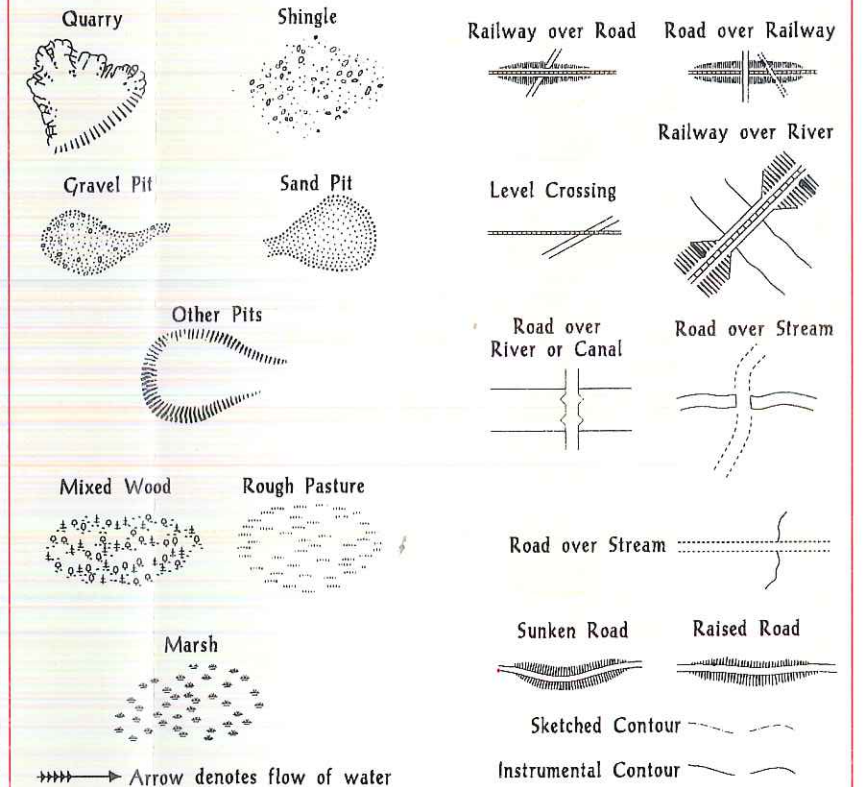
Customer Ref: Robert Tinsley
AIG Consultants Limited
PIER HOUSE WALLGATE
WIGAN
WN3 4AL

SITE DETAILS

Grid Reference 343032 396683

Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside L34 9HY

Historical Map Legend



Ordnance Survey Plan

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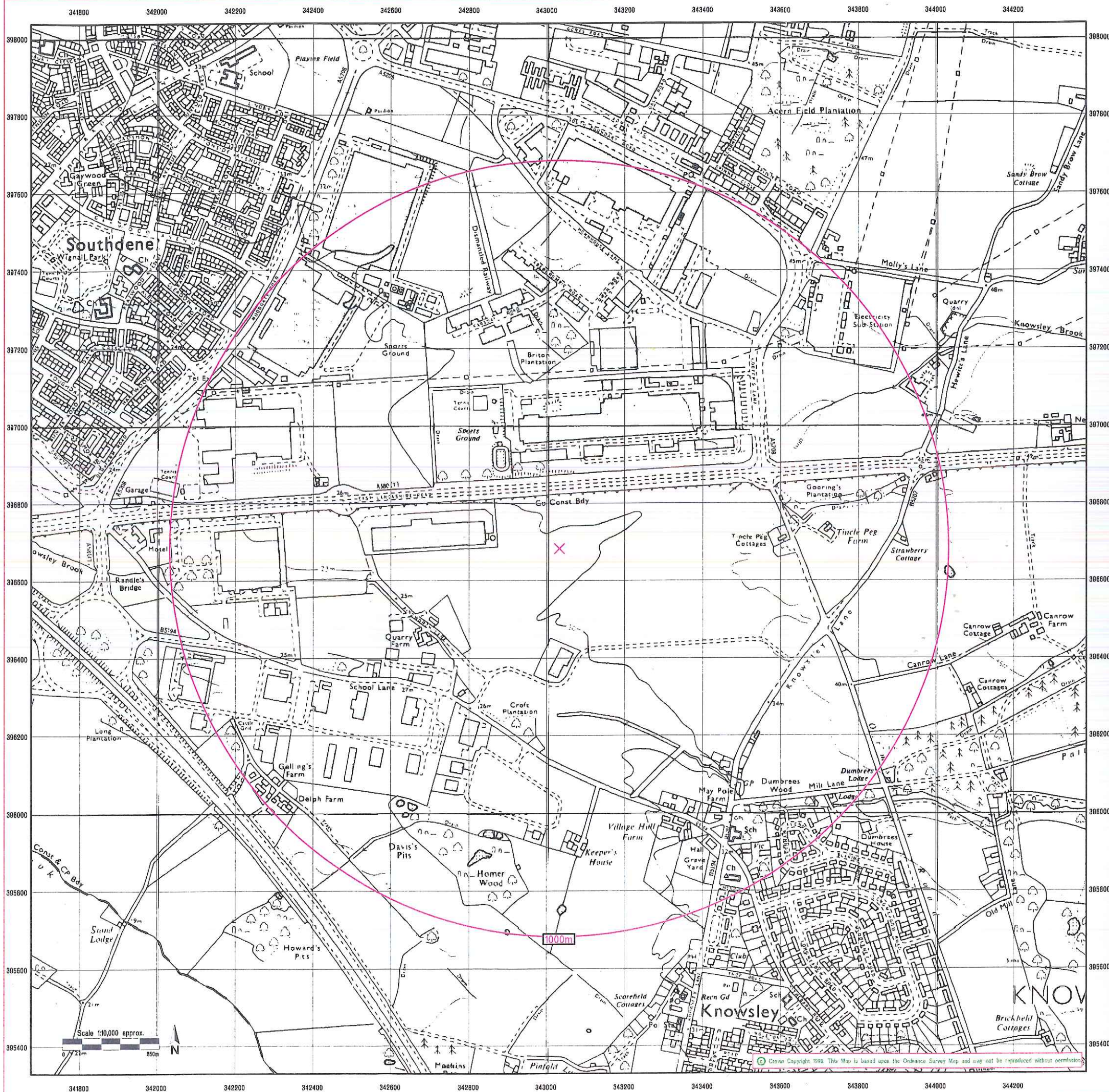
1966

Date(s) of Publication

Ordnance Survey
Value Added Reseller



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7 Abbey Court, Eagle Way, Sowton
Exeter EX2 7HY
Telephone 01392 441729 Fax 01392 441709



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Order No. EH23807-1

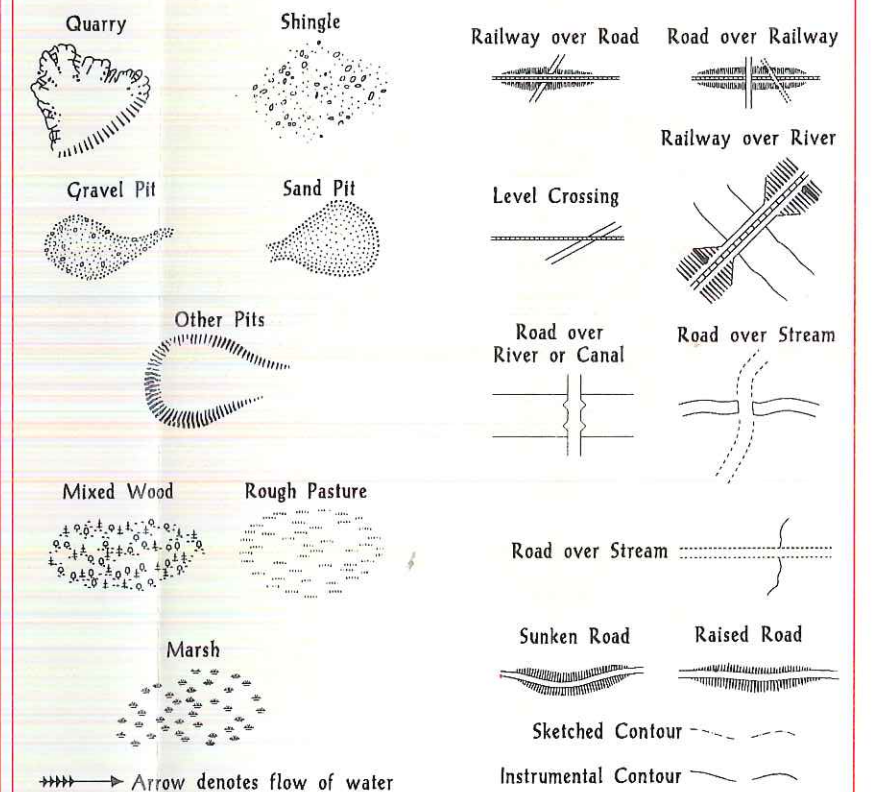
Customer Ref: Robert Tinsley
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WIGAN
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Grid Reference 343032 396683

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Knowsley Business Park
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Merseyside L34 9HY

Historical Map Legend



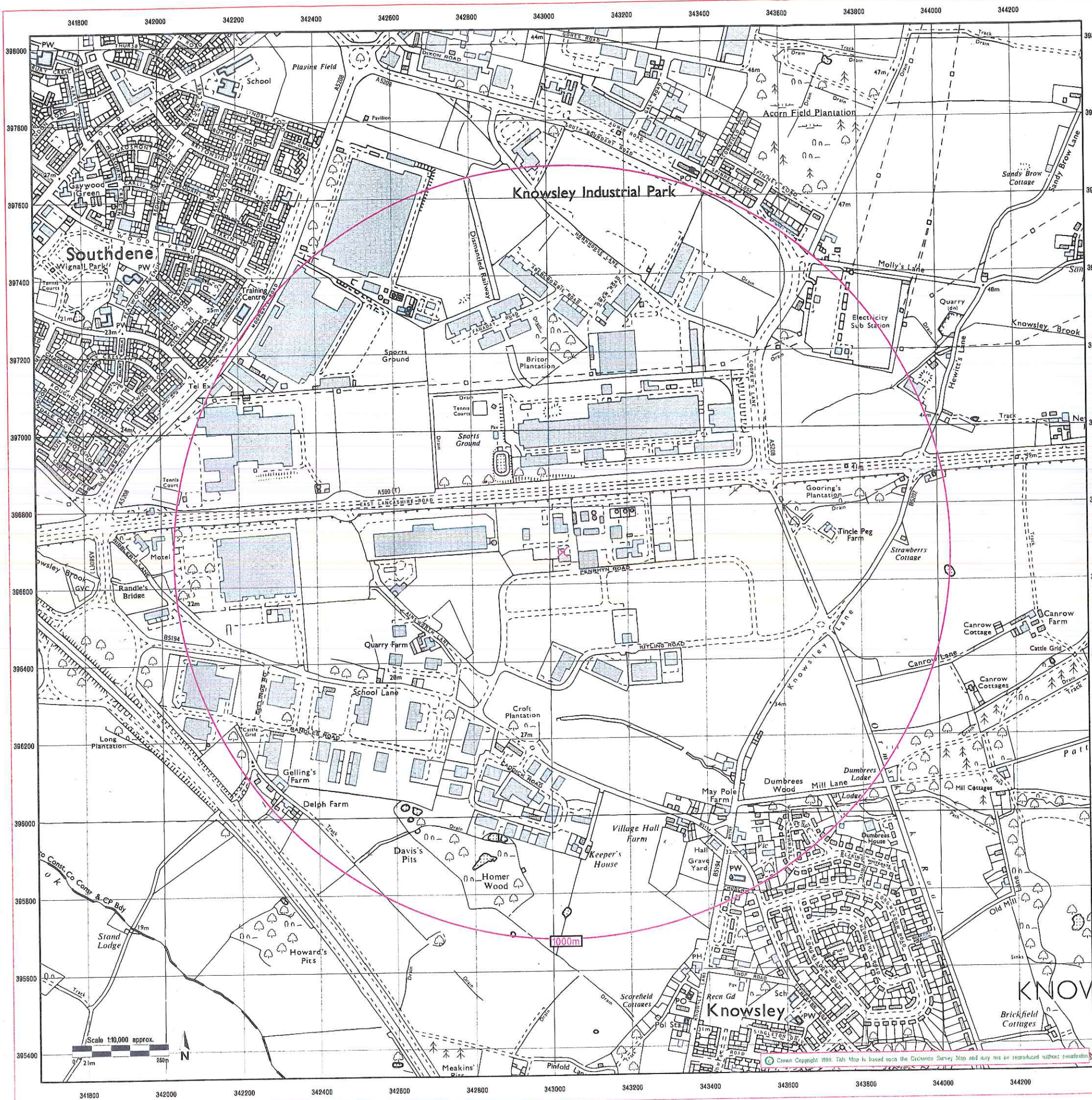
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1970

Date(s) of Publication



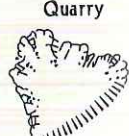
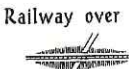
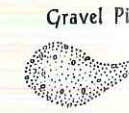
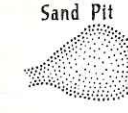
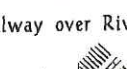
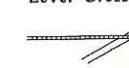
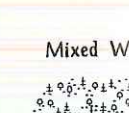
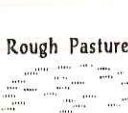
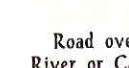
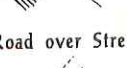
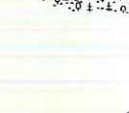
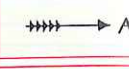
CLIENT DETAILS
Customer Ref: Robert Tinsley
AIG Consultants Limited
PIER HOUSE WALLGATE
WIGAN
WN3 4AL

Order No. EH23807-1

SITE DETAILS
Contract Chemicals Ltd
Penrhyn Road
Knowsley Business Park
PRESCOT
Merseyside L34 9HY

Grid Reference 343032 396683

Historical Map Legend

 Quarry	 Shingle	 Railway over Road	 Road over Railway
 Gravel Pit	 Sand Pit	 Railway over River	 Level Crossing
 Other Pits		 Road over River or Canal	 Road over Stream
 Mixed Wood	 Rough Pasture	 Road over Stream	 Sunken Road
 Marsh		 Raised Road	 Sketched Contour
 Arrow denotes flow of water			
 Instrumental Contour			

Ordnance Survey Plan
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1990

Date(s) of Publication



Value Added Reseller



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7 Abbey Court, Eagle Way, Sowton
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Telephone 01392 441720 Fax 01392 441709

APPENDIX C
BGS BOREHOLE LOGS

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

5-7, NEW YORK ROAD

LEEDS, 2

42870, 96762

SJ49NW-132

Contract No. M.1691/F.1217

Borehole No. 3

Location Knowsley

Ground Level

Client Liverpool City Engineer

Date 23rd April 1969

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ϕ deg.	m.c %	γ lb/cu. ft.	N
Topsoil		1'0"	1'0"						
Firm/Stiff Red Boulder Clay			8'0"	3'0" [	1440	0	16.1	132	
		9'0"		9'0" [	2740	17	13.3	138	
Stiff Red Marl with bands of red shaley fine sandstone			8'0"	14'0" [	2800	10	12.6	143	
		17'0"		17'3" I					50 for 3"
Red Sandstone		20'0"	3'0"						

Water Struck at 9'0"

Maximum Observed Water Level 6'0"

Undisturbed Sample

Disturbed Sample

Water Sample

Penetration Test

c = Cohesion

ϕ = Angle of Internal Friction

m.c = Moisture Content

γ = Bulk Density

N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

HOLST & CO. LTD.

SITE INVESTIGATION DEPT. 43022, 96770
5-7, NEW YORK ROAD SJ49NW-133
LEEDS, 2

Contract No. M.1691/F.1217

Borehole No. 4

Location Knowsley

Ground Level

Client Liverpool City Engineer

Date 23rd April 1969

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ϕ deg.	m.c %	γ lb/cu. ft.	N
Topsoil		1'0"	1'0"						
ed Sand and Gravel		2'6"	1'6"						
Hard Brown Boulder Clay			7'6"						
		10'0"		8'0" I	3400	0	12.2	142	
Weathered red shaley fine sandstone with bands of red marl		17'0"	7'0"	14'0" I					50 for 8"
ed Sandstone		20'0"	3'0"	18'6" I					50 for 6"

Water Struck at 9'0"

Maximum Observed Water Level

3'6"

Undisturbed Sample (I)
Disturbed Sample (O)
Water Sample (A)
Penetration Test (W)

c = Cohesion
 ϕ = Angle of Internal Friction
m.c = Moisture Content
 γ = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

5-7, NEW YORK ROAD

LEEDS, 2

43029, 96652

SJ49NW-142

Contract No. M.1691/F1217

Borehole No. 12

Location Knowsley

Ground Level

Client Liverpool City Engineer

Date 21st April 1969

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ϕ deg.	m.c %	γ lb/cu. ft.	N
Topsoil		1'0"	1'0"						
Greyish brown sand Traces of gravel			7'0"	5'0"					10
		8'0"							
Hard red sandy marl with bands of weathered red sandstone.			12'0"	10'0"	2080	23	13.3	143	
		20'0"							

Water Struck at 4'0"

Maximum Observed Water Level 3'0"

Undisturbed Sample

Disturbed Sample

Water Sample

Penetration Test

The Geological Survey accepts no responsibility for the accuracy of the data obtained from this borehole log.

c = Cohesion

ϕ = Angle of Internal Friction

m.c = Moisture Content

γ = Bulk Density

N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

APPENDIX D
PREVIOUS GROUND INVESTIGATION REPORTS

**Extract Of Cremer And Warner
Ground Investigation Report No. 93169**

4.4 Interpretation of Results

The results may be interpreted as follows:

- (i) Generally the highest concentrations of contaminants were found in the sample collected from Row 1 (TP3,4) 15m from the boundary fence on CC land.
- (ii) Only low concentration levels of several contaminants were detected in Row 2 near the boundary fence on CC land (TP1,2).
- (iii) Sample BH1 collected from the top of the underlying clay strata contained low concentrations of hydrocarbon contaminants with the exception of benzophenone.
- (iv) Moderate concentrations of aromatic contaminants were found in the sample collected from Row 3 (TP7,8). Row 3 was located on the MC site where surface run-off from the CC site appeared to have collected.
- (v) Row 3 (TP7,8) contained four compounds, two of which were unidentified, which were not detected at any other locations, either on MC land or CC property.
- (vi) Row 4 (TP5,6), located 5m from the boundary fence contained very low concentrations of only 2 contaminants present in Row 3 (TP7,8). Any of the other compounds which were being tested for were below detectable limits.
- (vii) All samples tested were slightly alkaline. The highest levels of pH are at Row 1 (TP3,4) and Row 3 (TP7,8) where the highest levels of organic contamination were detected.

