Photograph 9: Waste Oil Storage in Area A.

APPENDIX D – CONTROLLED WATERS RISK ASSESSMENTS

- **Source Protection Zones**

Source Protection Zones (SPZs) are defined by the Environment Agency (for England and Wales), SEPA (Scotland) and the Environment and Heritage Service (Northern Ireland) for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply. The zones show the risk of contamination from activities that might cause groundwater pollution in the area. The size and shape of a zone depends upon subsurface conditions, how the groundwater is removed, and other environmental factors.

SPZs are classified into four categories:

- **Zone 1 (Inner protection zone).** Any pollution that can travel to the abstraction point within 50 days from any point within the zone is classified as being inside Zone 1. This applies at and below the groundwater table. This zone also has a minimum 50 m protection radius around the abstraction point. These criteria are designed to protect against the transmission of toxic chemicals and water-borne disease.

- **Zone 2 (Outer protection zone).** The outer zone covers pollution that takes up to 400 days to travel to the abstraction point, or 25% of the total catchment area, whichever area is the largest. This travel time is the minimum period over which the Environment Agency considers that pollutants need to be diluted, reduced in strength or delayed by the time they reach the abstraction point.

- **Zone 3 (Total catchment).** This is the total area needed to support removal of water from the abstraction point, and to support any discharge from this.

- **Zone of special interest.** This may occasionally be defined as a special case. This is usually where local conditions mean that industrial sites and other potential sources of contamination could affect the groundwater source, even though they are outside the normal catchment area.

- **Groundwater Vulnerability Assessments**

From 1 April 2010 The Environment Agency Groundwater Protection Policy began to use aquifer designations which are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey. It is updated regularly to reflect their ongoing programme of improvements to these maps. The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.

- Bedrock -solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Table 1. Aquifer Classification ("Geological Classification").

Classification	Definition
Principal Aquifers (Highly Permeable)	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A Aquifers	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Secondary B Aquifers	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifers	This has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

APPENDIX E – QUALITATIVE AND QUANTITATIVE RISK ASSESSMENTS

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of risk	High Likelihood	Very high	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Negligible
	Unlikely	Moderate/Low	Low	Negligible	Negligible

APPENDIX F – GROUND GAS

Monitoring for the following is generally performed as part of ground gas assessment:

- Methane (CH_4): an odourless, flammable gas. Mixtures of methane with air containing between 5 and 15% v/v methane are explosive.

- Carbon dioxide (CO_2): an asphyxiant at elevated concentrations. Denser than air, it can accumulate in excavations, and within low points inside buildings

- Oxygen (O_2): important in the assessment of the potential formation of explosive mixtures with methane. Monitoring normally measures both methane and oxygen concentrations in ground gas to derive an indication of the risk of explosive mixture formation, expressed as a percentage of the Lower Explosive Limit (LEL). Low concentrations of oxygen in ground gas can also exacerbate the risk of CO_2 asphyxiation.

- Hydrogen sulphide (H_2S): odorous and toxic, capable of forming flammable mixtures with air.

- Volatile Organic Compounds (VOCs): present as chemical contaminants of soil and sometimes also biologically produced in low concentrations.

- **Assessment of methane (CH_4) and carbon dioxide (CO_2)**

Methane and CO_2 can arise from natural geological sources, mine workings, rotting organic matter (peat, landfilled materials, etc.) and/or contaminant biodegradation. Assessment of ground gas composition and flows is therefore an essential part of site assessment. The need to adequately address potential risks from ground gas on development sites is therefore required under the planning regime.

In order to appropriately assess the site risks, the Construction Industry Research and Information Association (CIRIA) and others have issued several guidance documents on landfill and ground gas that are intended to provide advice on how to investigate and deal with gas contaminated ground with respect to development. These are:

- Report 149: 'Protecting Development from Methane' (CIRIA, 1995a)

- Report 150: 'Methane Investigation Strategies' (CIRIA, 1995b)

- Report 151: 'Interpreting Measurement of Gas in the Ground' (CIRIA, 1995c)

- Report 152: 'Risk Assessment for Methane and Other Gases from the Ground' (CIRIA, 1995d)

More recent guidance has been published to update the documents detailed above to collaborate and promote industry 'good practice'. These are:

- CIRIA Report 665: 'Assessing risks posed by hazardous ground gases to buildings (CIRIA, 2008)

- NHBC: 'Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present' (NHBC, 2007)

- •BS8485: Code of Practice for the characterisation and remediation from ground gas in affected developments (BSI Group, 2007)

The earlier CIRIA 149 approach is now considered to be too conservative. A more realistic measure of the risk posed by methane and CO_2 in ground gas can be established by determining an appropriate Gas Screening Value (GSV), using the methods described in the NHBC and CIRIA 659 documents. These values are based upon earlier work undertaken by Wilson and Card (1999).

GSVs are calculated by multiplying the borehole flow rate (l/hr) by the percentage (% v/v) concentration in the gas stream of the specific component, i.e.:

GSV = (Concentration / 100) x Flow rate.

A risk-based methodology for deriving GSVs is defined for two situations (designated A and B), which are adequate for the great majority of site cases:

- Situation A: All development types except low rise housing with gardens

- Situation B: Low rise housing with gardens.

Under Situation A, classification of the scope of protection required is determined from the site GSV, summarised in Table 1. For Situation B, GSVs derived are used in a 'Traffic Light' classification (summarised in Table 2) which determines the required level and scope of protection measures. Tables 1 and 2 are summaries only: the details provided in the body text, footnotes and appendices of the above-referenced documents should be read in conjunction with the results to determine the appropriate level of protection.

For conservatism, Terra97 uses the maximum concentration and gas flow rate of methane detected in any borehole during all of the monitoring visits in deriving recommendations on appropriate protection measures. This represents the worst-case risk of forming an explosive mixtures. For CO_2, steady state concentrations and flow data are applied, as these determine the development of an asphyxiating mixture. All values are selected whether or not they occurred in the same borehole or during the same monitoring event.

Exceedences of the maximum concentrations used in a Tier 1 Gas Risk Assessment can be tolerated, when the conceptual model indicates that it is safe to do so. However, GSV values must never be exceeded - where site-specific circumstances permit the derivation of alternative GSVs according to the defined conceptual model, then the appropriate GSV values should be applied.

Table 1. GSV Categories Defined for Situation A (Summarised from CIRIA Report 665).

Risk classification	GSV (CH_4 or CO_2; l/hr)	Additional factors	Characteristic situation
Very low	<0.07	Typically methane <=1% and/or CO_2 <=5%, otherwise consider increase to Low Risk.	1
Low	<0.7	Typically borehole ground gas flow rate <=70 l/hr; otherwise consider increase to Moderate Risk.	2
Moderate	<3.5	---	3
Moderate to high	<15	QRA required to evaluate scope of remediation measures.	4
High	<70	---	5
Very high	>70	---	6

Table **2.** GSV Categories Defined for Situation B (Summarised from NHBC, 2007).

Methane		**CO_2**		**"Traffic light" classification**
Typical max. conc. (% v/v)	**GSV (l/hr)**	**Typical max. conc. (% v/v)**	**GSV (l/hr)**	
				Green
1	0.13	5	0.78	
5	0.63	10	1.60	Amber 1
20	1.60	30	3.10	Amber 2
				Red

- **Assessment of hydrogen sulphide (H_2S)**

H_2S is toxic and highly odorous ("rotten eggs") gas. It is often a minor component within mine gases, in ground gas within or overlying strata rich in pyrites or other sulphide-rich ores, and in most natural gas fields.

H_2S can be generated biologically in significant concentrations by the decomposition by sulphate-reducing bacteria of natural or anthropogenic organic matter under oxygen-free conditions. Its potential generation will be greater in environments containing elevated sulphate concentrations (including sea water). H_2S is therefore common within the gas arising from estuarine and marine sediments, pond sediment, stagnant water bodies, bogs and marshlands and landfilled waste, for example.

It must be noted that H_2S normally occurs together with other potentially hazardous ground gases. The measures adopted for protection against these will prove equally protective against H_2S.

There are no standards by which H_2S concentrations in ground gas can be assessed directly. Therefore, the significance of measured H_2S concentrations in ground gas must be evaluated on a case-by-case basis, taking into account the measured concentrations of other components and the specific conceptual site and exposure models. To assist in this process, the following standards and guidance may be applied.

General protection of land users

There are no UK air quality standards for general exposure to H_2S. The World Health Organisation has derived ambient air quality standards (WHO, 2000) for this gas, which may be used to inform risk assessment and decision-making:

- The 24 hour average exposure guideline value for ambient air: 0.15 mg/m^3 (0.1 ppmv, approx.; this was derived by the application of a 100x safety factor to the LOAEL for long-term exposure).

- This is significantly above the odour threshold, which is typically around 0.01 mg/m^3. To avoid substantial nuisance odour complaints, WHO (2000) recommends that the 30 minute average H_2S concentration in ambient air should not exceed: 0.007 mg/m^3 (0.005 ppmv, approx.).

Occupational exposures

For occupational exposure, the HSE (2005) limits for H_2S are applicable:

- 8 hour time weighted average occupational exposure limit: 5 ppmv (7 mg/m^3).

- Short-term exposure limit (15 minute reference period): 10 ppmv (14 mg/m^3).

- **Assessment of VOC data**

The assessment of VOC concentrations is not covered by above-referenced reports. These data can be used to inform the human health risk assessment for site occupants but should not be relied upon to assess human health risk due to uncertainties in the ground gas flow regime, variability in the (generally low) contaminant concentrations measured and inaccuracies in the concentrations measured by PID instruments.

Data on the VOC concentration in ground gas can also help inform potential occupational exposure risks to construction and similar workers. For this purpose, the measured values can be compared to the relevant occupational exposure limit (OEL) for the contaminant(s) of concern, as given in HSE (2005). In cases of doubt as to the identity of the organic contaminants within the ground gas or when these are present as a complex mixture, then the 8 hour time-weighted average (TWA) exposure limit for benzene (1 ppmv) will be applied for screening purposes. This is a reasonably conservative approach since the OEL for benzene is lower than that for the great majority of organic contaminants commonly encountered in soil and groundwater at contaminated sites

APPENDIX G – DATA SEARCHES

PHASE I ENVIRONMENTAL SUMMARY REPORT

NORQUEST INDUSTRIAL PARK, PHEASANT DRIVE, BIRSTALL, WEST YORKSHIRE, WF17 9LT, UK

ON BEHALF OF

M7/BX

AUGUST 2017

PROJECT INFORMATION	
Project Name	Phase I Environmental Summary Report: Norquest Industrial Park, Pheasant Drive, Birstall, West Yorkshire, WF17 9LT, UK
Project Number	M70146
Report Issue	Draft V1
Date of Issue	03/08/2017
Client Name	M7/BX
Client Address	c/o M7 Real Estate Ltd 4th Floor, The Crane Building 22 Lavington Street London SE1 0NZ United Kingdom
QUALITY ASSURANCE	
Auditor / Author Date of Site Audit	Geoff Perrett (associate of Ambiente International LLP) 15/06/2017
Technical Review	Inga Kooij Ambiente International LLP 4th Floor, 45 Maddox Street London W1S 2PE United Kingdom Email: inga.kooij@ambientellp.com
Approved By Signature	Allan Busse - Project Director

This report has been prepared by Ambiente International LLP with all reasonable skill, care and diligence within the terms of the contract with the client, in accordance with our terms of business and taking into account the resources made available with the timeframe for reporting. We disclaim any responsibility to the client in respect of any matters outside the scope of works as detailed in Section 1.1 of this report.

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1. INTRODUCTION

Ambiente International LLP was commissioned by M7 Real Estate Ltd on behalf of M7/BX to carry out a Phase I Environmental Summary Review of the property: Norquest Industrial Park, Pheasant Drive, Birstall, West Yorkshire, WF17 9LT, UK, in conjunction with the proposed acquisition of the freehold interest of the property.

1.1 Objectives & Scope of Works

The objective of the Environmental Review was to determine the existence and likely extent of any potential environmental liabilities associated with the current and historical use of the acquisition property. The Environmental Review included the following key activities:

- A visual inspection of the site to determine current site activities;
- A review of available information provided by the Vendor, including a Phase I Environmental Assessment for the site produced by WSP UK Ltd (Ref. 70006481) in September 2014 to obtain:
  - Historical information to ascertain historical use of the site and its immediate surroundings;
  - A review of geological, hydrogeological and hydrological information to establish environmental sensitivities at the site and in its vicinity;
  - A review of available information from public databases (Landmark Envirocheck), the local authority and Environment Agency (note: no updated or full Envirocheck report was obtained as part of this review).
- An updated standard enquiries / consultation with the Local Authority;
- A review of environmental documents provided by the tenants; and
- Preparation of a summary report outlining the findings of the review, a preliminary assessment of potential environmental risks and liabilities and recommendations/requirements for further work as required.

1.2 Limitations

This report presents the findings from the reviewed information provided by site personnel, and the owner (dataroom), as well as observations made during the site visit. The findings and opinions in this review are based upon information obtained from the sources outlined above. Information obtained from third parties has been accepted at face value; Ambiente believes this information to be reliable but does not guarantee its authenticity.

Unless otherwise stated in this report, the assessment assumes that the site will continue to be used for the current purpose without significant change. The observations in this report are valid for the date of the site visit, for the areas of the property made accessible during the site visit and for the information obtained / provided for review as detailed in Appendix 1. A detailed compliance assessment is not within the scope of works for this review. An assessment of the condition and maintenance of the infrastructure / plant equipment in use at the site is not within the scope of works for this review. A Legionella survey is not within the scope of this review. A survey and assessment of hazardous building materials (asbestos, polychlorinated biphenyls, lead based paint, artificial mineral fibre) and mould is not within the scope of this review. Comment will be made on the likelihood of the presence of hazardous building materials based on building dates only. Information on the potential presence of these materials and issues will also be requested for review and Ambiente will provide comment on the above mentioned materials / mould where observed during the site inspections.

All aspects of this report should be read in the context of the report in its entirety; Ambiente cannot be held responsible for excerpts taken out of the context of this report.

1.3 Reliance

This review is confidential to and can be relied upon by the addressees of the report and the named parties in any associated letter of reliance. We accept no responsibility of any nature to third parties to whom this report is made known; any such party relies on the report at their own risk.