These results indicate that contamination by identified compounds is probably limited on MC land to the vicinity of the boundary between CC and MC property. The identification of the proprietary compound "Permanax 6PPD" on MC land could only have originated from the CC site with migration of this and other compounds occurring overland through surface run-off from the drum storage area.

In conjunction with on-site observations the results from sample BH1 would indicate that the contamination was restricted mainly to the upper 0.5m of soil and that the underlying clay restricted vertical migration of contamination.

5.0 SUMMARY

The following key points and tentative conclusions can be drawn from this preliminary site investigation.

- (i) Soil contaminants identified on CC and MC sites suggests that contamination has migrated from CC property onto land owned by MC.
- (ii) From visual observations, migration appears to have occurred overland at two principal points, with contaminated surface water being channelled along the embankment bordering the MC and CC sites to collect in the south west corner of MC property. Based upon analytical results, contamination would appear to be concentrated in this area as a result and only very low levels of contamination were detected on MC property 5m from the site boundary.
- (iii) For most of the compounds identified, ground contamination standards are unavailable. However, where guidelines are available, for example, for total aromatic compounds, 'moderate' rather than 'heavy' contamination of the samples was identified.
- (iv) The surface ponding observed is a consequence of the impermeability of the underlying clay strata, generally found at a depth of 0.5m.
- (v) It is likely that the clay strata has restricted the vertical migration of contaminants to the upper soil layers.

Sub Soil Surveys Limited
Ground Investigations Report No. 97/2, February 1997

COPY
A. Macdonald
4/3/97

Glendinning Hanson Partnership

Chartered Architects



Planning Supervisors

175 King Cross Road, Halifax HX1 3LN 01422 367285 Fax 01422 330352
RAP/LL/96:162M/HSE/GH3.

4th March 1997

For the attention of Mr. G. Hannon

Ashall Construction Ltd.,
Greenway,
Manchester Road,
Warrington.
WA1 3EF

Dear Sirs,

Contract Chemicals, Knowsley.

As discussed recently over the telephone, we have now received the ground investigation report and we enclose a copy of this for your information.

Please attach the report to our Pre-Contract Health and Safety Plan, as Appendix B.

It should be noted that this report advises the support of the sides of excavations (see item 4.5).

Yours faithfully,

Andrew Portch
Glendinning Hanson Partnership

c.c. Mr. P. Kinley - Contract Chemicals

Encl.....

REPORT ON GROUND INVESTIGATION



APPENDIX B

SUB SOIL SURVEYS LIMITED

Chaddock Lane, Astley, Nr. Manchester
M29 7LD

Tel: ATHERTON (STD 01942) 883565

Report No 97/2

John Newton and Partners

Parkview House
Woodvale Office Park
Woodvale Road
Brighouse
West Yorkshire
HD6 4AB

Contract Chemicals Ltd

Penrhyn Road
Knowsley Industrial Park South
Prescot
Mersyside
L34 9HY
Order No P002 28402

Report on Ground Investigation

at Site of

Proposed Development

at

Contract Chemicals Ltd., Knowsley

February 1997

**Sub Soil Surveys Ltd.
Manchester**

CONTENTS

- 1 Introduction and Object
- 2 Site Geology
- 3 Site Investigation and Soil Profile
- 4 Groundwater and Excavations
- 5 Chemical Tests
- 6 Soil Tests and Bearing Capacities
- 7 Recommendations for Foundation Design

APPENDIX 'A'

Light Cable Percussion Borehole Logs

APPENDIX 'B'

- i) Classification and Strength Tests
- ii) Consolidation Tests
- iii) Chemical Tests

APPENDIX 'C'

Fig 1 Soil Sections through Boreholes

Fig 2 Site Plan indicating location of Boreholes

1 INTRODUCTION AND OBJECT

- 1.1 This investigation has been carried out to the instructions of John Newton and Partners at the site of a proposed new process building at Contract Chemicals Ltd., Knowsley.
- 1.2 The Contract Chemicals site lies approximately 1.0km to the northwest of Knowsley village centre between Penrhyn Road which runs along the south of the site and the East Lancashire Road (A580) which runs along the north of the site. As indicated on the enclosed site plan (fig 2) the site of the proposed development lies on the western part of the works site at approximate National Grid Reference SJ 429 968.
- 1.3 At the time of the investigation the site was an open area of land raised above the surrounding roadways with what appeared to be clay, brick rubble, etc., probably from the construction of adjacent plant, etc. A manhole was present on the central northern area of the site, with connecting sewers as indicated on the enclosed site plan.

Old maps indicate the site of the proposed structure to have remained undeveloped in the past although we understand that this general area may have been subject to landscaping associated with the culverting of a stream which used to run approximately east/west in a shallow valley across the Contract Chemicals site, but to the south of the proposed development.
- 1.4 The proposed development consists of the construction of a new three storey plant building which will be 36m by 15m on plan. The structure will be constructed with frames at 5 m centres with the anticipated column loadings being about 900 kN.
- 1.5 The object of the investigation was to sink the specified boreholes and to
 - a) report on the type, thickness and variability of the soil strata proved underlying the site
 - b) establish groundwater conditions
 - c) determine the maximum safe bearing capacities of the various soil strata and
 - d) give recommendations on economic foundation design for the proposed structure.

2 SITE GEOLOGY

2.1 The site is situated in an area where the geological succession is estimated to be possibly as follows:

- i) Greyish brown silty SAND with lenses and layers of PEAT - Shirdley Hill Sands
- ii) Firm, stiff and very stiff CLAY with sandy zones and variable gravel content and possibly with zones or lenses of silt, sand and gravel - Glacial Deposits
- iii) Reddish brown silty SANDSTONE possibly with pebbles - Sherwood Sandstone

2.2 The Shirdley Hill Sands deposits are often relatively or absent in some areas and previous investigations in the area have generally proved this, with this deposit varying from 0-2.1 m thick.

2.3 In the past this company has carried out investigations on the Contract Chemicals site with a borehole having been sunk close to the present site, but before the plant was originally built, with the following strata being proved :

Stiff reddish brown mottled sandy CLAY with grey fissures and a little gravel	<u>Glacial Clay - Zone 1</u> 1.8 m thick
Hard reddish brown very sandy CLAY/clayey SAND with a little gravel	<u>Glacial Clay - Zone 2</u> proved to 9.0 m

Groundwater was not proved during the sinking of the borehole but a standing water level of 3.7 m below ground level (bgl) was measured some time after completion.

A more recent investigation consisting of two machine dug trial pits has been carried out with one pit being located close to the northwestern corner of the present site.

This pit proved the following strata :

Stone onto stiff clay with sand, sandstone pieces, etc.	<u>Made or Disturbed Ground</u> 1.1 m thick
Stiff and very stiff reddish brown sandy CLAY with a little gravel	<u>Glacial Clay</u> proved to 3.0 m

No groundwater was encountered in this pit.

3 SITE INVESTIGATION AND SOIL PROFILE

- 3.1 Three light cable percussion boreholes were sunk to depths varying between 9.1 and 12.2 m bgl at the locations indicated on the enclosed site plan (Fig 2). The borehole logs are detailed in Appendix A and soil sections are plotted in Fig 1.
- 3.2 From these results it can be seen that the soil strata vary between the boreholes but can be approximated as follows:-

Table 1

Soil Profile

Description of stratum	Depth to top of stratum (m)	Thickness of stratum (m)	Remarks
Clay with sand, stone, brick, ash, etc.	0	1.1-2.6	<u>Made Ground</u>
Medium dense brown silty SAND with gravelly zones	1.1-1.7	0-1.8	<u>Shirdlev Hill Sands</u> proved in BH's 1&2
Very stiff reddish brown very sandy CLAY with a little gravel, sand lenses and occasional cobbles	1.9-3.5	4.7-8.1	<u>Glacial Clay</u> firm upper zone in BH3
Reddish brown SANDSTONE and MUDSTONE, weak to moderately weak or stronger	6.6-10.9	-	<u>Sherwood Sandstone Group</u>

- 3.3 It should be noted that although the maximum proved thickness of Made Ground was 2.6 m in BH2, thicker zones may well be present below the site, between and away from the borehole positions (eg. in areas of old service excavations, etc.).

It should also be appreciated that there may well be greater variation in the depths to and thicknesses of the various strata between and away from the borehole positions than indicated by the above table or the enclosed diagrammatic soil section (Fig. 1).

- 3.1 The upper surface of the Sherwood Sandstone deposit varied from 6.6-10.9 m bgl at the borehole positions this variation corresponding to a similar depression in the surface of this deposit proved below a site to the south in a previous investigation by

this company. Clearly, there could be greater variations in the depth to the sandstone surface elsewhere below the site, between and away from the borehole positions.

4 GROUNDWATER AND EXCAVATIONS

- 4.1 Groundwater observations are detailed in the borehole logs, plotted in Fig 1 and tabulated below:

Table 2
Groundwater Observations

Position	Depth on striking groundwater (m bgl)	Highest recorded water level
1	None	6.2
2	None	5.7
3	6.3 on pulling casing	6.3

- 4.2 These observations indicate that during the investigation period there was a groundwater table present below the site at about 5.7-6.3 m bgl. Higher water levels and possibly perched groundwater tables in the Made Ground should be expected during and after periods of wet weather conditions with correspondingly lower levels during protracted dry spells.
- 4.3 Groundwater control may well be required in excavations to be taken below the water table in order to prevent the onset of 'running' conditions or the 'piping' and 'heaving' of the base of excavations. Any system of groundwater control to be adopted at this site should be designed and operated so as to prevent the loss of 'fines' from the surrounding ground thereby causing a loss of support and attendant settlement to the ground and any nearby structures, etc.
- 4.4 The clay deposits proved at this site will soften rapidly in contact with rain or groundwater. We recommend, therefore, that the base of all excavations for footings founded in these clay deposits be blinded with lean concrete or any other suitable material as soon as formation level is reached.

- 4.5 It would be advisable to provide adequate lateral support for the vertical sides of all deep excavations at this site.

5 CHEMICAL TESTS

- 5.1 Sulphate and pH tests were carried out on samples of Made Ground and the results are detailed and tabulated in Appendix B and summarised below:

Made Ground

Sulphate Concentration = <50-150 mg/l SO_4 in 2:1 water:soil extract

pH = 7.8-8.0

- 5.2 From these results it can be seen that relatively low sulphate concentrations have been proved in the samples tested indicating that there should not be any deterioration due to sulphate attack of good quality dense concrete made from Ordinary Portland Cement.

6 SOIL TESTS AND BEARING CAPACITIES

- 6.1 The following in-situ and laboratory tests were carried out in order to provide the required data for estimating the maximum safe bearing capacities of the various deposits:

- i) Undrained Triaxial Compression tests carried out on 38mm diameter relatively 'undisturbed' samples. Detailed results are tabulated in Appendix Bi) and undrained shear strength (C_u) values are plotted in Fig 1.
- ii) Standard Penetration Tests carried out in the boreholes. Detailed results are tabulated in the borehole logs (Appendix 'A') and "N" values (blows per 300mm) are plotted in Fig 1.
- iv) Hand penetrometer tests carried out on disturbed and undisturbed samples.

From the above it may be seen that :

- 6.2 Glacial Clay

Beneath an impersistent upper firm zone proved in BH3 with a Standard Penetration Test result of

N = 11 blows for 300mm penetration

this deposit was proved to be of a very stiff consistency with measured undrained shear strength values of

$$C_u = 189-572 \text{ kN/m}^2$$

although some results showed a marked C_u/ϕ_u response.

We estimate the maximum safe bearing capacity of the very stiff clay to be about

$$300 \text{ kN/m}^2$$

6.3 Sherwood Sandstone

This deposit was proved to be generally a very weak to moderately weak or stronger sandstone or mudstone. An undrained triaxial compression test carried out in borehole 3 in the very weak mudstone gave a result of

$$C_u = 418 \text{ kN/m}^2$$

indicating the deposit here to be a very stiff clay / very weak mudstone.

Below this zone and elsewhere the deposit was proved to be weak to moderately weak or stronger with Standard Penetration Test results of

$$N = 123 \text{ blows for } 300 \text{ mm penetration}$$

$$\text{to } N = 50-106 \text{ blows for } 225 \text{ mm penetration or less}$$

We estimate the maximum safe end bearing capacity of the moderately weak or stronger sandstone or mudstone to be about

$$1500 \text{ kN/m}^2 \text{ (piled foundations)}$$

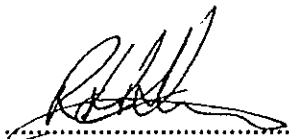
7 RECOMMENDATIONS FOR FOUNDATION DESIGN

- 7.1 It is stated that the proposed development will consist of the construction of a new three storey plant building which will be 36m by 15m on plan. The structure will be constructed with frames at 5 m centres with the anticipated column loadings being about 900 kN.
- 7.2 From the borehole logs, Fig 1 and table 1 it can be seen that 1.1-2.6m of Made Ground was proved in the boreholes, underlain by an impersistent Shirdley Hill Sands deposit which in turn lies on a generally very stiff Glacial Clay. Sherwood Sandstone, which also contained Mudstone layers was proved below 6.6-10.7 m bgl. As noted in Section 3 above there could be wider variation in these strata between and away from the boreholes.
- 7.3 We are of the opinion that the Made Ground and Shirdley Hill Sands are unsuitable for the support of the proposed structure due to the risk of excessive total and differential settlements developing. We recommend therefore that the proposed

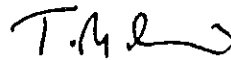
structure is supported on foundations taken below the Made Ground and Shirdley Hill Sands deposits and any softened upper zone of the underlying Glacial Clay, established into the underlying very stiff Glacial Clay stratum and designed on a maximum safe bearing capacity of

300 kN/m²

With this design foundations at least 3.5 m deep will be required and it should be noted that the Made Ground and Shirdley Hill Sands deposits may well be water bearing during the construction period hence groundwater control could be required. If the foundation depth or the use of groundwater control is considered to be uneconomic, it would be necessary to support the proposed structure on piled foundations established into either the very stiff Glacial Clay deposits or the underlying moderately weak or stronger Sherwood Sandstone deposits.



Eur Ing R. H Shires



T M Smith
Engineering Geologist

APPENDIX 'A'

STANDARD PENETRATION TEST

This test is carried out in accordance with BS 1377 Test 19.

On the following logs the test example given would be reported as shown.

TEST DATA

LOG PRESENTATION

Start of Test (m bgl.)	Blow Count	Penetration of Sampler		No. of Blows	
		From	To		
1.0	2.3/3.4.4.3	1.15	1.45	14	
1.0	2.3/17.34.50 for 50mm	1.15	1.35	101	
1.0	38.50 for 50mm	1.0	1.13	88	SP
1.0	50 for 38mm	1.0	1.04	50	SP

The note 'SP' refers to the test being terminated within the seating penetration.

The number of blows is only the 'N' value if a full penetration has been achieved.

The note 'NR' refers to no recovery being made in the SPT sampler.

SOIL STRENGTHS

Soil strengths are assessed from undrained shear strengths values obtained from triaxial compression tests and/or hand penetrometer tests using the following scale.

	Undrained Shear Strength (kN/m ²)
Very Soft	< 20
Soft	20 - 40
Firm	40 - 75
Stiff	75 - 150
Very Stiff	150 - 300
Very Stiff/Hard	> 300

In addition we also use the following subdivisions	
Undrained Shear Strength (kN/m ²)	
Soft/Firm	40-50
Firm/Stiff	45-100

Morning and Evening Water Levels

This column contains water level observations taken in the borehole at the start and end of each shift. The values given are the depths below ground level to a free water surface in the borehole at the time. Where no free water surface is observed, the hole is recorded as "dry". Clearly if a low permeability water bearing stratum is exposed in the borehole and sufficient water has not entered the borehole by then to give a free water surface, the borehole is noted 'dry' although the stratum penetrated is not. A more detailed appraisal can be obtained from a geotechnical analysis of the strata proved.