2. SITE SUMMARY

Ambiente International LLP was commissioned by M7 Real Estate Ltd on behalf of M7/BX to carry out a Phase I Environmental Review of the site at Norquest Industrial Park, Pheasant Drive, Birstall, West Yorkshire, WF17 9LT, UK, in conjunction with the proposed acquisition of the leasehold interest of the property. The findings of this review are summarised in the table below:

NORQUEST INDUSTRIAL PARK, PHEASANT DRIVE, BIRSTALL, WEST YORKSHIRE, WF17 9LT, UK	
 	
SITE CONTEXT	
Site Location	The subject property is located in Norquest Industrial Park, in eastern Birstall, at National Grid Reference 423410, 426910. The site is 9km south west of Leeds City Centre and approximately 750m south of the M62 /M621. The site is accessed from Pennine View (road) to the east, west and south and from Pheasant Drive in the north.
Site Layout	The property is irregularly shaped in plan and covers an area of approximately 5.58 hectares. The site comprises a terrace of units (Units 9-17) in the south west(numbered from east to west); Unit 19 in the central east ; Unit 20 in the east and the 'Bedfords Facility' in the central north comprising a narrow workshop building and a large surrounding yard area; and the VLS unit a small garage in the north west of the site (with a small yard area to south and east). The buildings are of steel portal frame construction with part brick and part metal profile clad elevations. The roofs are pitched and clad with an insulated profile metal cladding system (asbestos clad roofing at garage unit). The site buildings cover approximately 30% of the site area, 55% of the site is used for hardstanding (typically concrete yards and tarmac parking and access road/walkways. 1 5% of the site is landscaped (mainly on the south eastern and north eastern boundary and to the north of the terrace).
Surrounding Land Uses	**North:** Industrial estate adjacent including Volvo Crossroads Truck and Bus showroom, garage unit and Parcel courier company etc. **East:** Electrical substation building (adjacent). Open land. Residential from 60m. **South:** Open land / woodland (adjacent). Residential from 20m. **West:** Pennine View (road, adjacent). XPO Bulk UK logistics and Spivey & Son tank stockist and cleaners (from 5m) and garage unit with residential beyond (from 150m).

SITE CONTEXT	
Site History (according to WSP)	<u>On Site</u> The site was undeveloped and used as agricultural fields from <1854. The Heaton Lodge and Wortley Railway line was constructed by 1908 and ran within a cutting on the southwestern boundary of the site and cut though the southern easternmost section of the site. In 1956 a narrow building (later shown with an additional row, with the appearance of small garage units with drain and sump marked) was shown to be present in the southern area of the site and a small building was marked within the central site area (in area of current vehicle compound). The current garage was constructed by 1972. The railway was dismantled and the cutting was infilled by the 1980s. The current site was developed in c.1991 with the current above ground storage tank (AST) west of Bedfords Facility and the electricity substation west of Unit 19 marked. <u>Off Site</u> The earliest available map is dated 1854, when the site and surrounding area was largely undeveloped and land uses appeared to be predominantly agricultural. The following potentially contaminative land uses were noted <250m ▪ The area to the northeast of the site was identified as a series of 'coal pits' by 1854. Another colliery was marked 200m to the west (redeveloped with a brewery by 1908, redeveloped as a depot in c.1970s). Holden Clough Colliery, approximately 200m northeast of the site, was marked by the 1890s, and was disused by 1966. ▪ A sandstone quarries was marked 200m to the west on the 1854 map. ▪ Holden Clough Mill (Woolen) was present 200m to the east from 1854 to 1966. From 1966 it was identified as an Engineering Works and warehouses by 1986. ▪ Railway line on southern boundary from early 1900s until 1970s. ▪ Historical landfills (infilled between 1970s and 1990s) are present off-site to the south (encroaching and adjacent), east (adjacent), and west (from 170m). ▪ The surrounding current industrial estate was developed in the 1970s and 1980s.
Previous Environmental Reports / Investigations	A previous environmental report for the site was available for review in the data room: Phase I Environmental Assessment: Norquest Industrial Park, Pheasant Drive, Batley, West Yorkshire, UK - produced by WSP UK Ltd (Ref. 70006481) in September 2014. The WSP report states that with due regard to the continuation of the current industrial use, it is the opinion of WSP that the site represents a low/medium risk with respect to contaminated land liability issues.
REGULATORY REVIEW	
Planning Review	Planning records with in the dataroom indicates that the site was developed under the following permissions: 88/62/05708/A1: Industrial warehouse development (no plan, appears to relate to the southern area of the estate including Unit 9-17, 19 and 20). A site investigation was required (Condition 11) to determine if there was an issue with soil gases. A scheme was required for dealing with this issue (if identified). A planning application for a silo at 'Norquest" included a comment from environmental protection that stated that elevated methane had been identified in the railway cutting in the south east of the site (a 1992 monitoring document from the council confirms this).

REGULATORY REVIEW	
Planning Review *Continued*	A schedule of documents related to a former transaction indicates that a site investigation and trial pits & methane gas testing was undertaken in 1989 (presumably in connection with the development, documents not available for review). Geoindex also indicates several boreholes were drilled in 1976 also likely in connection with the planned development. A planning enforcement notice indicates that the site did not meet condition 4 in relation to landscaping design only. Several other planning applications were filed in the dataroom (mostly in relation to minor structural changes), however without plans it was not possible to determine the locations. The planning application for the Bedfords facility was not identified (possibly 77/60/05363/A1, with no contaminated land conditions attached). The planning application for the garage was also not available for review. The Kirklees online planning database lists two minor applications for internal and external alterations at Bedfords only.
Regulatory Responses	An environmental records search was requested from Kirklees Council as part of this review. A response was received on 31st July 2017 from Michael Pogson, Environmental Health Officer as follows: "No determinations have been made by this Service under the provisions of the Environmental Protection Act 1990 regarding the classification of contaminated land on the site. The site [and local area] has been identified as potential contaminated land due to historic industrial activities. It is not possible to state at this moment whether or not the above property will be included in future investigations in relation to Part IIA of the Environmental Protection Act 1990. This service is not aware of any incidences of pollution, leakage or spillage at the site of interest. During the past 3 year period there have been no Statutory Nuisances substantiated under the Environmental Protection Act 1990 at the site. This service is not aware of any Pollution Prevention and Control Act records, permits or licenses regarding the site of interest. In relation to landfills: Nab Lane Landfill (<20m to north east): During its licensing period the site accepted approximately 800,000m^3 of waste, of which roughly 40% was domestic type, 20% commercial and 40% inerts. A file note reports that tipping had taken place here prior to the issue of the Resolution, including large amounts of asbestos. Nab Lane Landfill closed in the Spring of 1987. This site is checked for landfill gas emissions on a regular basis. Several monitoring boreholes lying 50 - 100m from the northern Norquest boundary have recorded methane levels of between 1% and 13% v/v during the past 12 months, with correspondingly high carbon dioxide and depleted oxygen. Nearer boreholes, within 50m of Norquest have historically shown negligible landfill gas levels. Nab Lane leachate is collected via a basal drainage system and discharged to public sewer Nab Lane Landfill Extension (near site): This was short section of old railway cutting to the south of Nab Lane Bridge, backfilled at some stage during the working life of the main site. The infill directly abuts the eastern Norquest boundary. There is no record of waste types disposed here. Shallow "spike" surveys carried out on the tipped surface area proved negligible methane (less than 0.1% v/v) and carbon dioxide (maximum value 2% v/v). Adjacent pavement service ducts are checked for LFG; no evidence of migration has been found to date. There are no leachate issues noted on file.