SUB SOIL Surveys Ltd M29 7LD 0942 883565		MANCHESTER Ground Level		Site Reference 97/2		Borehole No. 1		1 of 2	
		CASING 150mm to depth of 6.0m		Site Knowsley		Client John Newton & Partners			
Boring Method Light Cable Percussion									

Date	Depth of Casing Below G.L.	Water Level Morning & Evening	Depth of Strata Below G.L.	Description of Strata (all depths given in metres)	Reduced Level	No. & Type of Sample	Penetration of Sampler		Number of Blows	Symbolic Log		
							From	To				
08.01.97				Brown sandy clay, sand, brick, ash etc. (MADE GROUND)		1B	0.50	1.00				
					2X	1.35	1.65	13				
				Medium dense brown silty SAND with gravelly zones		3X	1.95	2.25	25			
					4D 5X	2.40 2.75	3.05	23				
				Very stiff reddish brown very sandy CLAY with a little gravel and sand lenses		6D 7X	3.40 3.65	3.95	45			
					8U	4.30	4.75					
					9D	4.85						
					10U	5.50	5.95					
					11D	6.05						
					12U	6.50	6.95					
					13D	7.05						
					14U	7.50	7.95					

Sample Key: B.Bulk D.Disturbed U.Open Tube V.Vane W.Water X.Standard Penetration Test

Water Level Observations during boring depths below ground level					Estimated Seepage	Depth of Casing when sealed N.S. - Not Sealed	Water level in Cased/Uncased Borehole on Completion depth below ground level		
depth observed	after 5 mins.	after 10 mins.	after 15 mins.	after 20 mins.			Date	Water Level	Depth of Casing
None									
						09.01.97	6.20	Nil	

Water Added to Assist Boring at:

REMARKS
 Time spent excavating by hand - 45 minutes

SUB SOIL Surveys Ltd	MANCHESTER M29 7LD 0942 883565	Ground Level	Site Reference 97/2	Borehole No. 1 2 of 2

Boring Method Light Cable Percussion	CASING 150mm to depth of 6.0m	Site Knowsley Client John Newton & Partners
---	----------------------------------	--

Date	Depth of Casing Below G.L.	Water Level Morning & Evening	Depth of Strata Below G.L.	Description of Strata (all depths given in metres)	Reduced Level	No. & Type of Sample	Penetration of Sampler		Number of Blows	Symbolic Log
							From	To		
08.01.97	6.0	Dry	10.90 11.2	Very stiff reddish brown very sandy CLAY with a little gravel and sand lenses		150	8.05			
						16U	8.50	8.95		
						17D	9.05			
						18U	9.50	9.95		
						19D	10.05			
						20U	10.50	10.90		NR
				Reddish brown sandy MUDSTONE, weak		21X	11.05	11.20	89	

Sample Key: B.Bulk D.Disturbed U.Open Tube V.Vane W.Water X.Standard Penetration Test									
Water Level Observations during boring depths below ground level					Estimated Seepage	Depth of Casing when sealed N.S. - Not Sealed	Water level in Cased/Uncased Borehole on Completion depth below ground level		
depth observed	after 5 mins.	after 10 mins.	after 15 mins.	after 20 mins.			Date	Water Level	Depth of Casing

Water Added to Assist Boring at:

REMARKS

SUB SOIL	MANCHESTER Surveys Ltd M29 7LD 0942 883565	Ground Level	Site Reference 97/2	Borehole No. 2 1 of 2
	Boring Method Light Cable Percussion	CASING 150mm to depth of 6.0m	Site Knowsley	Client John Newton & Partners

Date	Depth of Casing Below G.L.	Water Level Morning & Evening	Depth of Strata Below G.L.	Description of Strata (all depths given in metres)	Reduced Level	No. & Type of Sample	Penetration of Sampler		Number of Blows	Symbolic Log
							From	To		
09.01.97			2.60							

Sample Key: B.Bulk D.Disturbed U.Open Tube V.Vane W.Water X.Standard Penetration Test

Water Level Observations during boring depths below ground level					Estimated Seepage	Depth of Casing when sealed N.S. - Not Sealed	Water level in Cased/Uncased Borehole on Completion depth below ground level		
depth observed	after 5 mins.	after 10 mins.	after 15 mins.	after 20 mins.			Date	Water Level	Depth of Casing
None									
						10.01.97	5.70	Nil	
Water Added to Assist Boring at:									

REMARKS

Time spent chiselling - 1.25 hrs. Time spent excavating by hand - 30 minutes

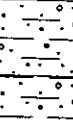
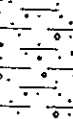
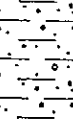
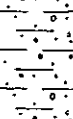
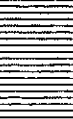
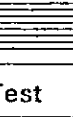
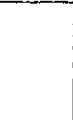
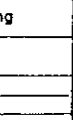
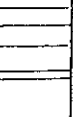
SUB SOIL Surveys Ltd	MANCHESTER M29 7LD 0942 883565	Ground Level	Site Reference 97/2	Borehole No. 2	2 of 2
	Boring Method Light Cable Percussion		Casing 150mm to depth of 6.0m		Site Knowsley
		Client John Newton & Partners			

Date	Depth of Casing Below G.L.	Water Level Morning & Evening	Depth of Strata Below G.L.	Description of Strata (all depths given in metres)	Reduced Level	No. & Type of Sample	Penetration of Sampler		Number of Blows	Symbolic Log
							From	To		
09.01.97	6.0	Dry	10.70	Very stiff reddish brown sandy CLAY with a little gravel and sand lenses		15C	8.05			
						16C	8.50	8.95		
						17C	9.05			
						18C	9.50	9.95		
						19C	10.05			
						20E	10.50	10.90		
			12.15	Reddish brown SANDSTONE, weak to moderately weak or stronger		21C	11.05	11.10	50	
						22C	11.30			
						23C	11.70	11.78	50	SP
						24C	12.00			
						25C	12.10	12.15	50	SP NR

Sample Key: B.Bulk D.Disturbed U.Open Tube V.Vane W.Water X.Standard Penetration Test									
Water Level Observations during boring depths below ground level					Estimated Seepage	Depth of Casing when sealed N.S. - Not Sealed	Water level in Cased/Uncased Borehole on Completion depth below ground level		
depth observed	after 5 mins.	after 10 mins.	after 15 mins.	after 20 mins.			Date	Water Level	Depth of Casing
Water Added to Assist Boring at:									

REMARKS

SUB SOIL Surveys Ltd MANCHESTER M29 7LD 0942 883565	Ground Level	Site Reference 97/2	Borehole No. 3	1 of 2	
	Boring Method Light Cable Percussion	CASING 150mm to depth of 4.5m	Site Knowsley		
	Client John Newton & Partners				

John Newton & Partners											
Date	Depth of Casing Below G.L.	Water Level Morning & Evening	Depth of Strata Below G.L.	Description of Strata (all depths given in metres)	Reduced Level	No. & Type of Sample	Penetration of Sampler		Number of Blows	Symbolic Log	
							From	To			
10.01.97				Clay with stone, brick, cloth etc. (MADE GROUND)		1B	0.50				
			1.10	Medium dense greyish brown silty SAND		2X	1.35	1.65	10		
			1.90	Firm brown sandy CLAY with a little gravel and greyish zones		3D 4X	1.80 1.95	2.25	11		
			2.40	Very stiff reddish sandy brown CLAY with a little gravel and sand lenses		5U	2.40	2.85			
						6D	2.95				
						7U	3.50	3.95			
						8D	4.05				
						9U	4.50	4.95			
						10D	5.05				
						11U	5.50	5.95			
						12D	6.05				
			6.60	Reddish brown MUDSTONE, weak		13U	6.50	6.90			
						14D 15X	6.90 7.05	7.35	123		
					16D	7.50					
					17X	8.05	8.28	106			
			8.00								

Sample Key: B.Bulk D.Disturbed U.Open Tube V.Vane W.Water X.Standard Penetration Test

Water Level Observations during boring depths below ground level					Estimated Seepage	Depth of Casing when sealed N.S. - Not Sealed	Water level in Cased/Uncased Borehole on Completion depth below ground level		
depth observed	after 5 mins.	after 10 mins.	after 15 mins.	after 20 mins.			Date	Water Level	Depth of Casing
6.30					On pulling casing				
Water Added to Assist Boring at:									

REMARKS

Time spent chiselling - 1 hrs. Time spent excavating by hand - 30 minutes

APPENDIX 'B'

TEST RESULTS - EXPLANATION OF TABLE HEADINGS

CLASSIFICATION & STRENGTH

Classification

I_p - Plasticity Index
 W_L - Liquid Limit
 W_p - Plastic Limit
} - Atterberg Limits

$W\%$ - Moisture Content

Strength

Test - U1 - Single 38mm Undrained Triaxial
U2 - Set of Two 38mm Undrained Triaxials
U3 - Set of Three 38mm Undrained Triaxials

Test - M1 - Single Stage 100mm Undrained Triaxial
M2 - Two Stage 100mm Undrained Triaxial
M3 - Three Stage 100mm Undrained Triaxial

Test - UC - Unconfined compressive strength

γ_b - Bulk Density

σ_3 - Cell Pressure

$\sigma_1 - \sigma_3$ - Maximum Deviator Stress

c - Shear Strength

ϕ - Angle of Friction

CHEMICAL ANALYSIS

Total (%) - Percentage sulphate (SO_3) in dried soil sample

2:1 Extract (g/l) - Grams per litre sulphate (SO_3) in 2:1 water:soil extract

Groundwater (g/l) - Grams per litre sulphate (SO_3) in groundwater sample

To convert SO_3 to SO_4 multiply SO_3 by 1.2

LABORATORY RESULTS - Classification and Strength

Project: Knowsley

Project No: 97/2

Sample				Classification					Strength					
Hole	Depth	Type	Description	% pass. .425 mm	I _P	W _L	W _P	W%	Test	γ_b Mg/m ³	σ_3 kN/m ²	$\sigma_1 - \sigma_3$ kN/m ²	c kN/m ²	ϕ deg
1	4.30 4.75	8U	Very stiff reddish brown sandy CLAY with a little gravel					7.6	U2	2.33	138 414	1081 918	500	0
	5.50 5.95	10U	Very stiff reddish brown sandy CLAY with a little gravel and occasional sand lenses					7.6	U2	2.33	138 414	792 1576	102	36
	6.50 6.95	12U	Very stiff reddish brown very sandy CLAY with a little gravel					NO TEST						
	7.50 7.95	14U	Very stiff reddish brown sandy CLAY with a little gravel					7.9	U3	2.33	138 276 414	898 870 1256	504	0
	8.50 8.95	16U	Very stiff reddish brown sandy CLAY with a little gravel and occasional sand lenses					8.9	U2	2.35	138 414	789 1415	132	32
	9.50 9.95	18U	Very stiff reddish brown very sandy CLAY with a little gravel					NO TEST						
2	3.30 3.75	6U	Very stiff reddish brown sandy CLAY with a little gravel					7.2	U2	2.38	138 414	1129 1091	555	0
	4.50 4.95	8U	Very stiff reddish brown very sandy CLAY with sand lenses and a little gravel					8.3	U2	2.31	138 414	472 1586	0	41
	5.50 5.95	10U	Very stiff reddish brown very sandy CLAY with a little gravel					NO TEST						
	6.50 6.95	12U	Very stiff reddish brown very sandy CLAY with occasional sand lenses and a little gravel					8.7	U3	2.31	138 276 414	731 863 995	431	0
	7.50 7.95	14U	Very stiff reddish brown sandy CLAY with a little gravel					NO TEST						
	8.50 8.95	16U	Very stiff reddish brown very sandy CLAY with a little gravel					NO TEST						
	9.50 9.95	18U	Very stiff reddish brown sandy CLAY with a little gravel and occasional sand lenses and a cobble					7.9	U2	2.27	138 414	617 1281	77	33
3	2.40 2.85	5U	Very stiff brown sandy CLAY with a little gravel and occasional sand lenses					12	U2	2.30	138 414	348 410	189	0
	3.50 3.95	7U	Very stiff reddish brown very sandy CLAY with a little gravel and occasional sand lenses					8.5	U2	2.30	138 414	566 1236	62	33
	4.50 4.95	9U	Very stiff reddish brown very sandy CLAY with a little gravel and sand lenses					NO TEST						
	5.50 5.95	11U	Very stiff reddish brown sandy CLAY with a little gravel and occasional lenses of sand					8.4	U3	2.29	138 276 414	832 1205 1395	572	0
	6.50 6.90	13U	Friable reddish brown very sandy CLAY/weathered MUDSTONE					11	U3	2.32	138 276 414	578 964 964	418	0
Remarks											SUB SOIL			
											M29 7LD 01942 883565			

LABORATORY RESULTS - Consolidation

Project: Knowsley

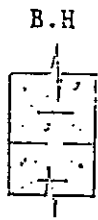
Project No: 97/2

Sample														
Hole	Depth	Type	Description	Size mm	W%	γ_b Mg/m ³	γ_d Mg/m ³	G _s	S _r %	p kN/m ²	Voids Ratio e	m _v m ² /MN	c _v m ² /Yr	Log √ t
2	3.30 3.75	6U	Very stiff reddish brown sandy CLAY with a little gravel	h19 d75	8.9						0 50.0 75.0 125.0 225.0 425.0 825.0	0.16 0.11 0.07 0.05 0.03		
Remarks											SUB SOIL			

M29 7LD 01942 983565

APPENDIX 'C'

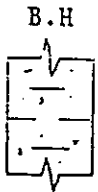
KEY - FOR SOIL SECTION



100

UNDRAINED SHEAR STRENGTH - C_u Value (KN/m^2)

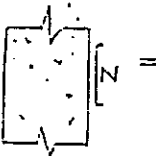
- approximated to the nearest whole number



15

MOISTURE CONTENT (%)

- approximated to the nearest whole number



STANDARD PENETRATION TEST

- Number of blows per 300mm unless otherwise stated

- SP - test terminated within the seating penetration



HIGHEST STANDING WATER LEVEL



20 mins.

Struck

OBSERVED GROUNDWATER SEEPAGE

100 000 1:1

EQUIPMENT STORE

BOILER HOUSE

WORK SHOP

COOLING TOWERS

SH1

BH3

BH2

WORKSHOPS

DIG PLANT

SURFACTANT HALL

SWITCH ROOM

DRYER HOUSE

LABS

ENGINEERING OFFICES

MAIN INTERCEPTOR

FLUME

VALVE CHAMBER

WAREHOUSE

CAR PARK

OFFICE BLOCK

PENRYN ROAD



Site plan

SUB SOIL

01942 883565

Scale

1:1000

Ref

97/2

Copy Safety 66

JOHN NEWTON & PARTNERS

Consulting Civil Structural & Environmental Engineers

PARKVIEW HOUSE, WOODVALE OFFICE PARK, WOODVALE ROAD,
BRIGHOUSE, WEST YORKSHIRE, HD6 4AB
TEL: BRIGHOUSE (01484) 400691 FAX: (01484) 400696
OFFICES IN BUCKINGHAMSHIRE & LONDON



Our ref: NG1019.3\UNJAWe

27 February 1997

Alan Blackburn, Esq.
Contract Chemicals,
Knowlesley Industrial Estate,
Penrhyn Road,
Knowlesley,
Nr Liverpool

Dear Mr Blackburn,

Re: New Production Building

Please find enclosed copy of a letter received from Sub Soil Survey Ltd giving details of the Contamination Test Results.

Should you wish to discuss this with me then please do not hesitate to contact me.

Yours sincerely,

J.A. WOOD
BSc, C.Eng. MStruct E.
Partner

Enc.

cc: Mr J Sugden - Glendinning Hanson Partnership,
Ashall Construction Ltd ✓

JOHN NEWTON & PARTNERS NORTHERN
J.A. WOOD, BSc, CEng, MStructE, S.W. EVANS, BEng, CEng, MICE, MStructE,
J. NEWTON, CEng, MICE, A.N. BRACKLEY, BEng (Hons), CEng, MICE, MStructE,
A.K. DAWSON, BSc, CEng, MICE, P.L. HURD, BSc, CEng, MICE.

SUB SOIL



Surveys Ltd.

Specialists in Geotechnical Engineering

YOUR REF.

OUR REF. RHS

26 February 1997

CHADDOCK LANE, ASTLEY, MANCHESTER M29 7LD

Telephone: 01942 883565

Fax No: 01942 883566

John Newton and Partners

Parkview House
Woodvale Office Park
Woodvale Road
Brighouse
West Yorkshire
HD6 4AB

For the Attention of Mr. J Wood

Dear Sir,

Contamination Test Results at Contract Chemicals, Knowsley
Contract No 97/2

Further to our recent report on the Ground Investigation at this site we are pleased to enclose the results of testing for specific contaminants carried out on samples recovered from the site and comment on these as follows:

1. The levels of the specific contaminants tested for all lie below the lowest of the ICRCCL trigger concentrations (for gardens, allotment, etc.), hence the results indicate that there should be no specific risk associated with similar soils on the site. Clearly it would be advisable, however, for normal construction hygiene practice to be followed by site operatives and any materials found on site that may be suspected of containing higher levels of contaminants (eg unusual colours, odours, etc.) should be subjected to further testing.

2. With regard to disposal of material arising from the site, it appears that there may be a premium to pay due to elevated levels of Phenols and Nickel in two of the samples tested which would classify these material as Class B on the Kelly tables. Further advice on disposal should, however be obtained from the Waste Regulation Authority controlling this area

We trust that these comments prove to be of value and apologise for any inconvenience that the delay in submitting these results/comments may have caused, however should any further help or advice be required please do not hesitate to contact us.

Yours faithfully,
pp Sub Soil Surveys Ltd

A handwritten signature in black ink, appearing to read 'R H Shires', with a long horizontal flourish extending to the right.

Eur Ing R H Shires

SAL

Job 7245/Inorganic

Analysis for Inorganics

For

Sub Soil Consultancy Services Limited
Chaddock Lane
Astley
MANCHESTER M29 7LD

F.A.O: Sean A Lee

Order No: 96/615/C/SL Job No: Knowsley 97/2

Date of Sample Receipt: 16.01.97

Date of Sample Testing: 16.01.97 - 23.01.97

Date of Report Issue : 23.01.97

No. of Pages: 2

Signed: *E. Hollywell*

E. Hollywell

Date: 23.01.97

Checked: *C.M. Dever*

C.M. Dever

Date: 23/1/97

Unless otherwise noted all tests were performed in accordance with SAL Inorganic SOP's.

Scientific Analysis Laboratories Limited
Medlock House
New Elm Road
Manchester M3 4JH

Certificate of Analysis

Our ref: 7245

SOILS: Results are based on air dried sample		Client ID	Client ID	Client ID	Client ID		
		BH1 B1	BH2 B1	BH2 B4	BH3 B1		
		0.5-1.0	0.5-1.0	2.0-2.5	0.5		
		SAL Ref	SAL Ref	SAL Ref	SAL Ref		
		7245 001	7245 002	7245 003	7245 004		
Determinand	Units						
Arsenic	mg/kg	<5	10	5	5		
Mercury	mg/kg	<1.0	<1.0	<1.0	<1.0		
Selenium	mg/kg	<1.0	<1.0	<1.0	<1.0		
Copper	mg/kg	15	35	20	30		
Lead	mg/kg	30	45	15	30		
Zinc	mg/kg	40	75	45	40		
Cadmium	mg/kg	<1.0	<1.0	<1.0	<1.0		
Chromium	mg/kg	20	25	30	20		
Nickel	mg/kg	20	30	40	20		
Water soluble Boron	mg/kg	<1.0	<1.0	<1.0	<1.0		
pH		8.0	8.0	8.0	7.8		
2:1 Sulphate as SO4	mg/l	100	<50	150	150		
Monohydric Phenols	mg/kg	1	<1	<1	<1		
Total Cyanide	mg/kg	6	2	1	<1		
Sulphide	mg/kg	<10	<10	<10	<10		
Toluene extract	mg/kg	1200	<500	<500	<500		

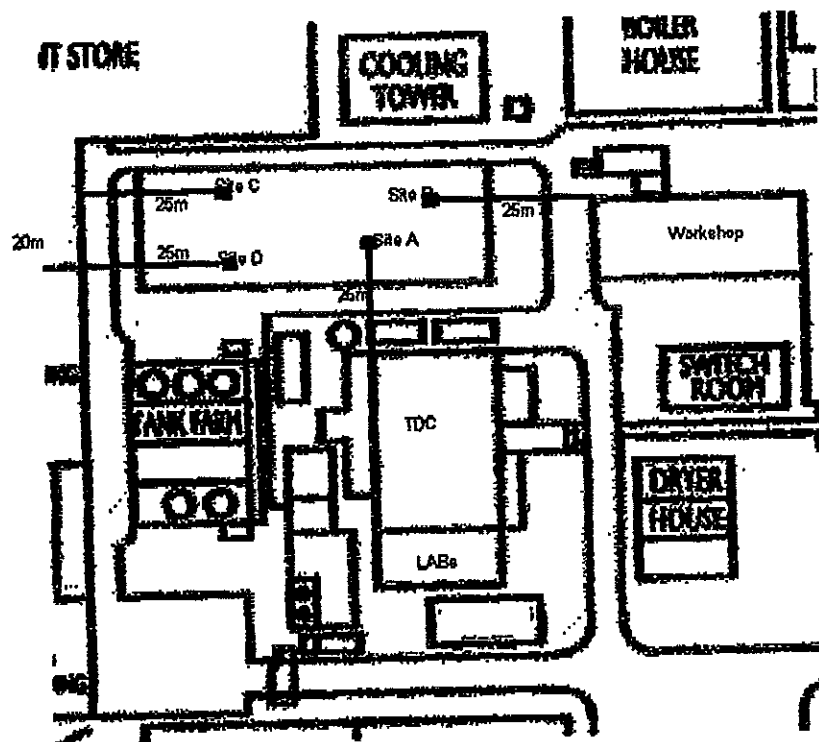
**CCL Ground Investigation
Prior To Constuction of Bonner Building**

RL 2/2/97

Contract Chemicals (Knowsley) Limited New Production Building Land Investigation

As part of the Environmental Management System objectives and targets it was stated that prior to any major construction or excavation work land investigation would be carried out. Samples were taken in four strategic locations which will eventually be covered by hardstanding and the new production building. Samples were taken at a depth of 20-30cm in the locations identified on the plan which were 25m from existing points.