REGULATORY REVIEW	
Regulatory Responses *Continued*	Closed Landfill 20 (crossing corner of site): Landfill 20 runs close to the southern Norquest boundary and across it at the eastern end. One of the industrial units within the area of Norquest under consideration is partially built over the infill. Waste licence 159 (in favour of S. Briggs, Moat Hill Farm) was granted for the operation of Landfill 20. This allowed for the disposal of "solid, inert, incombustible, non-putrescible waste, including construction and demolition materials" and ran from 1978 to 1988. Following completion of tipping here in 1988 Consulting Engineers were commissioned to undertake a geotechnical survey of the landfill and its immediate surroundings. Boreholes were sunk, some through the wastes, others in natural ground away from the landfill, as a check for gas migration. The boreholes through wastes were monitored by the Consultant's staff during October and December 1989, recording methane values of <0.1% v/v to >5% v/v. There is no Consultant's monitoring information on file for the boreholes sunk in natural ground. Kirklees' staff subsequently intended to monitor those boreholes, but found that they had been capped off and inaccesible. Kirklees' staff continued to monitor some of the boreholes sunk in wastes until 1992 when these were buried under restoration materials; a maximum methane value of 6% v/v was recorded in one of them before its burial. Off-site checks (air-bricks to buildings, pavement service ducts, "pinholes" sunk to 1m depth) for LFG migration were made at locations in the nearby housing estate and on the Norquest site in February and July 1990. No Methane was detected. There are no leachate issues noted on file.
Regulatory Data (Envirocheck datasets from WSP)	A review of regulatory databases as provided in the WSP 2014 report provides the following environmentally relevant information in relation to the subject site and surrounding area (within 500m): ▪ No contaminated land entries within 500m. ▪ There are 11 recorded pollution incidents within 250m of the site. The nearest pollution incident (classified by the EA as a Category 2 – Significant Incident) is associated with the subject site and was attributed to Water Company Sewage from a Foul Sewer. The incident occurred in 1989. No further information was available. ▪ Three closed landfill facilities are located within 250m of the site. The closest relates to the infilling of a railway cutting present adjacent to and encroaching onto the southern boundary of the subject site. Authorised wastes included inert, commercial and industrial wastes deposited between 1978 and 1988. The second site is located immediately adjacent to the north-eastern boundary and received domestic, industrial and commercial waste and liquid sludge. The first input date was 1970, but the last input date is not supplied. In addition, a third closed landfill is present approximately 170m to the west and the deposited waste included industrial wastes until 1996. ▪ The closest facilities relate to material recycling and physical treatment (R Spivey & Son Ltd, 15m west);; physio-chemical treatment (NCG UK Ltd, Unit 13, 130m west); and a Waste Transfer depot (R Gentry, 170m west) ▪ The closest Integrated Pollution Prevention and Control (IPPC) permit is licensed to Mars Petcare approximately 165m to the northwest and is associated with the processing of vegetable and food. ▪ An enforcement and prohibition notice was served on 18th December 1998 and related to an open bag of asbestos dust on Pennine View Trading Estate approximately 80m north west. ▪ Eight consents have been issued under the Planning (hazardous substances) Act 1990. All entries relate to Tennants Distribution Limited and vary the quantity of low flashpoint flammable substances stored, 140m north. Tennants Distribution Limited are also a Control of Major Accidents Hazards (COMAH) site

REGULATORY REVIEW	
Coal Mining & Radon	Coal Mining The Coal Authority mining report (dated November 2013) states that the property is in the likely zone of influence from workings in 5 seams of coal at shallow to 250m depth, and last worked in 1932. The property is not in the likely zone of influence of any present underground coal workings and no future underground workings are planned. Within 20 metres of the boundary of the property are six mine entries. One mine shaft is located on-site near the site's northern boundary, under current landscaping (Ref: 423426-29). No treatment details were available for this shaft. There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property. No former opencast mining has been undertaken at the site. Radon The site is located within a Lower Probability radon area where less than 1% of homes are above the Action Level of radon gas. Therefore, no radon protection measures are considered necessary.
Energy Performance	Energy performance reviews were undertaken by Coles Knapp and Advent Energy Management in 2013 for Units 9-17, 19 & 20, the Bedfords Facility and VLS garage. The energy performance asset ratings for the units were between C and E, except for the garage (rated G). Planned legislation (Energy Act 2011) will make it unlawful to rent poorly performing buildings (EPC Rating of F or G) after April 2018. As such, the garage falls into this lowest band.
SITE OPERATIONS	
Current Site Operations	At the time of the audit the site was occupied as follows: Units 9 to 15: Vacant. Units 16 and 17: Panel UK Ltd., a metal finishing and fabrication company (i.e. cutting and painting) (no degreasers were used). All the machines are 'dry' and do not contain oils or lubricants. Unit 19 and Bedfords Facility: occupied by Bedfords Ltd for storage and distribution of palletised goods. The tenant also undertakes vehicle refuelling at their site. Unit 20: occupied by George Walker (Walkers), for transport and distribution of palletised goods and IBCs (intermediate bulk containers). The chemicals within the IBCs are typically for road markings and are non-hazardous. VLS Facility: occupied by VLS for maintenance of cars and small vans. No environmental permits are held at the site.
Site Infrastructure / HVAC	The property is assumed to have connection to mains electricity, gas, water and drainage. The following provides a basic description of key infrastructure relevant to the subject property: Water Supply and Wastewater Foul and surface water drainage is connected to the public sewerage system. The sewerage and water undertaker for the site is Yorkshire Water. No trade effluent consents are registered at the site. No oil interceptors were observed at the site. No vehicle washing is undertaken at the site.

SITE OPERATIONS	
Site Infrastructure / HVAC *Continued*	Electricity Supply There are two electricity substations at the site: north of Unit 11 and to the southwest of Unit 19. The substations are the property of Northern Powergrid (Yorkshire) who would be liable for compliance and upkeep. No known back-up power supplies / generators on site. Heating and Air Conditioning The units are connected to the mains gas. Central heating was provided to each of the offices via separate gas-fired combination boilers. The air conditioning units observed at Unit 20 were noted to be charged with non-ozone depleting substances and / or fluorinated greenhouse gases covered by the Kyoto protocol which have no current restrictions on use. Other The site buildings are not provided with a sprinkler system or showers. Legionella testing is not undertaken at the facility. No lifts were noted at any of the units. *For full details of the site's HVAC systems and infrastructure maintenance/ condition records please refer to the Building / M&E survey reports.*
Bulk Storage Tanks	There are no known current or former underground bulk storage tanks for hazardous materials at the site. The following above ground tanks were noted adjacent west, external to the Bedfords Facility building: ▪ Three large brick bunded diesel tanks (coloured blue and rusting slightly) used for lorry refuelling. The tanks are monitored with a gauge and an alarm; data awaited. ▪ One double skinned white plastic tank containing GreenOx, which is a self-contained tank, with integrated fill point and pump. No staining was observed at the fill points or dispensing points.
Materials Storage / Waste Management	Hazardous Material Storage Unit 16 & 17: Stored paints (non-hazardous powders) in labelled cardboard boxes on shelves within the main unit. Unit 19 & Bedford: Two lubricating oil drums were stored on drip trays within a small brick and wood shed structure adjacent to the south west of the main Bedford warehouse. Walkers Facility (Unit 20) stores non-hazardous chemicals in 1,000litre IBCs without secondary containment. IBCs were stored on concrete hardstanding externally with no signs of spills/staining were observed. The chemicals within the IBCs are typically for road markings and are understood to be non-hazardous. The materials are solely for use off site. VLS stores oils and lubricants within 205 litre drums with no secondary containment. Waste Management Waste generated by the tenants predominantly comprises general and recyclable waste (non-hazardous controlled waste). Waste management was observed to be good across the site, with waste segregated where possible, stored in appropriate containers and removed by licensed waste contractors, with good housekeeping procedures observed.