Sampling was carried out by R. Leese and C. Tilston.
Analysis was carried out by Alcontrol Laboratories.



**ALcontrol UK**

Analytical Services

Templeborough House, Mill Close,
Rotherham, S60 1BZ**Yorkshire Environmental**

Tel : 01709 841096

Fax : 01709 841100

Certificate of Analysis

Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 28/01/97

Sample Received: 29/01/97

Analysis Completed: 14/02/97

Sample: Site A

Laboratory Number: 97609109

Order no.3984

Determination	Result	Units	Method
pH (soil)	8.4	pH Units	3.6.2
Solids air dried	87.7	%	11.3
Stones greater than 10mm	< 0.00	%	11.7
Sulphate (soil)	0.049	% SO4	8B
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Cyanide (total) (DSB)	2.51	mg/kg	2.5.1
Phenol monohydric (DSB)	< 1.46	mg/kg	2.21.2
Sulphide (DSB)	< 1.0	mg/kg	*
Arsenic (soil)	< 5.0	mg/kg	8B
Cadmium (soil)	0.18	mg/kg	8B
Chromium (soil)	35.5	mg/kg	8B
Lead (soil)	< 50.0	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	0.20	mg/kg	9B
Copper (soil)	46.0	mg/kg	8B
Nickel (soil)	24.3	mg/kg	8B
Zinc (soil)	96.7	mg/kg	8B
Boron (soil) (water sol)	0.69	mg/kg	8B
PAH Screen FID	< 50.0	mg/kg	*

Signed:

Mark Johnson

14/02/97

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TESTING
No. 0995
No. 0996
No. 0997

Page

of

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Certificate of Analysis

Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 28/01/97

Sample Received: 29/01/97

Analysis Completed: 14/02/97

Sample: Site B

Laboratory Number: 97609110

Order no.3984

Determination	Result	Units	Method
pH (soil)	8.3	pH Units	3.6.2
Solids air dried	86.8	%	11.3
Stones greater than 10mm	< 0.00	%	11.7
Sulphate (soil)	0.056	% SO4	8B
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Phenol monohydric (DSB)	< 1.46	mg/kg	2.21.2
Sulphide (DSB)	1.2	mg/kg	*
Arsenic (soil)	5.7	mg/kg	8B
Cadmium (soil)	0.17	mg/kg	8B
Chromium (soil)	27.0	mg/kg	8B
Lead (soil)	70.5	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	0.26	mg/kg	9B
Copper (soil)	37.9	mg/kg	8B
Nickel (soil)	19.2	mg/kg	8B
Zinc (soil)	133	mg/kg	8B
Boron (soil) (water sol)	0.67	mg/kg	8B
PAH Screen FID	< 50.0	mg/kg	*

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14/02/97

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TESTING
No. 0995
No. 0996

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Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 28/01/97

Sample Received: 29/01/97

Analysis Completed: 14/02/97

Sample: Site C

Laboratory Number: 97609111

Order no.3984

Determination	Result	Units	Method
pH (soil)	8.1	pH Units	3.6.2
Solids air dried	89.1	%	11.3
Stones greater than 10mm	40.9	%	11.7
Sulphate (soil)	1.98	% SO4	8B
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Phenol monohydric (DSB)	< 1.46	mg/kg	2.21.2
Sulphide (DSB)	< 1.0	mg/kg	*
Arsenic (soil)	< 5.0	mg/kg	8B
Cadmium (soil)	0.30	mg/kg	8B
Chromium (soil)	35.7	mg/kg	8B
Lead (soil)	52.7	mg/kg	8B
Mercury (soil)	0.15	mg/kg	9A
Selenium (soil)	0.19	mg/kg	9B
Copper (soil)	36.3	mg/kg	8B
Nickel (soil)	23.6	mg/kg	8B
Zinc (soil)	126	mg/kg	8B
Boron (soil) (water sol)	1.96	mg/kg	8B
PAH Screen FID	< 50.0	mg/kg	*

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Mark Johnson

14/02/97

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TESTING
No. 0995
No. 0996

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Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 28/01/97

Sample Received: 29/01/97

Analysis Completed: 14/02/97

Laboratory Number: 97609112

Sample: Site D

Order no.3984

Determination	Result	Units	Method
pH (soil)	9.9	pH Units	3.6.2
Solids air dried	90.4	%	11.3
Stones greater than 10mm	34.1	%	11.7
Sulphate (soil)	0.078	% SO4	8B
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Phenol monohydric (DSB)	< 1.46	mg/kg	2.21.2
Sulphide (DSB)	1.4	mg/kg	*
Arsenic (soil)	5.2	mg/kg	8B
Cadmium (soil)	0.29	mg/kg	8B
Chromium (soil)	25.3	mg/kg	8B
Lead (soil)	52.4	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	0.29	mg/kg	9B
Copper (soil)	36.4	mg/kg	8B
Nickel (soil)	17.7	mg/kg	8B
Zinc (soil)	104	mg/kg	8B
Boron (soil) (water sol)	1.22	mg/kg	8B
PAH Screen FID	72.0	mg/kg	*

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Mark Johnson

14/02/97

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TESTING
No. 0995
No. 0996

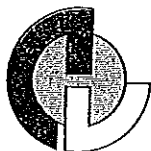
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**CCL Ground Investigation
Prior To Construction Of Flammable Store**



ALcontrol UK

Analytical Services

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Tel : 01709 841096
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Certificate of Analysis

Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 22/07/97

Sample Received: 23/07/97

Analysis Completed: 04/08/97

Laboratory Number: 47405795

Your Order : 4332

Sample : Sample 1

Determination	Result	Units	Method
pH (soil)	8.0	pH Units	3.6.2
Solids air dried	88.6	%	11.3
Stones greater than 10mm	1.69	%	11.7
Sulphate (soil)	0.007	% SO4	8B
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Phenol monohydric (DSB)	< 1.5	mg/kg	2.21.2
Sulphide (DSB)	< 1.0	mg/kg	*
Arsenic (soil)	< 5.0	mg/kg	8B
Cadmium (soil)	0.12	mg/kg	8B
Chromium (soil)	37.3	mg/kg	8B
Lead (soil)	< 50.0	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	< 0.10	mg/kg	9B
Copper (soil)	< 10.0	mg/kg	8B
Nickel (soil)	21.7	mg/kg	8B
Zinc (soil)	33.7	mg/kg	8B
Boron (soil) (water sol)	0.53	mg/kg	8B
PAH Screen FID	60.0	mg/kg	*

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Mark Johnson

04/08/97

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TESTING
No 0955
No 0956
No 0957



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Certificate of Analysis

Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 22/07/97

Sample Received: 23/07/97

Analysis Completed: 04/08/97

Your Order : 4332

Laboratory Number: 47405796

Sample : Sample 2

Determination	Result	Units	Method
pH (soil)	9.7	pH Units	3.6.2
Solids air dried	86.5	%	11.3
Stones greater than 10mm	7.59	%	11.7
Sulphate (soil)	0.067	% SO4	8B
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Phenol monohydric (DSB)	< 1.5	mg/kg	2.21.2
Sulphide (DSB)	9.7	mg/kg	*
Arsenic (soil)	7.2	mg/kg	8B
Cadmium (soil)	0.40	mg/kg	8B
Chromium (soil)	22.8	mg/kg	8B
Lead (soil)	54.8	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	0.17	mg/kg	9B
Copper (soil)	26.3	mg/kg	8B
Nickel (soil)	15.6	mg/kg	8B
Zinc (soil)	51.0	mg/kg	8B
Boron (soil) (water sol)	0.71	mg/kg	8B
PAH Screen FID	< 50.0	mg/kg	*

Signed:

Mark Johnson

04/08/97

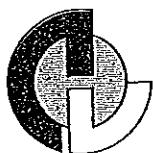
1

1



TESTING
No. 9995
No. 9996
No. 1118

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Certificate of Analysis

Customer : Contract Chemicals,
Penrhyn Road,
Knowsley Industrial Park South
Prescot,
Merseyside

Sample Date: 22/07/97

Sample Received: 23/07/97

Analysis Completed: 04/08/97

Laboratory Number: 47405797

Your Order : 4332

Sample : Sample 3

Determination	Result	Units	Method
pH (soil)	9.3	pH Units	3.6.2
Solids air dried	89.6	%	11.3
Stones greater than 10mm	19.3	%	11.7
Sulphate (soil)	0.051	% SO4	8B
Cyanide (total) (DSB)	< 2.00	mg/kg	2.5.1
Thiocyanate (DSB)	< 10.0	mg/kg	2.11.1
Phenol monohydric (DSB)	< 1.5	mg/kg	2.21.2
Sulphide (DSB)	14.7	mg/kg	*
Arsenic (soil)	5.8	mg/kg	8B
Cadmium (soil)	0.34	mg/kg	8B
Chromium (soil)	22.4	mg/kg	8B
Lead (soil)	65.9	mg/kg	8B
Mercury (soil)	< 0.10	mg/kg	9A
Selenium (soil)	0.20	mg/kg	9B
Copper (soil)	18.8	mg/kg	8B
Nickel (soil)	15.8	mg/kg	8B
Zinc (soil)	56.2	mg/kg	8B
Boron (soil) (water sol)	0.67	mg/kg	8B
PAH Screen FID	< 50.0	mg/kg	*

Signed:

Mark Johnson

04/08/97

1

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No 0995
No 0996
No 0998

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APPENDIX E
REMEDIATION WORKS METHOD STATEMENT

Report No: 15128/1
Date: November 1993

**METHOD STATEMENT DETAILING
INSTALLATION OF SURFACE DRAINAGE SYSTEM
AND ASSOCIATED EARTHWORKS**

**prepared for
CONTRACT CHEMICALS**

**ROBINSON FLETCHER CONSULTANTS LIMITED
Pier House
Wallgate
Wigan
WN3 4AL**

**METHOD STATEMENT DETAILING
INSTALLATION OF SURFACE DRAINAGE SYSTEM
AND ASSOCIATED EARTHWORKS**

**at
CONTRACT CHEMICALS KNOWSLEY FACILITY**

1. INTRODUCTION

- 1.1 Robinson Fletcher Consultants Limited (RFC) have been instructed by Contract Chemicals Limited (CC) to provide recommendations and designs to control surface run off from a former waste products chemical storage area which occupies the north western border of the CC site.
- 1.2 Additionally, Robinson Fletcher have also been instructed to provide a method statement detailing removal of ground affected by surface run off of water and soil from the former waste chemical storage area, onto land occupied by McGregor Cory (MC) which lies adjacent to the north western border of the CC site.
- 1.3 The remediation measures proposed follow an earlier site investigation undertaken by Cremer and Warner in April 1993, which concluded that surface run off of water was eroding soil materials from the CC site and depositing them on the ground in the south eastern corner of the MC site.
- 1.4 The report also determined that the surface ponding in the area is a consequence of the impermeability of the underlying clay strata, found at a depth of 0.5m. It is not, therefore, anticipated that it will be necessary to excavate substantially deeper than the upper 0.5m of the soil profile in order to remove the eroded materials on site.
- 1.5 To prevent further deposition of eroded materials it is proposed to intercept and divert surface water run off away from the MC site via a system of kerbing (i.e. bunds) and drains. Following the installation of this system the affected ground in the south eastern corner of the MC site will be excavated and removed.
- 1.6 Based on the information provided in the Cremer and Warner report and also from a visual inspection of the MC site, it is estimated that approximately 400m³ of soil material will need to be removed and be replaced with clean subsoil and topsoil.
- 1.7 The installation of both the drainage system and the proposed earthworks operations, will be assessed by an engineer from RFC. The engineer will be present on site during installation of the drainage system and during excavation and replacement of soil materials from the adjacent MC site.

2. INSTALLATION OF SURFACE RUN-OFF DRAINAGE SYSTEM

2.1 General

- 2.1.1 It is proposed to construct the surface drainage system prior to excavation of the ground on the MC property. Works will need to be staged in this manner to prevent redeposition of any eroded materials on the clean soil materials which will be used to remediate the MC site.
- 2.1.2 During all stages of construction the guidelines, principles and conditions as outlined by the Water Authorities Association in their 1989 publication 'Sewers for adoption' (3rd Edition) will be followed.
- 2.1.3 The relevant drawings detailing the construction of the proposed drainage system are shown in Appendix A. The drawings are referenced Nos. 15128/1 to 15128/7, inclusive.

2.2 Outline of Proposed Drainage Scheme

- 2.2.1 A full topographical survey of the site has been undertaken to determine the characteristics of site drainage on the former waste chemical storage area. The survey has determined that an area approximately 3500m² in size drains towards the southern and western border of the hardstanding. Based on an anticipated rainfall figure of 50mm/hr and therefore a flow of approximately 50 litres per second, the following scheme has been proposed to deal with surface run-off.

2.2.2 Kerbing

- (i) It is proposed to construct a 200mm high reinforced concrete kerb along the western border of the site to prevent surface waters overspilling onto the adjacent MC site. The kerbing will follow the gradient of the site which falls at approximately 1 in 30 to the south and will channel the water towards the south western corner of the site where it will enter a land drain. A plan of the kerb line is shown on Drawing No. 15128/1 in Appendix A.
- (ii) The kerb will be laid in 10.0m sections and each joint will incorporate a waterproof seal to prevent leakage through the structure. The kerb will adjoin the existing concrete bund that surrounds the current waste chemical storage compound. Drawing No. 15128/2 in Appendix A shows the kerbing in section.

- (iii) Subject to a further brief investigation it may be necessary to extend the kerbing system along the back of the existing waste chemical storage compound and tie this in with the proposed land drain.

2.2.3 Formation of Proposed Land Drain (RE to S1)

- (i) It is proposed to install a land drain in the south western corner of the former waste chemical storage area. A detailed section drawing is given as Drawing No. 15128/3 in Appendix A.
- (ii) The drain will extend for a distance of 30m and will fall at a gradient of 1 in 30 to the south. The drain will comprise a perforated 225mm diameter glazed clay pipe, the base of which will lie at a depth of approximately 1.0m. The appropriate invert levels for RE (the most northerly part of the drain) and S1 (the first manhole) are provided on the drainage plan for the site (see Drawing No. 15128/1).
- (iii) The trench in which the pipe is laid will be at least 0.6m wide. The trench will be partly lined along its base and western wall with a LDPE geomembrane. The geomembrane and the eastern wall will then be covered with a geotextile, which will act to prevent the underlying membrane from being pierced/torn by any sharp backfill material. Additionally, the geotextile should prevent sediment contained in groundwater from entering through the sides of the trench. Once the lining membrane and geotextile have been laid and anchored in the base of the trench the perforated drainage pipe will be installed at the appropriate invert levels. The drainage trench will then be carefully backfilled with non deleterious 20-40mm diameter limestone gravel which will form a permeable surround to the perforated pipe. A schematic cross section highlighting construction of the land drain is given as Drawing No. 15128/3 in Appendix A. Once installed, the land drain will require maintaining to prevent the potential spread of vegetation across the surface of the feature.
- (iv) A rodding eye will be installed at the most northerly part of the trench (i.e. at location RE) in order to facilitate maintenance of the pipe.
- (v) Manhole S1 will be constructed at the southern point of the land drain. The manhole construction is shown in section on Drawing No. 15128/4 in Appendix A. The manhole will incorporate a sediment trap which will intercept any sediment associated with the surface run-off before the water is drained to sewer. The sediment trap will therefore require regular inspection and should be emptied of any debris at appropriate intervals.
- (vi) A surplus of soil will be generated by work to excavate the land drain. This will be disposed of at a landfill site suitably licensed to accept such material.

2.2.4 Formation of Branch Connection Between Land Drain and Effluent Drainage System (S1 to S3)

- (i) It is proposed to connect the land drain with the trade effluent discharge drain which lies to the east of the current waste chemicals storage compound. The connection will be made in two parts.
- (ii) The first drain run will be laid between Manhole S1 and S2. The run will extend for a distance of approximately 46.0m and will fall from the west at a gradient of 1 in 100. The depth of excavation, in order to lay the pipe, will therefore vary between approximately 1.0 and 3.0m along its length. A schematic section highlighting construction of the drainage pipe is shown on Drawing No. 15128/5.
- (iii) Essentially the drain will comprise a non perforated, vitrified clay pipe 225mm in diameter which will be well bedded in a granular surround. Arisings from the excavation of the trench will be used to backfill above the pipe bedding. The upper 0.5m of excavated soil will be taken off site and disposed of at a landfill suitably licensed to accept such material.
- (iv) Manhole S2 should be constructed as shown in section on Drawing No. 15128/6. A second shorter drain run will then be constructed between Manholes S2 and S3. Manhole S3 already exists on site, associated with the current effluent discharge system. It will consequently require modification in order to accept the new branch drain from Manhole S2 which will enter through the side of the manhole just above the existing bench, at the base of the structure.
- (v) The invert level of the effluent drain in Manhole S3 lies at 3.5m below ground level. Consequently, the branch connecting, S2 with S3 will fall at a gradient of approximately 1 in 5.8. A cross section of Manhole S3 is shown on Drawing No. 15128/7.

3. EXCAVATION OF GROUND AFFECTED BY SURFACE WATER RUN OFF FROM MCGREGOR CORY PROPERTY

3.1 General

- 3.1.1 Once the land drain and branch connection to trade effluent discharge have been constructed, and surface run-off from the former waste chemical storage area is subsequently controlled, work can then commence to excavate the ground affected by surface water run off on the adjacent MC property.
- 3.1.2 The results of Cremer and Warner's investigation on the MC site suggest that the ground that is affected by drainage run off lies predominantly within the upper 0.5m of the soil profile. It was also concluded that ponding within the area of contamination is a consequence of the impermeability of the underlying clay strata.
- 3.1.3 The approximate area of land which will require removal, is shown on Drawing No. 15128/8 in Appendix A. It is proposed to excavate this area to at least 0.5m or to a depth where Robinson Fletcher are satisfied that the ground has been remediated satisfactorily. The estimated volume of soil to be excavated and removed from the site is approximately 400m³.

3.2 Excavation of Ground From McGregor Cory Property

- 3.2.1 The extent of the area to be excavated will be discussed with MC and will be delineated by pole and fluorescent tape before excavation works commence.
- 3.2.2 Thereafter, it is proposed to construct an access to the affected area through the fence that forms the boundary of MC's land as shown on Drawing No. 15128/8. It is anticipated that most of the concrete pillars of the chain link fence will need to be removed from the area surrounding the affected ground in order to allow appropriate excavation to take place. The approximate extent of fencing to be removed is shown on Drawing No. 15128/8.
- 3.2.3 A bridge will be constructed over the newly formed land drainage system in order to accommodate plant access to the area. Access to the MC site will be made through the former waste chemical storage area on the MC site. Consequently, the access route will need to be temporarily covered with a wooden lattice roadway to prevent mud being taken off site on the wheels of plant vehicles.
- 3.2.4 The contractor will use a tracked excavator to dig out the ground on site until clean subsoil is encountered. The contractor will be required to acquaint himself and if necessary devise a scheme to deal with the potential problem of ponding which may affect the area of excavation. The excavated material will be stockpiled in a safe manner i.e. stable slopes and to a shallow height adjacent to the access point to the MC land. The stockpiled material will be removed off site

through CC's site in one operation and disposed of at a suitably licensed disposal point.

3.3 Restoration

3.3.1 Once all the affected material has been removed and disposed from the MC site the excavated area will be restored to original ground level with clean subsoil dressed with a 100mm layer of topsoil. It is anticipated that the subsoil and topsoil will be stockpiled separately on the MC site close to the access point. Alternatively it may be brought in as required. The subsoil and topsoil can then be spread across the excavated area in a continuous operation.

3.3.2 On completion of works to lay the topsoil, the area will be re-seeded and the original chain link fencing reinstated to a condition which is as near as possible to the existing fence condition. If any parts of the fence are damaged by works to remove or reinstall the feature then these will be accordingly repaired.

3.4 Areas of Further Excavation

3.4.1 During a general inspection of MC land lying adjacent to CC's former chemical waste storage area, it became apparent that pockets of ground have been affected by surface run off at two further locations along the western border with CC's site.

3.4.2 The affected areas appear limited in size and it is proposed to treat both areas in a similar manner to that proposed for the south eastern corner of MC's property (i.e. take down fence, excavate affected soil, replace with clean soil and topsoil, seed and reinstate fence.).

4 MONITORING OF WORKS

- 4.1 During works to construct the surface drainage system on the CC site and subsequent works to excavate and reinstate the land on MC's site, an engineer from Robinson Fletcher will undertake daily site visits to supervise operations.
- 4.2 For the purposes of consultation during the course of site works, the supervising engineer will be contactable either on site or at the offices of Robinson Fletcher Consultants Limited. The telephone numbers are:
- | | | |
|-----|-----------------|-------------|
| i) | Site Mobile No. | 0860 433033 |
| ii) | RFC Office No. | 0942 824406 |
- 4.3 Daily records will be kept outlining progress of the works. A sample record is provided in Appendix B.
- 4.4 The engineer will advise the contractor as to whether the specified site works are being undertaken in a satisfactory manner and will advise on satisfactory completion or as to whether any further work is required.
- 4.5 Any alterations to the specified works will be subject to the approval of the engineer from Robinson Fletcher Consultants Limited.

Our Ref: UK93/15128/BWB/mb/lcc0604.doc

Date: 6 April 1994

Contract Chemicals (Knowsley) Limited
Penrhyn Road
Knowsley Industrial Park South
Prescot
Merseyside
L34 9HY

For the attention of Mr Paul Kinley

Dear Paul,

Re: Remediation Work Knowsley

Further to recent discussions and our letter of 31 March 1994, please find enclosed a draft plan which has been drawn up from the additional survey work conducted at the McGregor Cory site last week.

The surveyor has attempted to delineate the visually affected areas (hatched on the plan) which amounts to an area of approximately 440m². Assuming that a nominal 0.5m of soil is to be removed for decontamination purposes, this would amount to 220m³ of soil material that will require off-site disposal.

There will, undoubtedly, be a slightly greater volume of material generated by the decontamination operations. However, our original estimate of 400m³ of soil material requiring disposal, and the associated budget costs set aside it, should cover the required scope of works.

We will be preparing a formal response to Messrs. White Young's letter of 28 March 1994, in due course and would welcome any comments you should have. We will be incorporating our survey plan with our response in order to agree the maximum extent of the decontamination excavations.

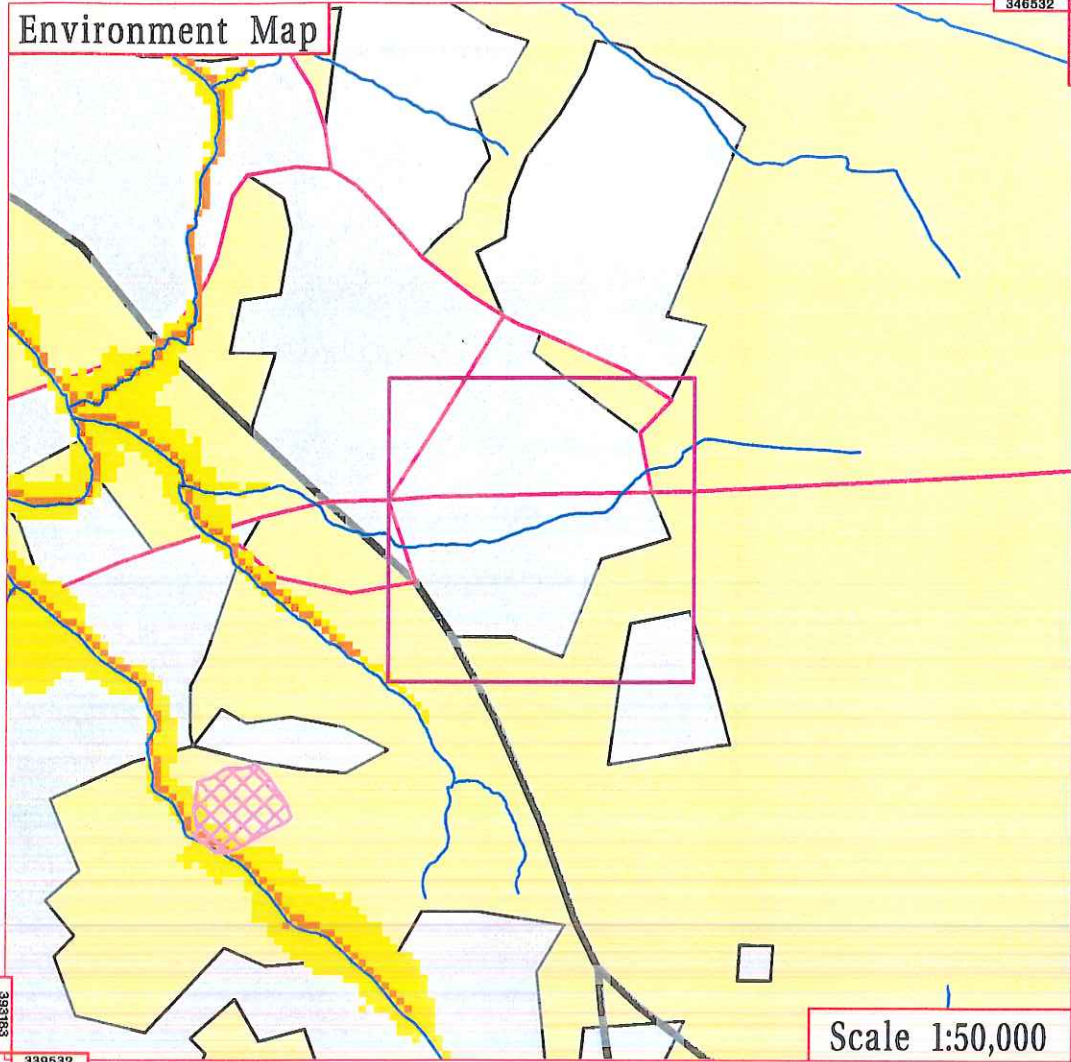
I will be out of the office until Tuesday 12 April 1994, hence should you wish to discuss any matter in greater detail, please contact Mr John Martin (Director) at the above office.

Yours sincerely

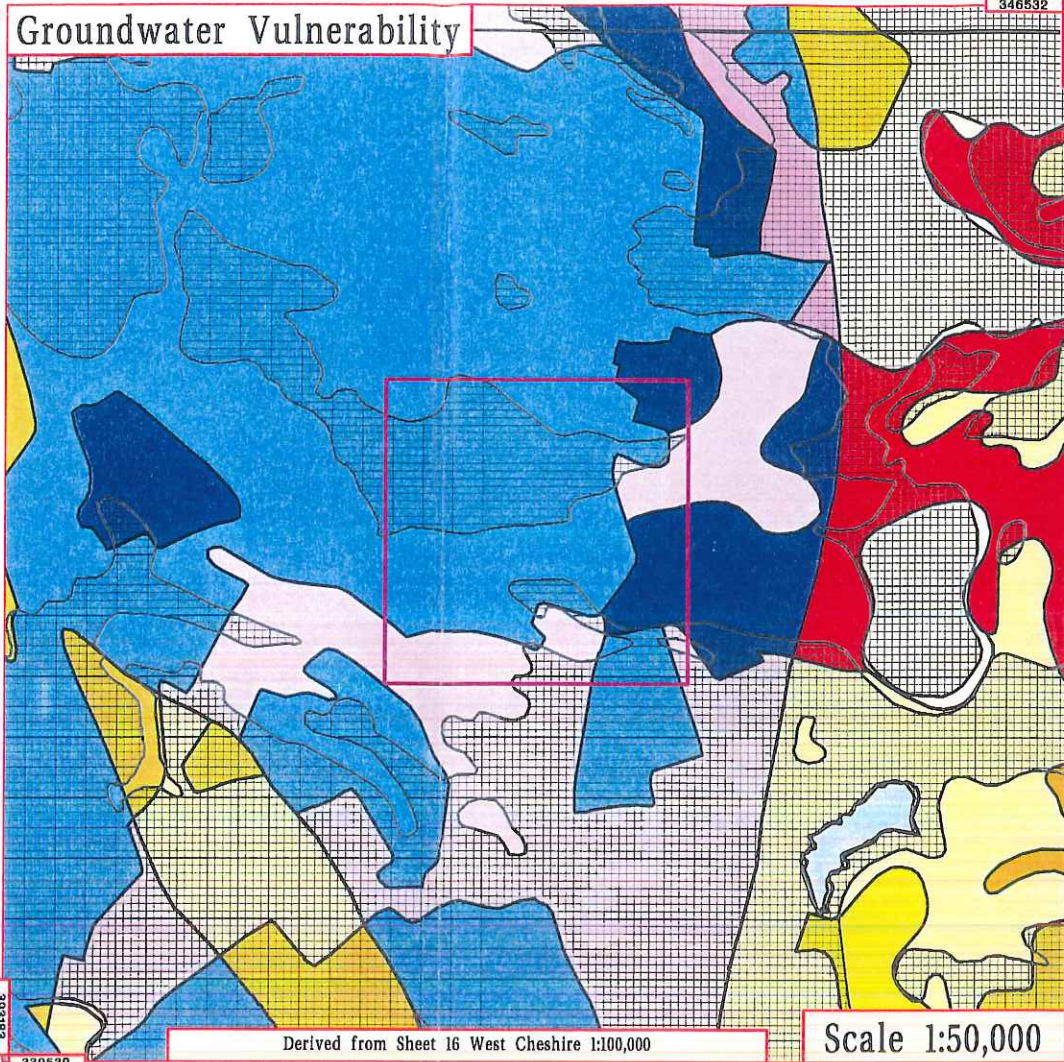
B. W. Blundell
for and on behalf of
Robinson Fletcher consultants Limited

CC - David Mawdsley, Alsop Wilkinson Solicitors

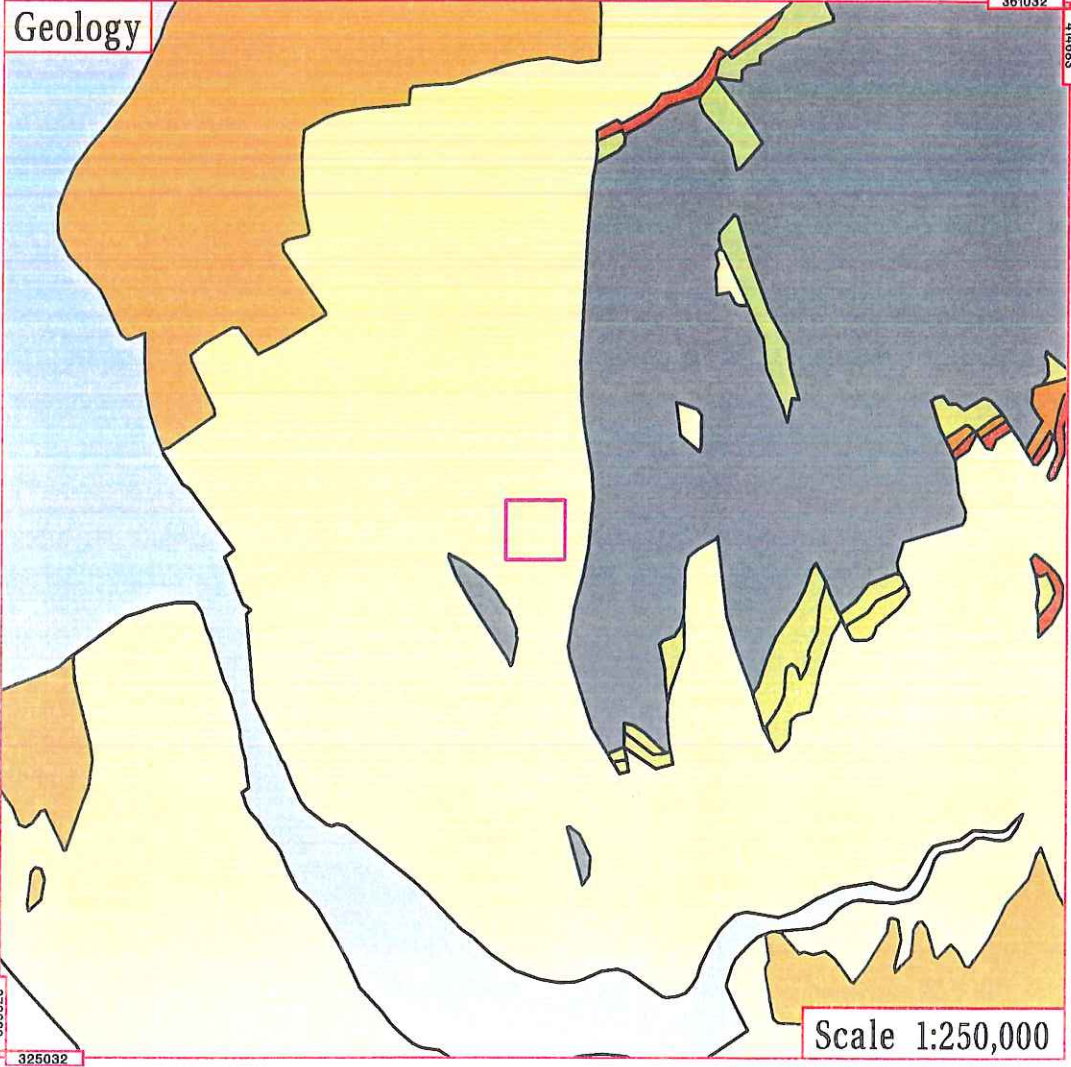
Environment Map



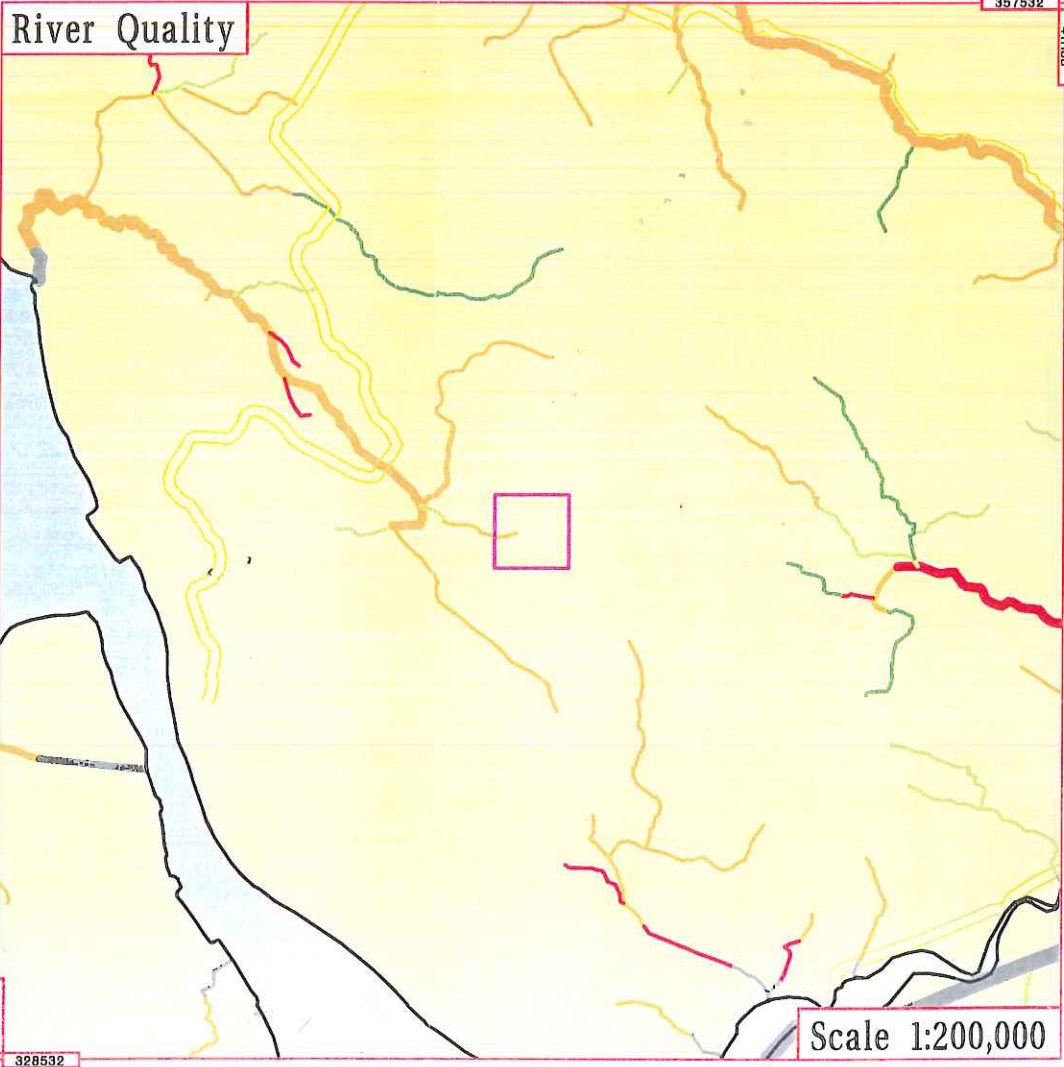
Groundwater Vulnerability



Geology



River Quality



EnviroCheck

Environmental Site Sensitivity Data

CLIENT DETAILS

Order No. ES23807-1

Customer Ref: Robert Tinsley
AIG Consultants Limited
PIER HOUSE WALLGATE
WIGAN
WN3 4AL