SITE OPERATIONS	
Materials Storage / Waste Management	Units 16&17: Waste streams comprised metal filings and filters from the vacuum extraction / filtration system stored in a dedicated skip (collected by Suez). Unit 19 & Bedford: The tenant stores an oily rags drum on the floor in the shed structure. Unit 20: The unit produces office and packaging waste, which is segregated and stored in skips prior to disposal by Biffa. VLS: Waste oil is stored within a 205 litre drum inside the entrance of the facility and disposed as required. Some staining is present on the concrete floor within entrance of Facility and three empty waste oil drums were stored outside to the immediate northeast with no secondary containment. No other staining was observed during the walkover. According to the EA public register, Bedfords hold an upper tier waste carrier and dealer licence.
Hazardous Building Materials	Asbestos The garage was developed in the 1970s, and the remainder of the buildings were constructed in the early 1990s. The import and use of asbestos has been banned in the UK since 1999. As such, asbestos containing materials (ACMs) may have been used in the building construction. No asbestos reports or Asbestos Management Plans (AMP) had been made available for review. Malcolm Hollis in the 2014 Building Survey Report indicated possible asbestos containing materials in the pitched roof at the garage unit as well as in the external cladding sheets, guttering, fascias and roof lining,. Polychlorinated Biphenyls (PCBs) PCBs have been banned in closed applications such as transformers since 1986. As such PCBs may by present in associated electrical equipment in the older sections of the site (substations appear to post-date ban however). Artificial Mineral Fibres (AMF) AMF may have been used at the property (e.g. insulation of pipes and ceiling materials etc.). Subject to continued current use of the property no further action is required, however on redevelopment / renovation a survey should be undertaken and any identified AMF should be handled and disposed of appropriately. Please note that a detailed assessment of AMF was not within the scope of this report. Lead Based Paint The use of lead based paint was prohibited in the UK in the early 1990s in connection with EU Directive (89/677/EEC) although its use was already largely curtailed by the 1960s. Due to the age of the current development, lead based paint may have been used at the garage. Based on the commercial / industrial use and likely interim refurbishment and maintenance works to the building, the risk of exposure to sensitive receptors is considered to be limited. Health and safety measures should be implemented in case of refurbishment works in areas where lead paint use is suspected.
Mould	No mould was observed in accessible areas during the site audit.
Other	No Japanese Knotweed or monitoring wells / gas protection measures etc was noted during the site walkover. Documentation in the dataroom indicates former Japanese Knotweed issues on the south eastern boundary (data awaited).

ENVIRONMENTAL SETTING	
Topography	The subject property slopes from northwest (approximately 140m above ordnance datum AOD) downward to the southeast (approximately 130m AOD).
Geology	The site is underlain by the Emley Rock (Pennine Lowers Coal Measures Formation), described as a fine-grained flaggy sandstone with mudstone partings for which an estimates thickness is not recorded. A deeper borehole (SE22SW604, dated 1992) located east of the Bedfords Facility, found Made Ground (grass, topsoil and brown sand) to 1.3m bgl, underlain by sandstone to 3.7m bgl, mudstone to 8m bgl and then coal (bitumous) to 8.7m bgl. The coal is underlain by clay (clay and weak mudstone, and fine sandstone and siltstone) to the maximum depth drilled of 9.5m bgl. On-site shallower boreholes (c.1976) identified bedrock at shallow depth.
Hydrogeology	The site is underlain by a Secondary A Aquifer (moderate permeability) within the Emley Rock (Pennine Lower Coal Measures Formation). The site is not located within a groundwater source protection zone as defined by the Environment Agency (EA). WSP stated that there were no groundwater abstractions identified within a 1km radius of the subject site. Groundwater sensitivity is assessed to be low.
Hydrology	The nearest surface water feature to be a small surface water ditch [or drain] along the line of the former railway (mainly culverted) <10m to the south of the site. A stream / drainage channel is also located c.250m north east with a pond 350m east. WSP stated that no surface water abstractions have been identified within a 250m radius of the subject site. Surface water sensitivity is assessed to be moderate.
Fluvial Flood Risk	According to GOV.UK, the site is located within a very low risk flooding area where the risk of flooding each year is less than once in 1000 years (0.1%). The tenants reported that the site has not been affected by flooding since their occupation.
Ecology	The Magic website indicates that there is a Local Nature Reserve from 900m west. Ecological sensitivity is assessed to be low.
ENVIRONMENTAL RISK ASSESSMENT	
Potential Sources of Contamination Identified	<u>On site</u> ▪ Potential for residual contamination from historical use of site including coal mining in north and railway line in south east (infilled in 1980s including industrial waste) garage and workshop built in 1972 now occupied by VLS etc and further units from early 1990s onwards. ▪ Potential for leaks and spills from the bulk fuel storage, poor drums storage and the bulk storage if IBCs; ▪ Potential for asbestos containing materials within the building fabric (mainly suspected at garage unit). <u>Off-site</u> ▪ Potential for migration of contamination from historical and current off-site local land uses including historical coal mining to north/northeast, historical engineering works to west and east; historical collieries to west and northeast; and historical and current surrounding industrial estate developed in the 1970s and 1980s. ▪ Potential for migration of contamination from adjacent landfills.

ENVIRONMENTAL SETTING	
Interpretation of Environmental Risk	On the basis of the information provided for review and continued current use: The potential environmental risks associated with former use of the site are assessed to be low to site users, groundwater and surface water. The risks from current site use and noted material and waste storage practices are assessed as low to site users, groundwater and surface water. These risks can be further managed through implementation of the recommendations. The risks associated with asbestos containing materials is assessed to be moderate to site users / maintenance workers. The level of risk reflects the potential severity of the consequence of exposure to asbestos fibres and can be managed through implementation of the recommendations outlined in the available asbestos reports and this review. The potential environmental risks from off-site former and current adjacent land uses are assessed to be low to site users. The potential environmental risks from landfills are assessed to be moderate to low to site users. The landfills represent a potential source of soil gas. No incidents have been reported to date. Records indicate elevated methane readings in the south east of the site in 1992 however recent data from the council indicates that no significant gassing issues are present. There are no basement areas at the subject site and air exchange within the units is expected to be adequate to prevent harmful accumulation of ground gases if present. As such these risks are considered to be acceptable under continued current use.
CONCLUSIONS	
Conclusions	On the basis of the information provided for review and continued current use: Although a potential "contamination linkage" with the significant possibility of significant harm (SPOSH) to human health, non-human receptors or controlled waters has not been identified, there is the potential for residual contamination to be present at the site due to its former uses. The level of environmental risk associated with the subject property is assessed to be acceptably low and the property has not been registered as contaminated land, therefore no further environmental investigation or assessment is considered necessary prior to acquisition.
Residual Liability	On the basis of the information provided for review and subject to the implementation of the recommendations outlined below, under continued current use it is not expected that significant environmental residual liability would be realised at the property.
Financial Security	On the basis of the information provided for review, subject to the implementation of the recommendations outlined below and continued current use, the subject property can be considered acceptable security for funding from an environmental standpoint.

The recommendations associated with the findings of the review are summarised in the tables below:

SITE OWNER RECOMMENDATIONS		
Recommendation	**Reasoning**	**Time Frame**
Ensure that asbestos surveys are obtained for all Vacant units within the site and that a register and management plan is held on site and appropriate management action is undertaken as required.	Compliance with Regulation 4 of the Control of Asbestos Regulations 2012 / Risk Management.	Earliest opportunity
The south eastern boundary of the site should be further inspected for the potential presence of Japanese Knotweed (in progress).	Risk management	In progress

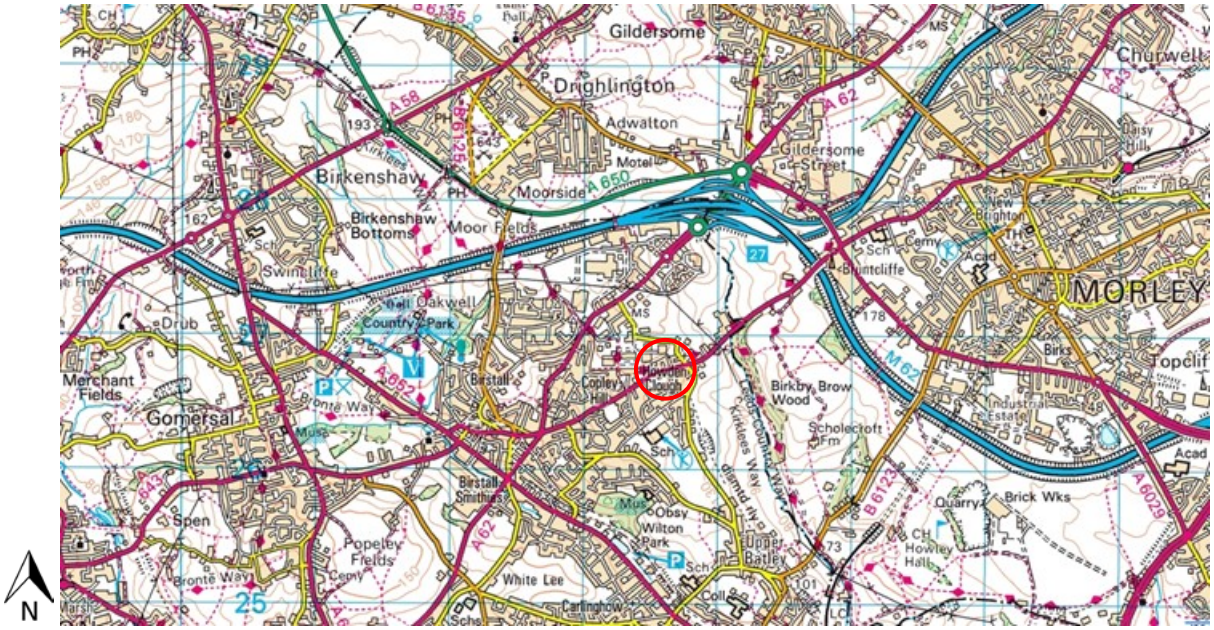
TENANT RECOMMENDATIONS			
Tenant / Unit	**Recommendation**	**Reasoning**	**Time Frame**
Tenants (all)	The tenants should ensure that asbestos surveys are obtained / undertaken for their units. Asbestos registers and management plans should be held on site and appropriate management action should be undertaken as required.	Compliance with Regulation 4 of the Control of Asbestos Regulations 2012 / Risk Management	Earliest opportunity
Bedfords Facility	Diesel tanks at require further risk assessment (in progress) and should be covered to protect tanks and bunds from rainfall.	Best Practice / Risk Management	Earliest opportunity
Unit 20 (Walkers Facility)	The tenants should provide secondary containment for the IBCs containing non-hazardous liquids	Best Practice / Risk Management	Earliest opportunity
Vehicle Lease and Service Limited (workshop)	The tenants should improve housekeeping in their unit, including ensuring that oil drums and waste oil are stored on drip trays / bunds.	Best Practice / Risk Management	Earliest opportunity