SITE DETAILS

Grid Reference 343032 396683

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Penrhyn Road
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Guide to the Environment Map

- | | | | |
|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------|
| Urban Areas | Motorways | 'A' Roads | Extent of Search |
| 0 - 1 m estimated 100 yr flood depth | 1 - 2 m estimated 100 yr flood depth | over 2 m estimated 100 yr flood depth | River Network and Water Feature |
- The flooded areas have been generated using a generalised technique and should not, by themselves, be used to infer that specific areas are or are not at risk of inundation. Flood risk at any specific location may be influenced by local factors - not least flood defences - that have not been taken into account.
- Local Nature Reserve

Guide to the Groundwater Vulnerability Map

Derived from Sheet 16 West Cheshire 1:100,000

- | | | |
|----------------------|------------------------------|------------------------------|
| Minor Aquifer High U | Minor Aquifer Low | Minor Aquifer Intermediate 2 |
| Minor Aquifer High 1 | Major Aquifer High U | Major Aquifer Low |
| Major Aquifer High 3 | Major Aquifer High 1 | Major Aquifer Intermediate 2 |
| Water | Minor Aquifer Intermediate 1 | Minor Aquifer High 3 |
| Drift Deposit | | |

Guide to the Geology Map

- | | | |
|--|--|---|
| Oxford Clay and Kellaways Beds | Permian and Triassic sandstones, undifferentiated, including Bunter and Keuper | Triassic mudstones (including Keuper Marl, Dolomitic and Rhaetic) |
| Ludlow | Namurian (Millstone Grit Series) | Lower Westphalian (mainly Productive Coal Measures) |
| Westphalian and Stephanian, undivided, of Barren Red lithology | Upper Westphalian (including Pennant Measures) | Permian mudstones (including Middle and Upper Marls, Eden and St Bees shales) |
| Permian basal breccias, sandstones and mudstones | Water / Unclassified Geology | |

Guide to the River Quality Map

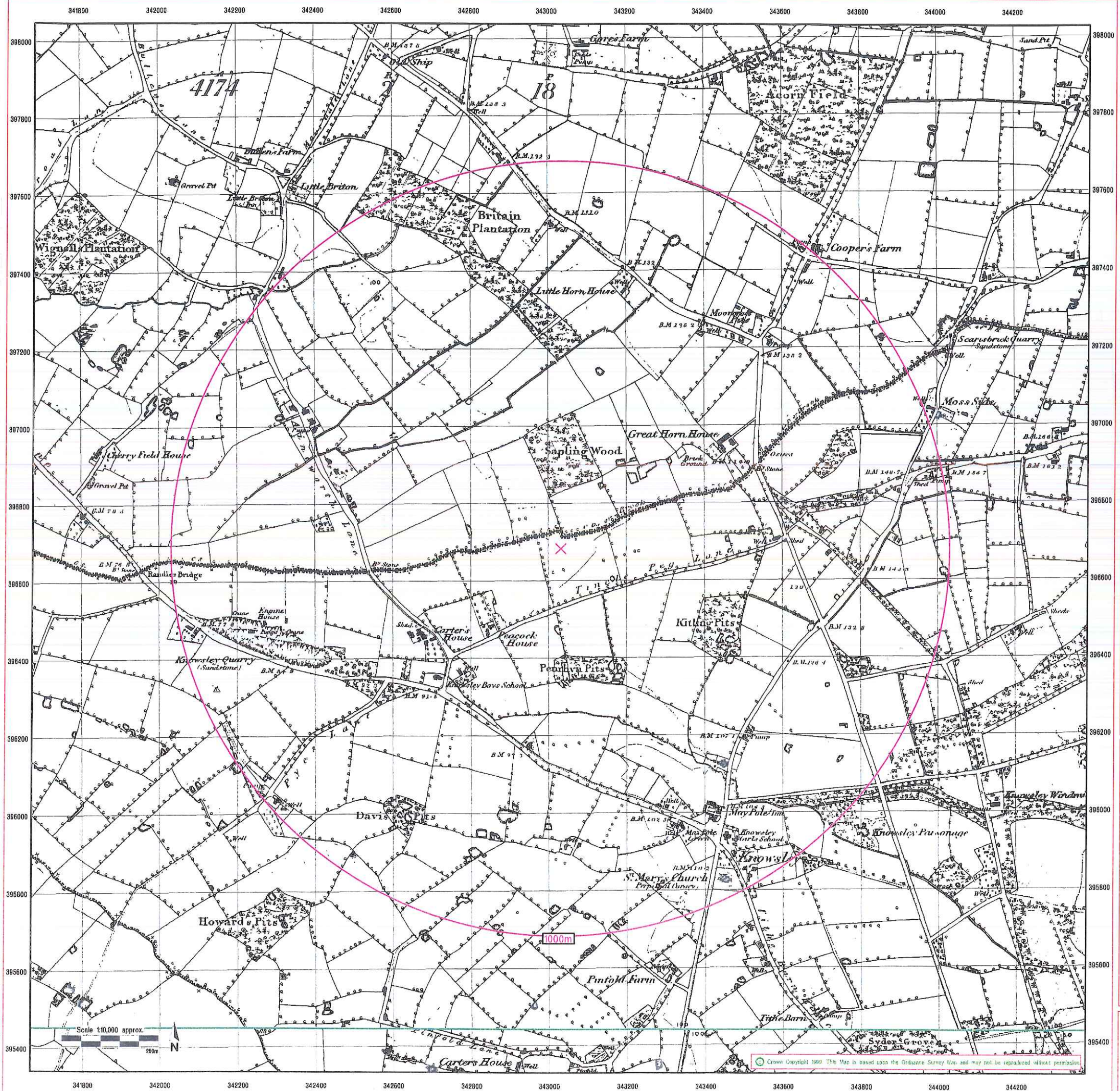
- | | | |
|--------------------|--------------------------|-----------------|
| River Quality E | River Quality C | Canal Quality D |
| River Quality D | River Quality F | Canal Quality E |
| Unclassified River | Unclassified Tidal River | Sea |



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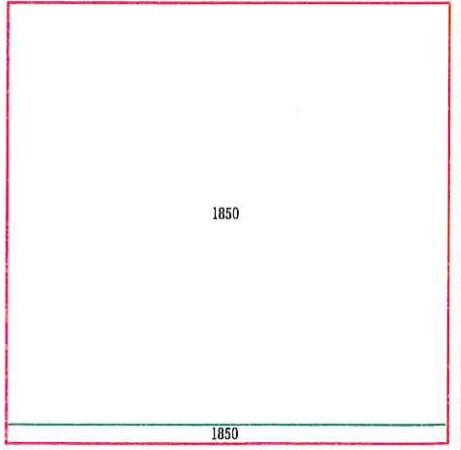
Historical Map Legend

Arrow denotes flow of water

LANCASHIRE AND FURNESS county

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:50,000 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

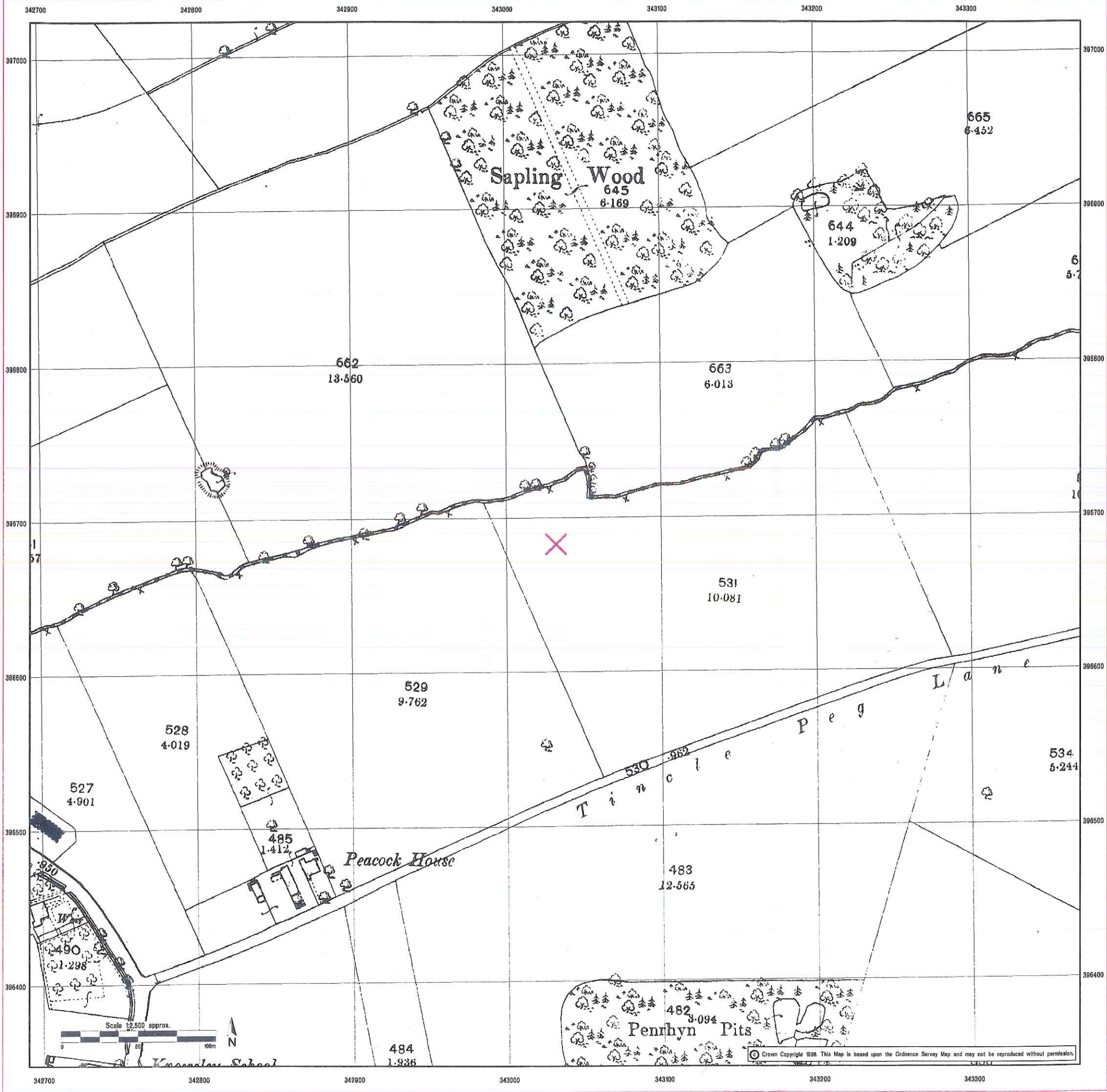
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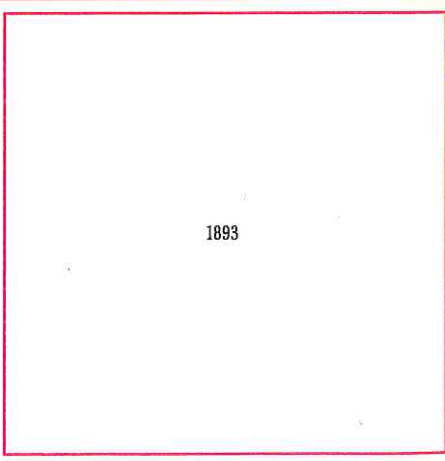
Historical Map Legend

Quarry	Shingle	Railway over Road	Road over Railway
Gravel Pit	Sand Pit	Level Crossing	Railway over River
Other Pits		Road over River or Canal	Road over Stream
Mixed Wood	Rough Pasture	Road over Stream	
Marsh		Sunken Road	Raised Road
		Sketched Contour	Instrumental Contour

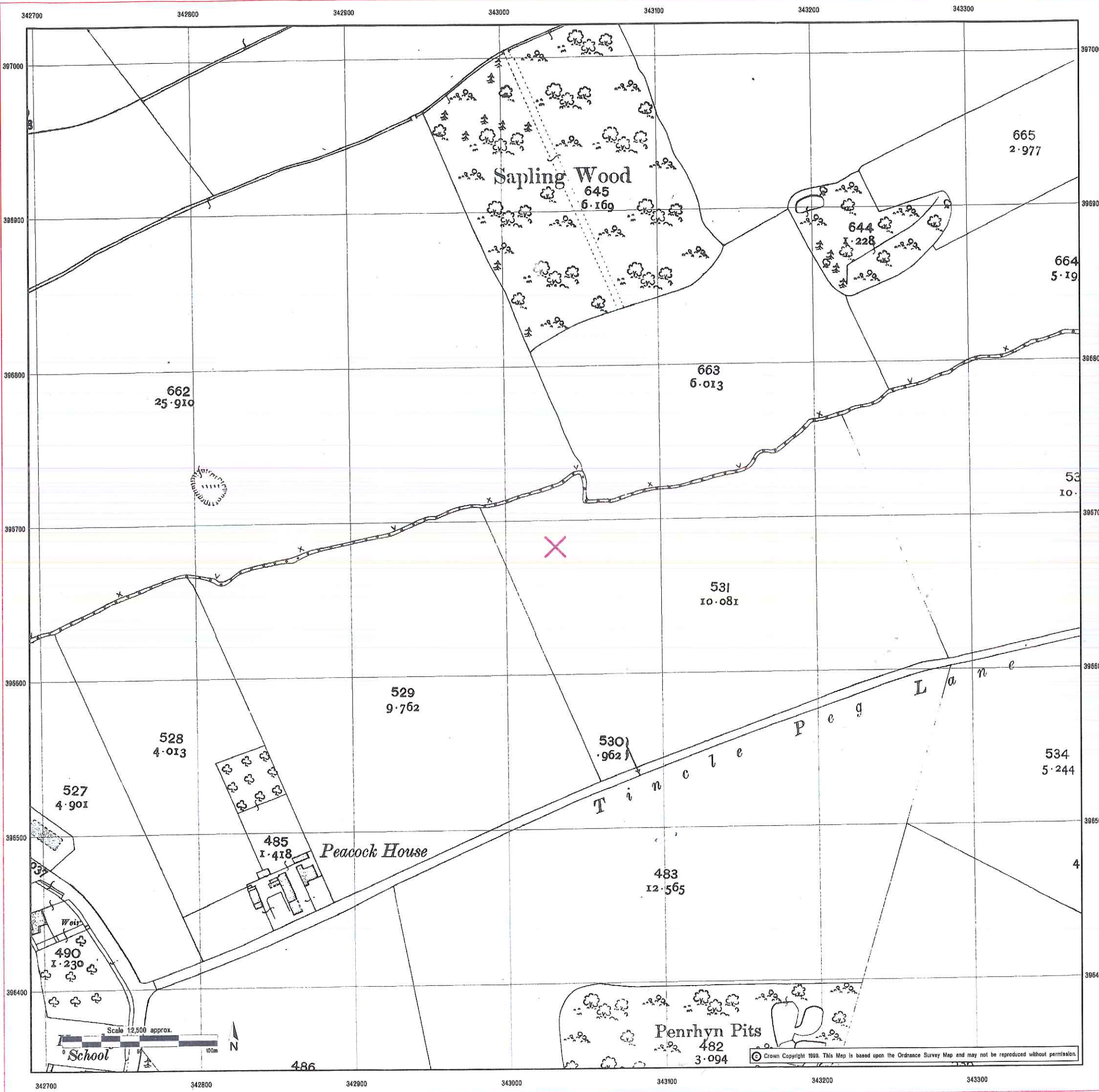
→ Arrow denotes flow of water

Lancashire And Furness

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Historical Map Legend

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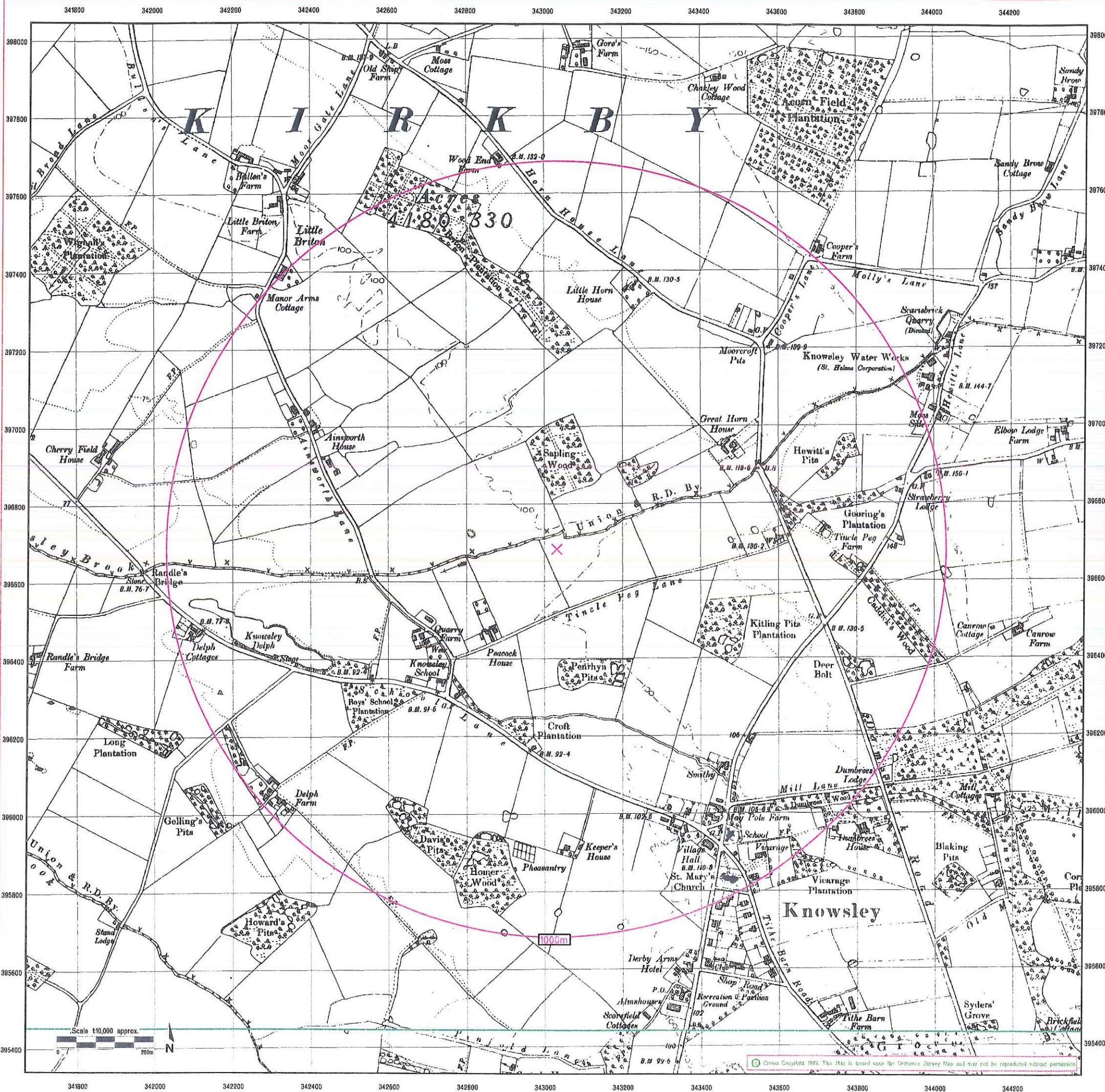
Lancashire And Furness

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1908

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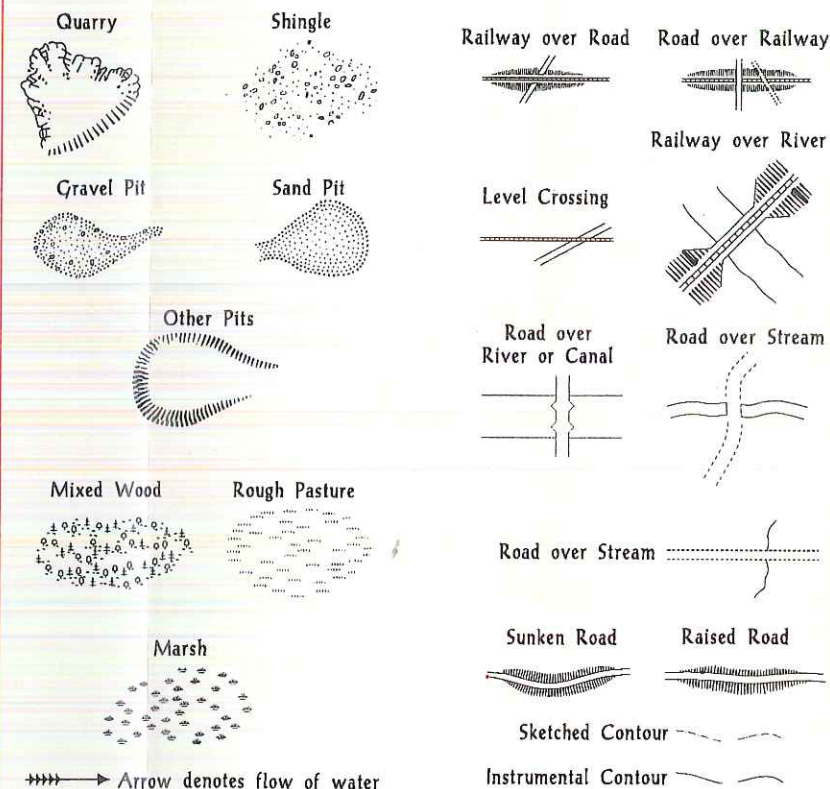
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Historical Map Legend



LANCASHIRE AND FURNESS county

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1909

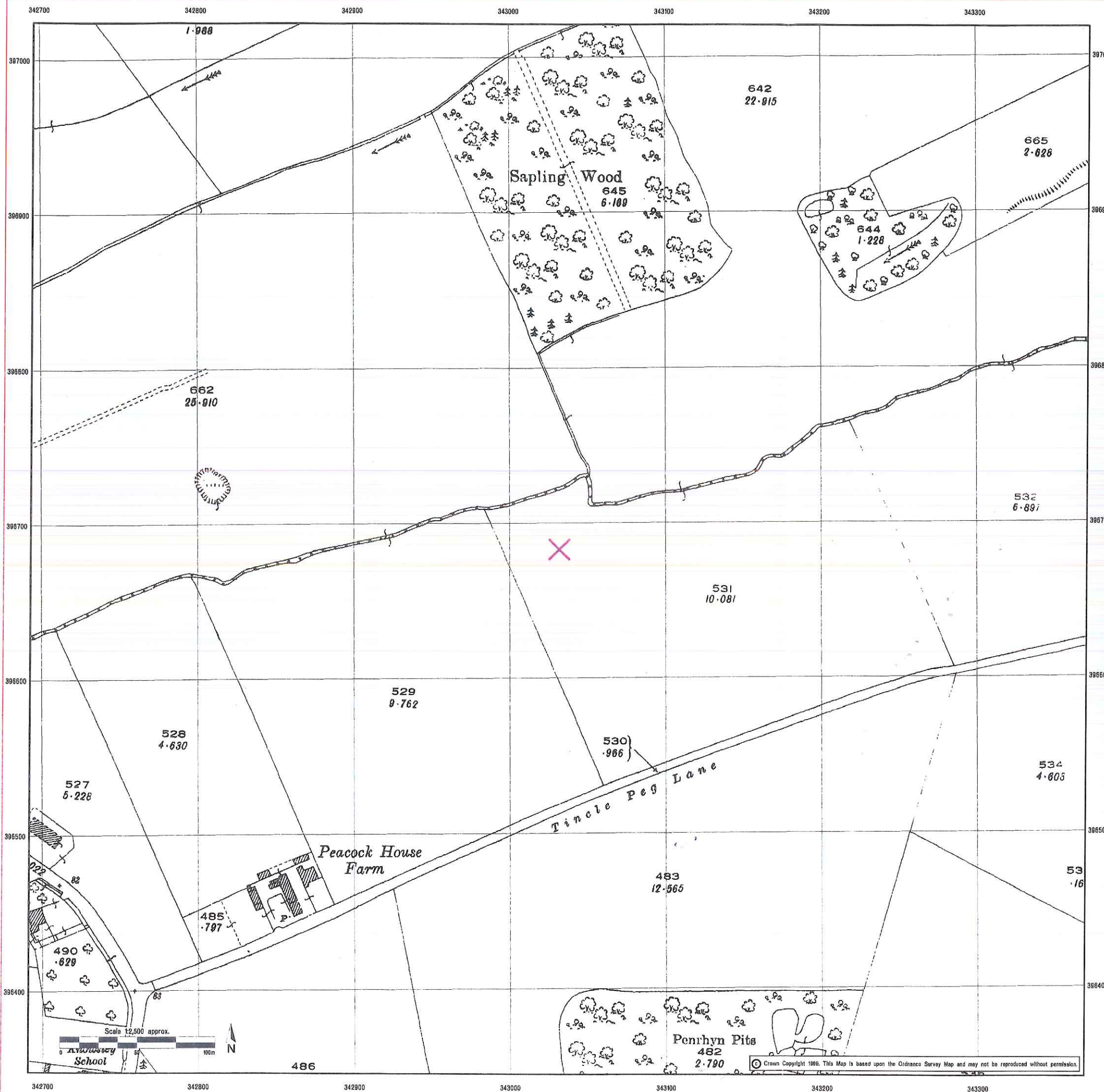
1909

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SITE DETAILS

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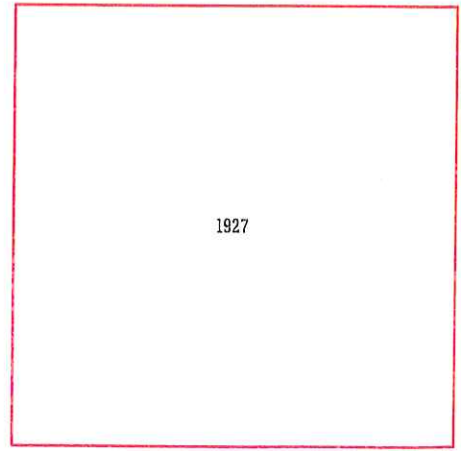
Historical Map Legend

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Arrow denotes flow of water

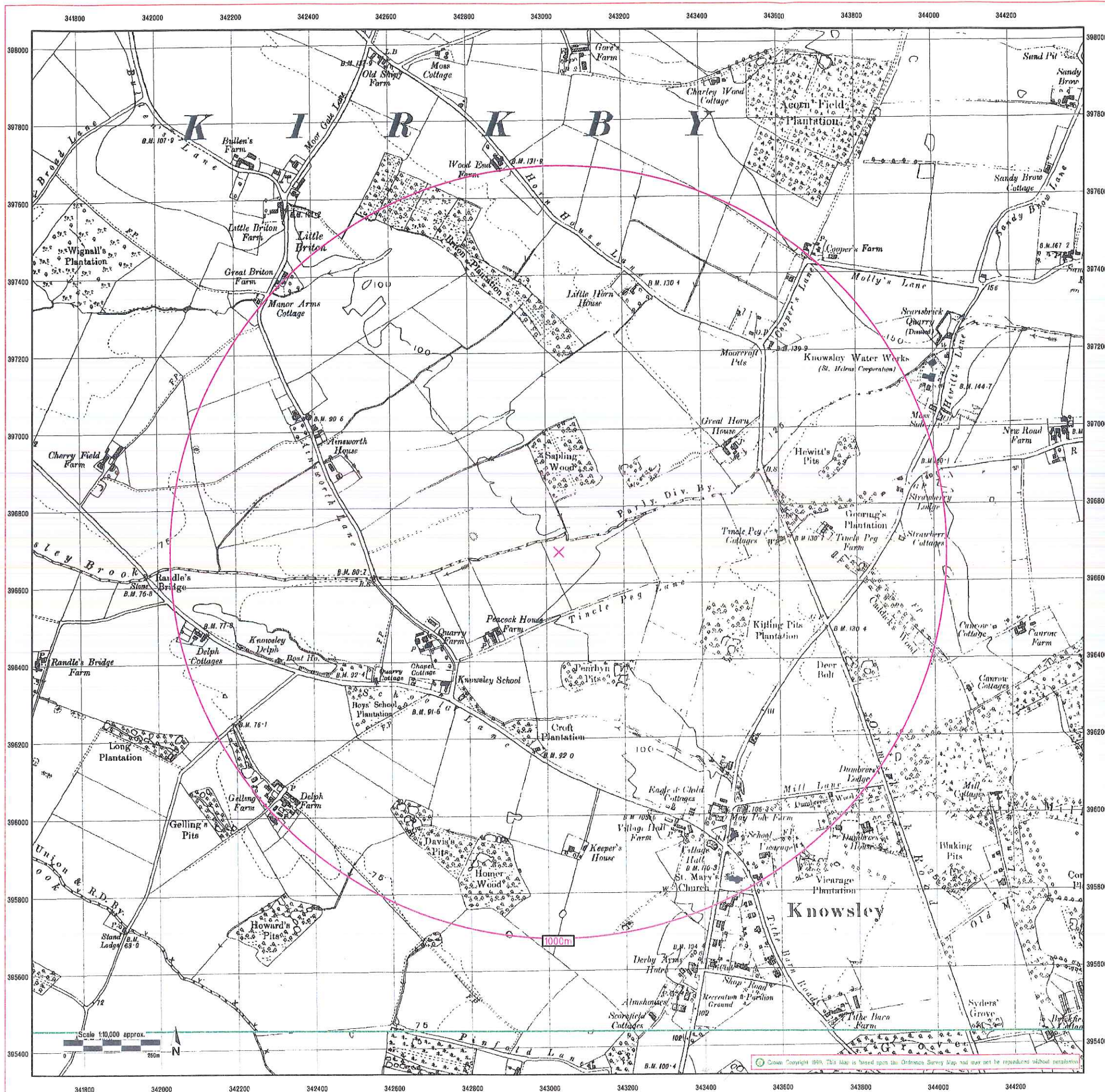
Lancashire And Furness

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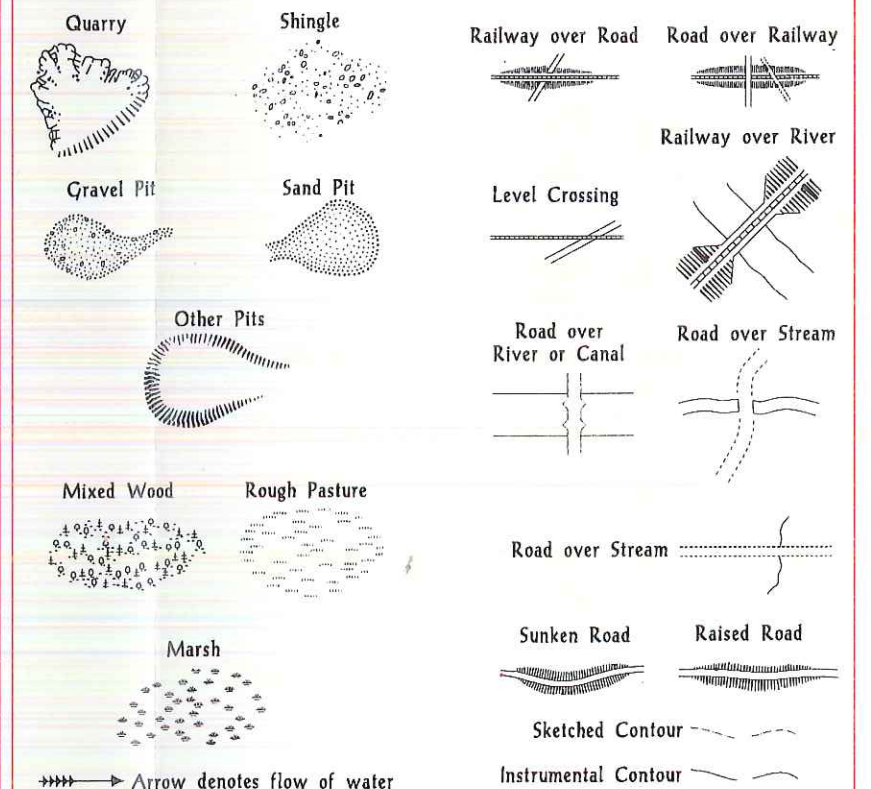
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Historical Map Legend



LANCASHIRE AND FURNESS county

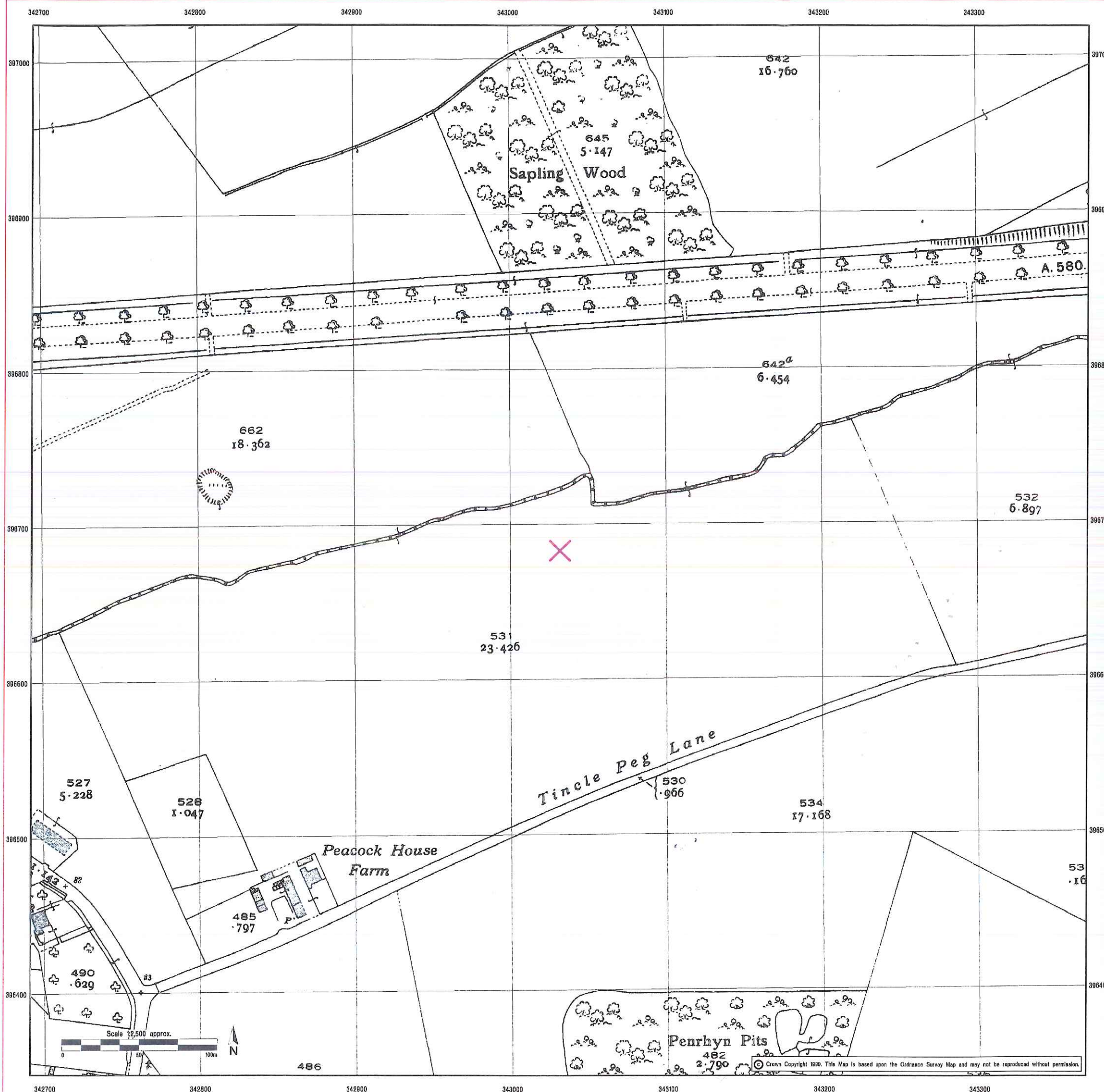
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1928