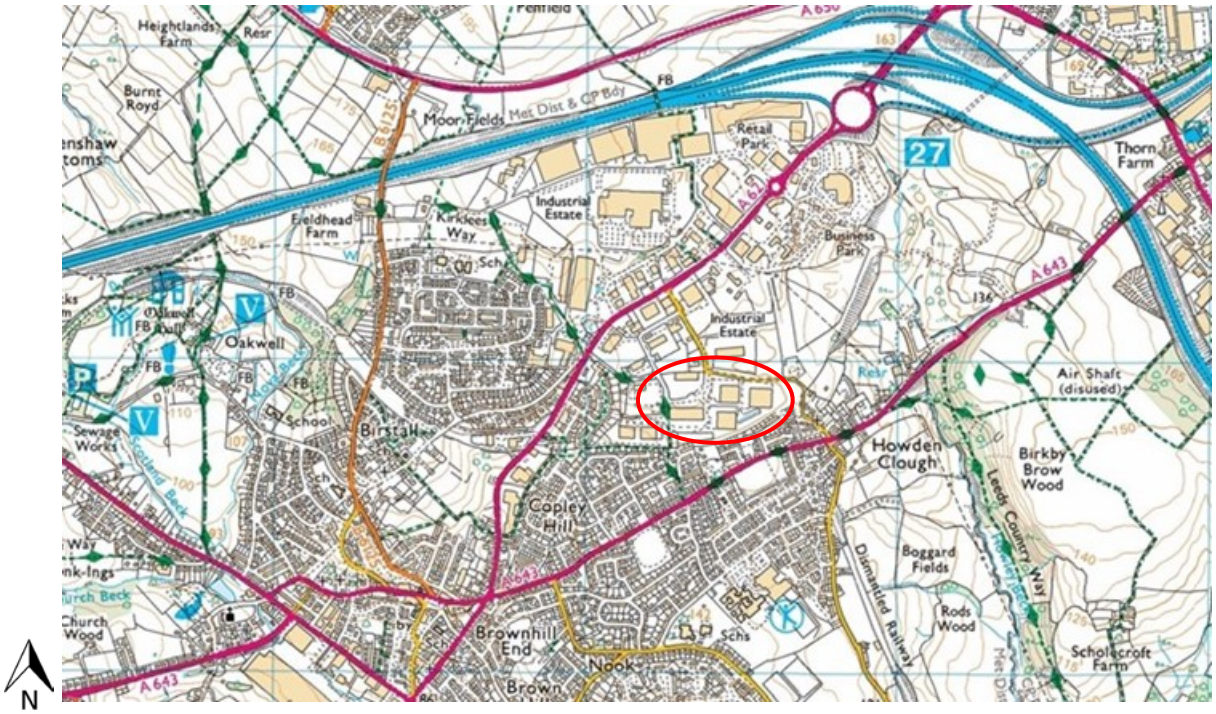
FIGURES

1. SITE LOCATION

SITE LOCATION PLANS

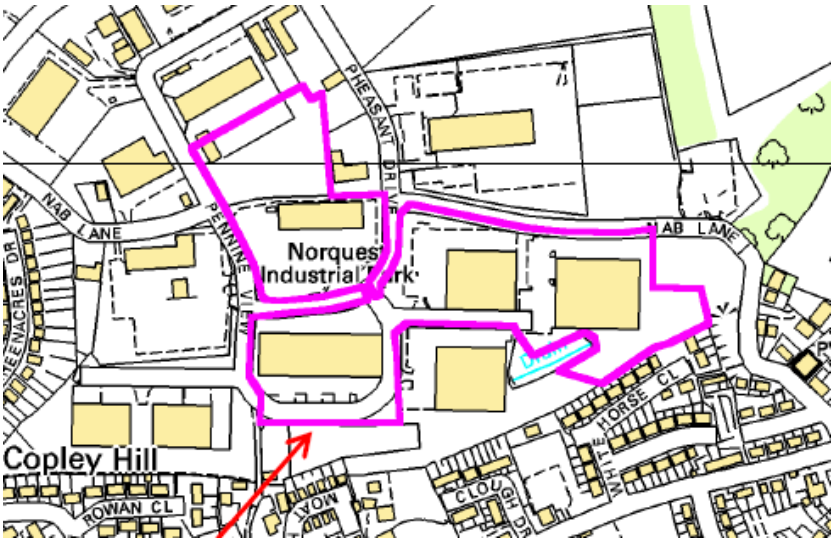
Norquest Industrial Park, Pheasant Drive, Birstall, West Yorkshire, WF17 9LT, UK





2. SITE LAYOUT PLAN

SITE LAYOUT PLAN



AERIAL PHOTOGRAPH

3. PHOTOGRAPHIC RECORD

PHOTOGRAPHIC RECORD OF SITE VISIT: 15th June 2017	
Photo 1: Example of storage (including IBCs) in unit 20.	
Photo 2: View of VLS vehicle maintenance garage.	
Photo 3: Rusting diesel tanks associated with Bedford's Facility.	

Photo 4: Example of substation located in south of site.	
Photo 5: Paint storage within unit 17	
Photo 6: Vehicle lease and service unit. Note storage of waste materials (including 205 liter drum) in entrance.	

Photo 7: View of Bedford warehouse (facing north). Tanks present in left of picture.	

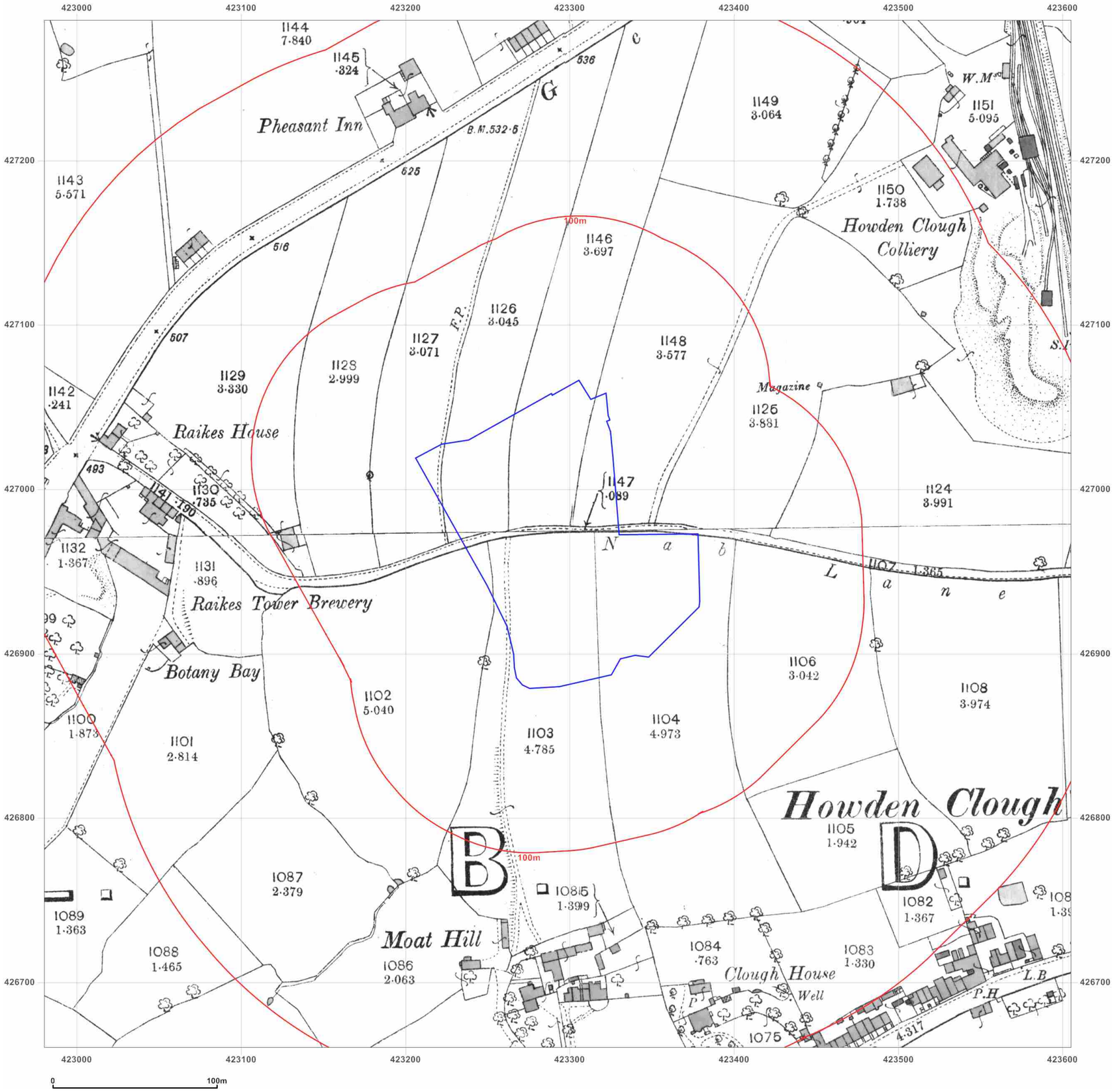
APPENDICES

1. REFERENCES & INFORMATION REVIEW

A detailed compliance assessment is not within the scope of works for this review. The table below details a list of documents / databases consulted during this review:

INFORMATION SOURCES	DOCUMENTS REVIEWED / INFORMATION PROVIDED
▪ www.environment-agency.gov.uk	▪ Public environmental records / mapping data
▪ https://flood-warning-information.service.gov.uk/long-term-flood-risk	▪ Flood risk maps
▪ www.magic.gov.uk	▪ Environmental mapping data
▪ Google Earth / Bing Maps	▪ Aerial Photographs / Maps
▪ Kirklees Council	▪ Environmental Response, July 2017 ▪ On-line Planning Database
▪ Data room	▪ Environmental Assessment Report – Norquest Industrial Park, Batley. Prepared by WSP in September 2014 (Ref. 70006481). ▪ Building Survey Report – Norquest Industrial Park, Gelderd Road. Prepared by Malcolm Hollis in September 2014 (Ref.39925/RB/DW).