1928

Date(s) of Publication



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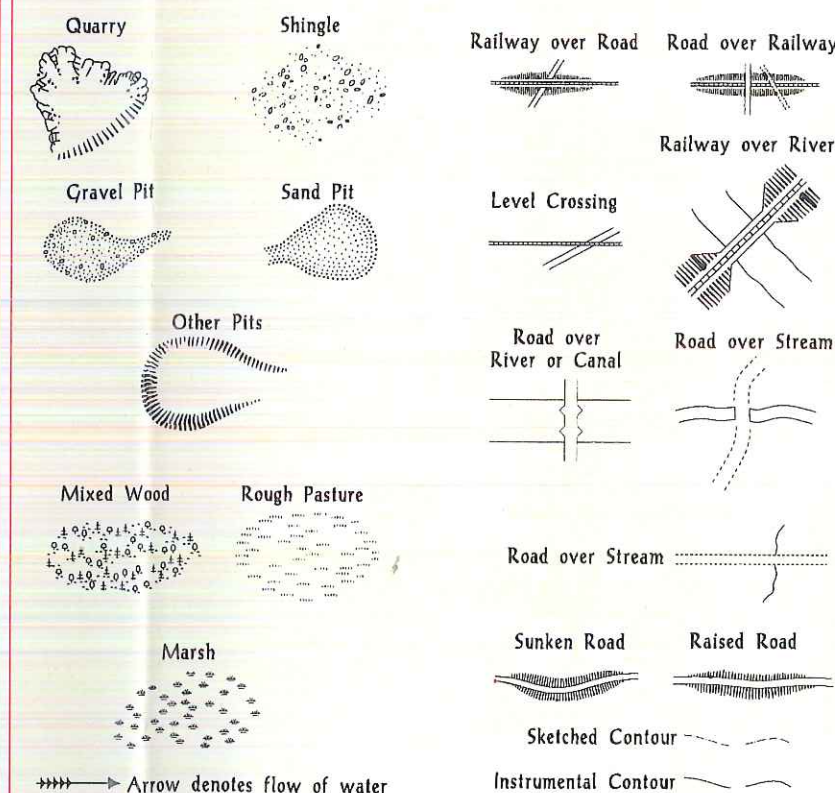
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Historical Map Legend



Lancashire And Furness

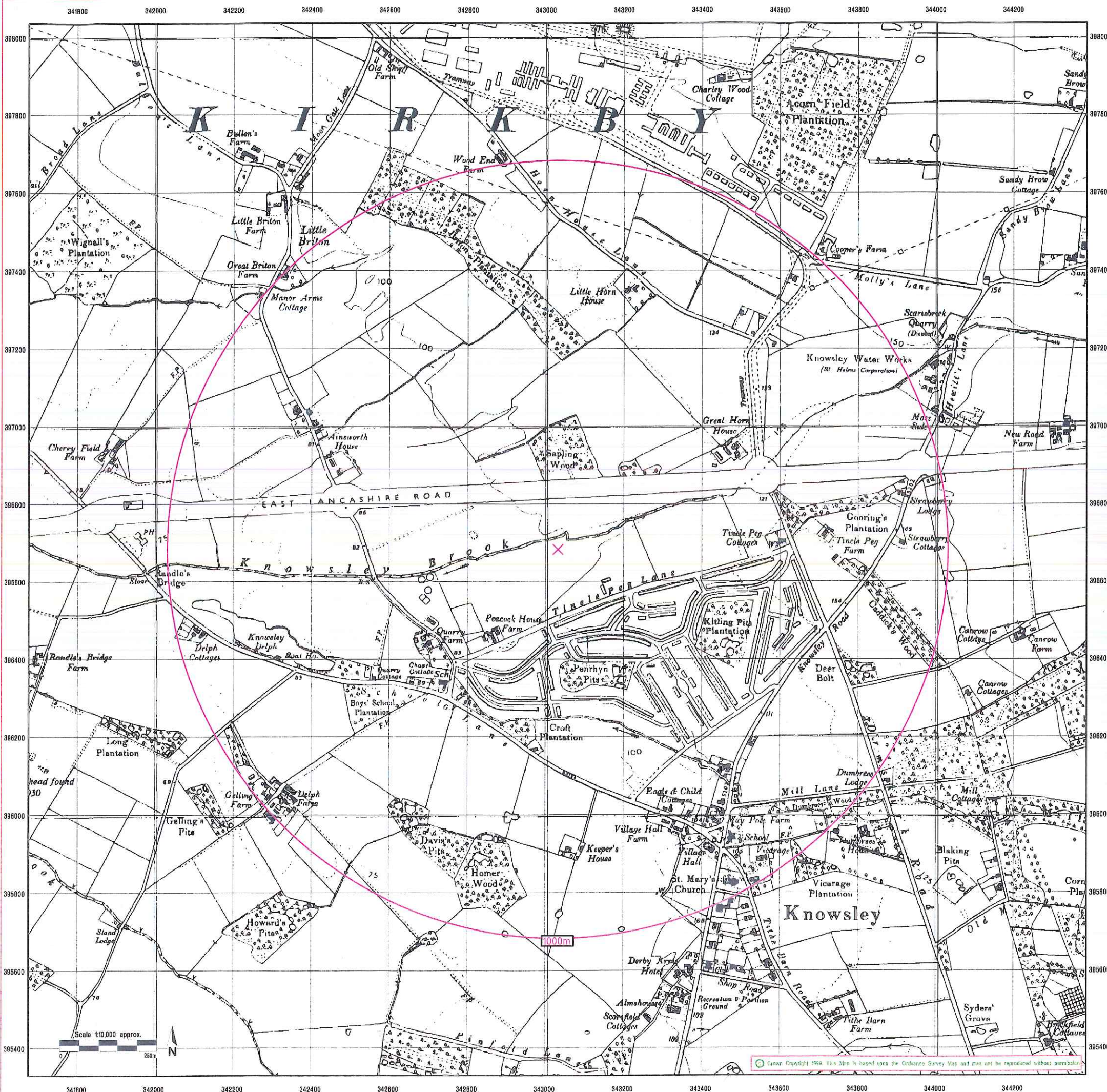
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1937

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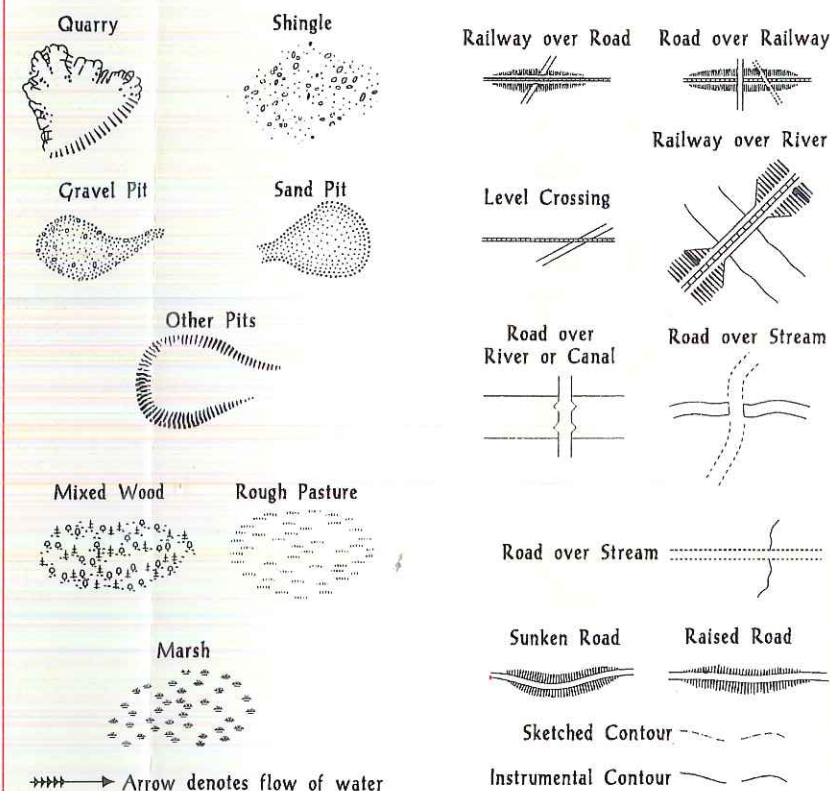
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SITE DETAILS

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Historical Map Legend



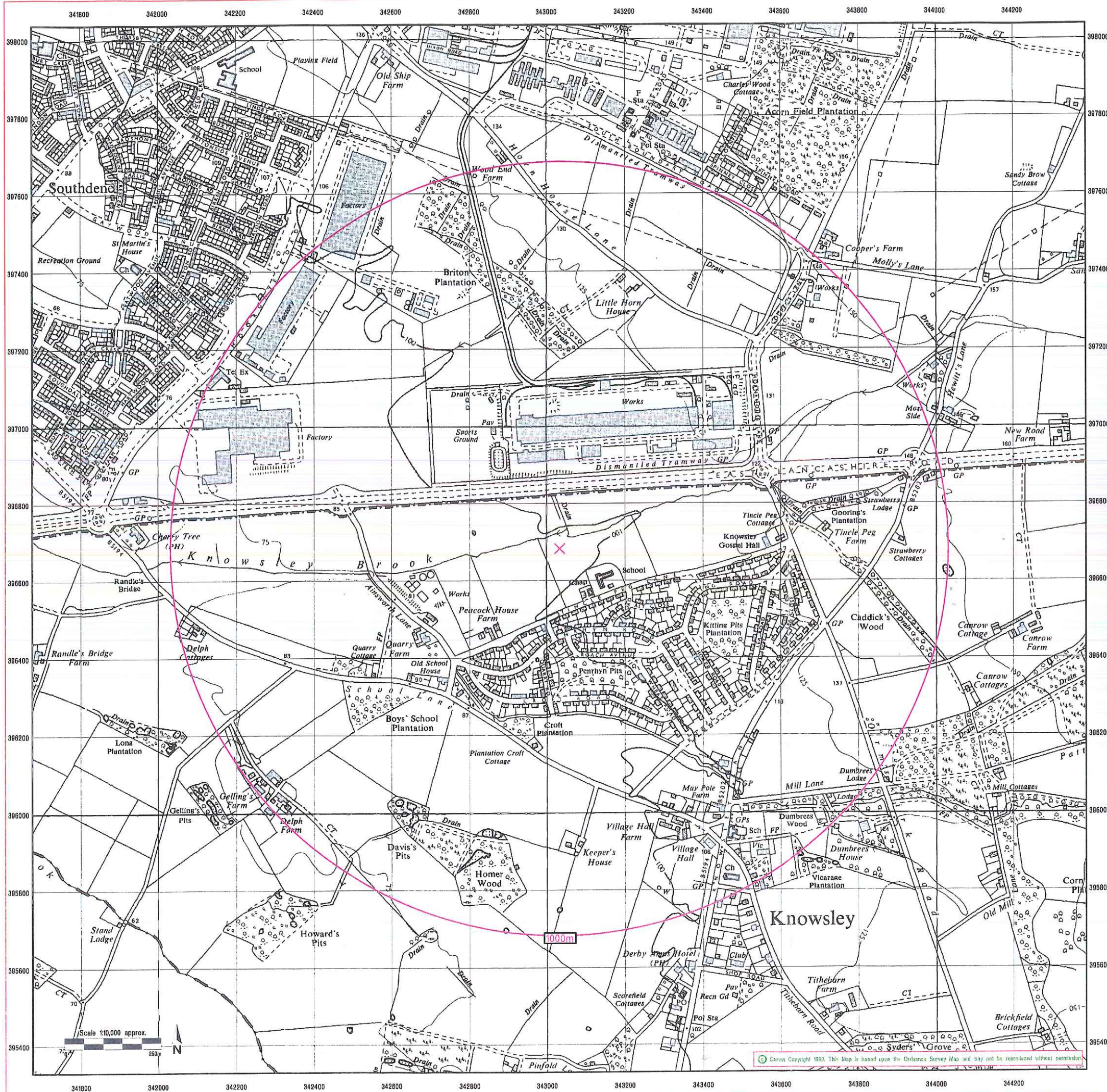
Ordnance Survey Plan

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1956

Date(s) of Publication



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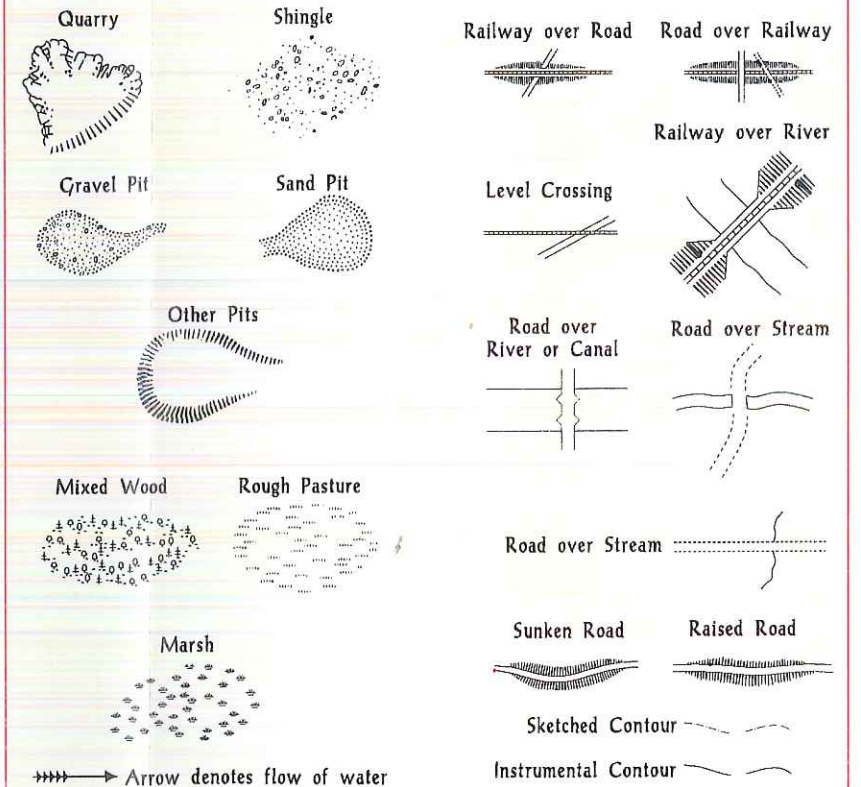
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Historical Map Legend



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1966

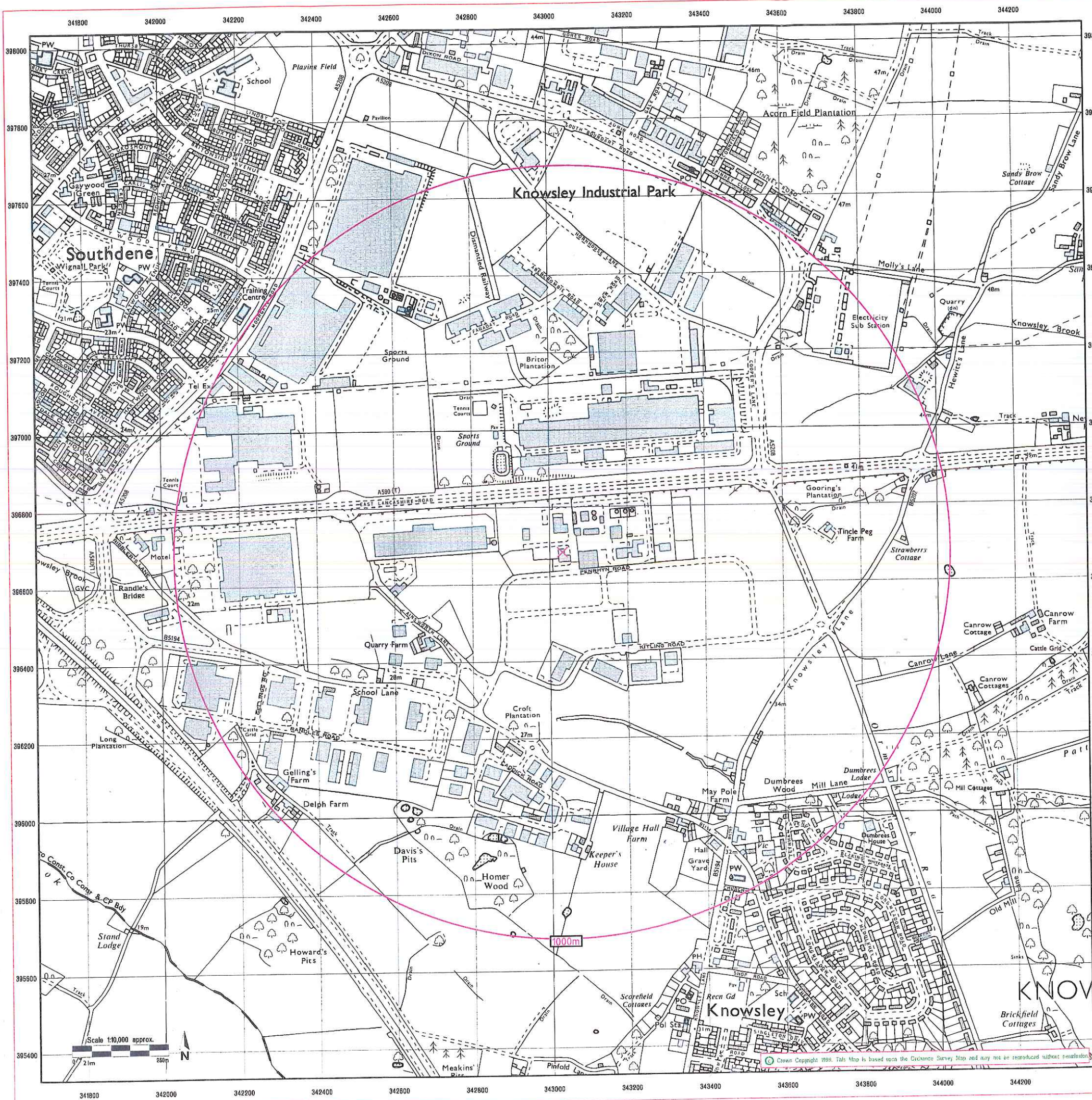
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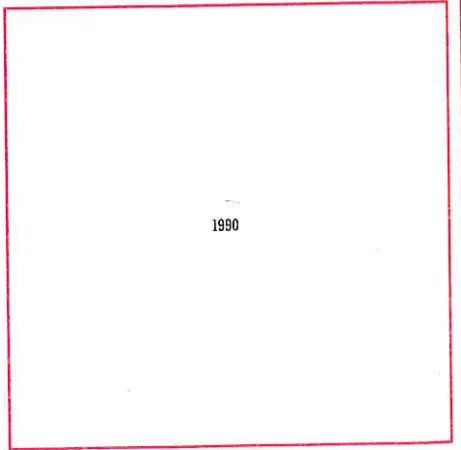
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Historical Map Legend

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Ordnance Survey Plan
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