2. LOCAL AUTHORITY CONSULTATION, JULY 2017



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BATLEY, WF17 9LT

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Report Ref: GS-6676104
Grid Ref: 423292, 426973

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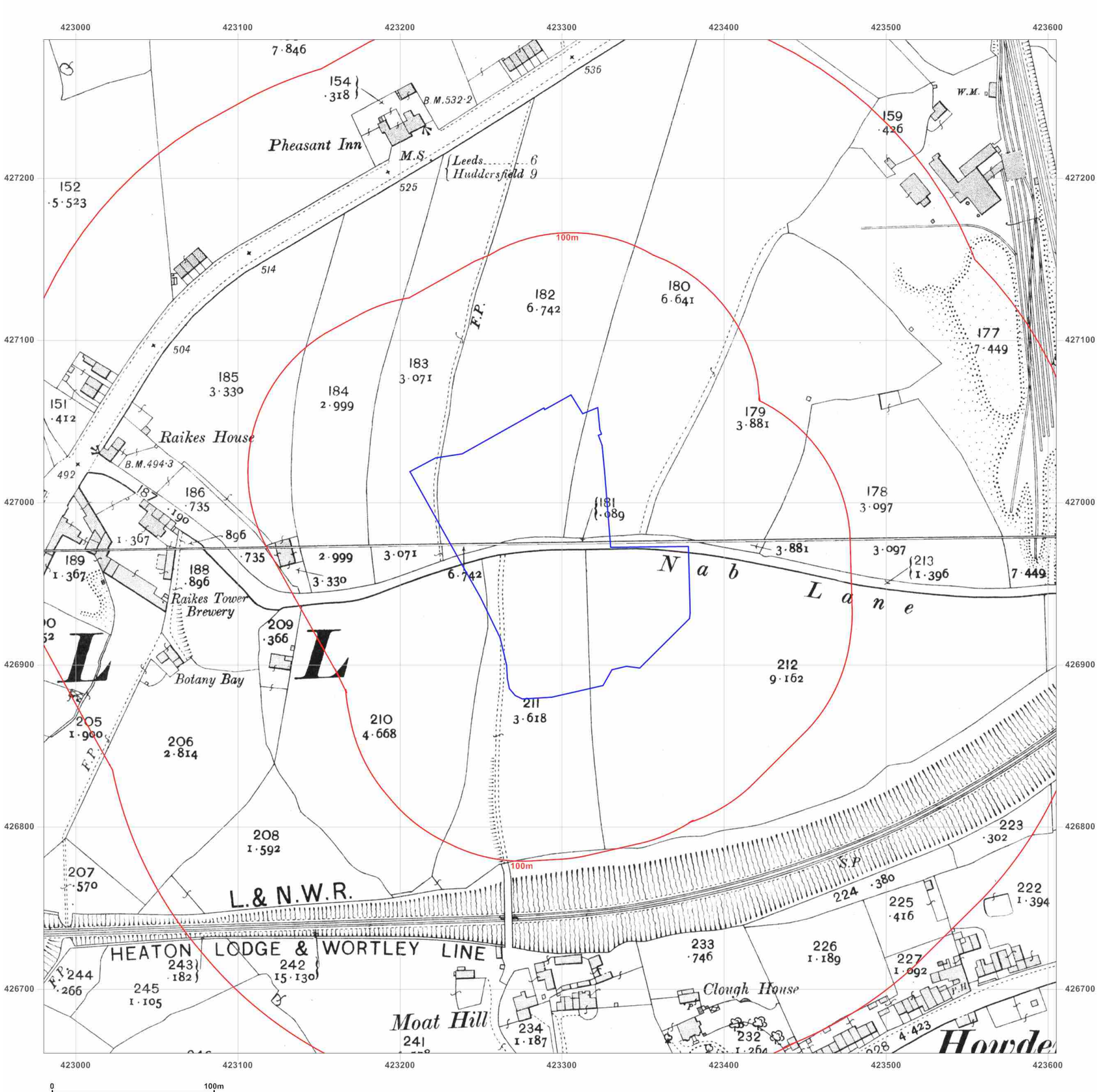

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Grid Ref: 423292, 426973

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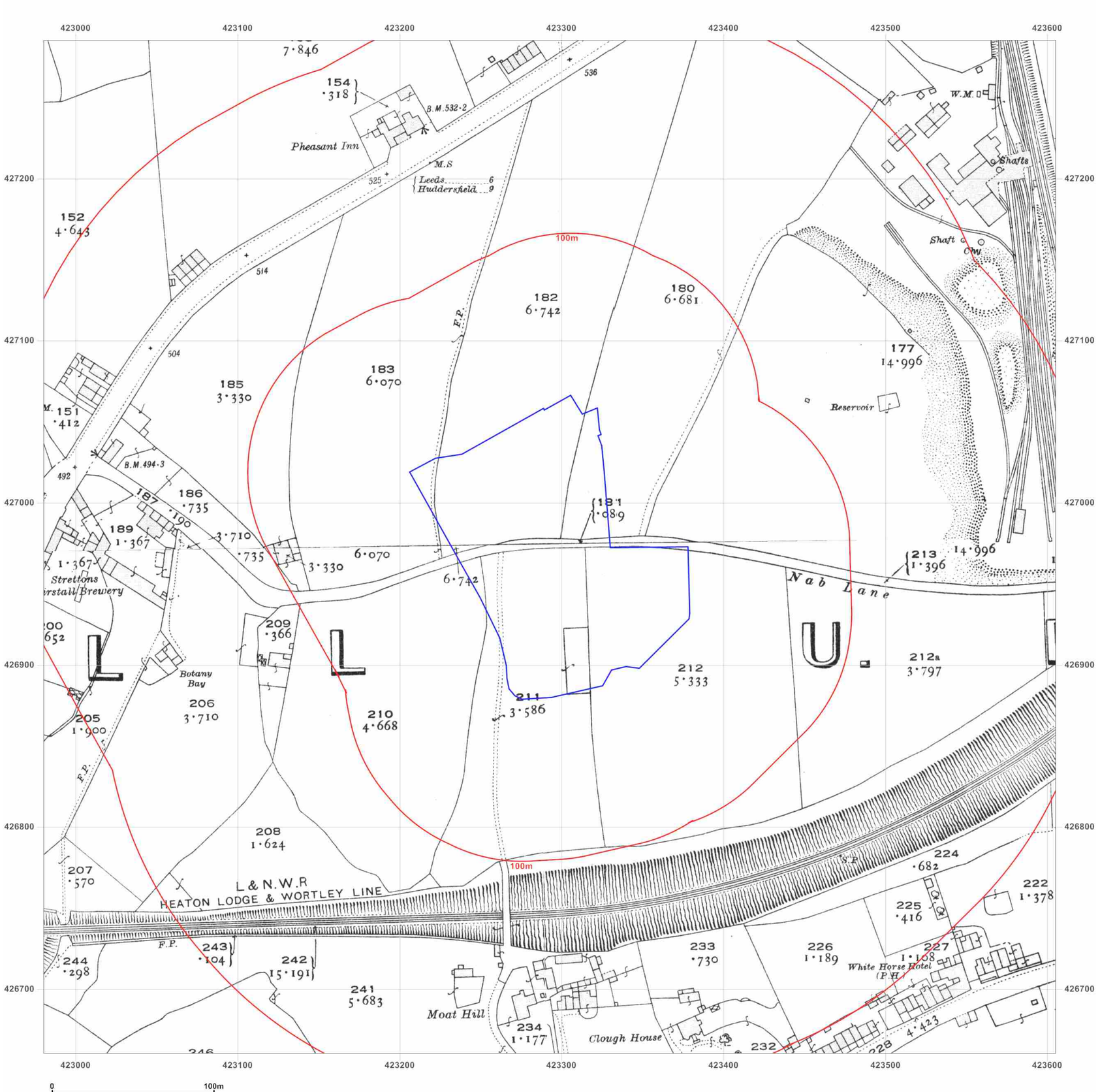

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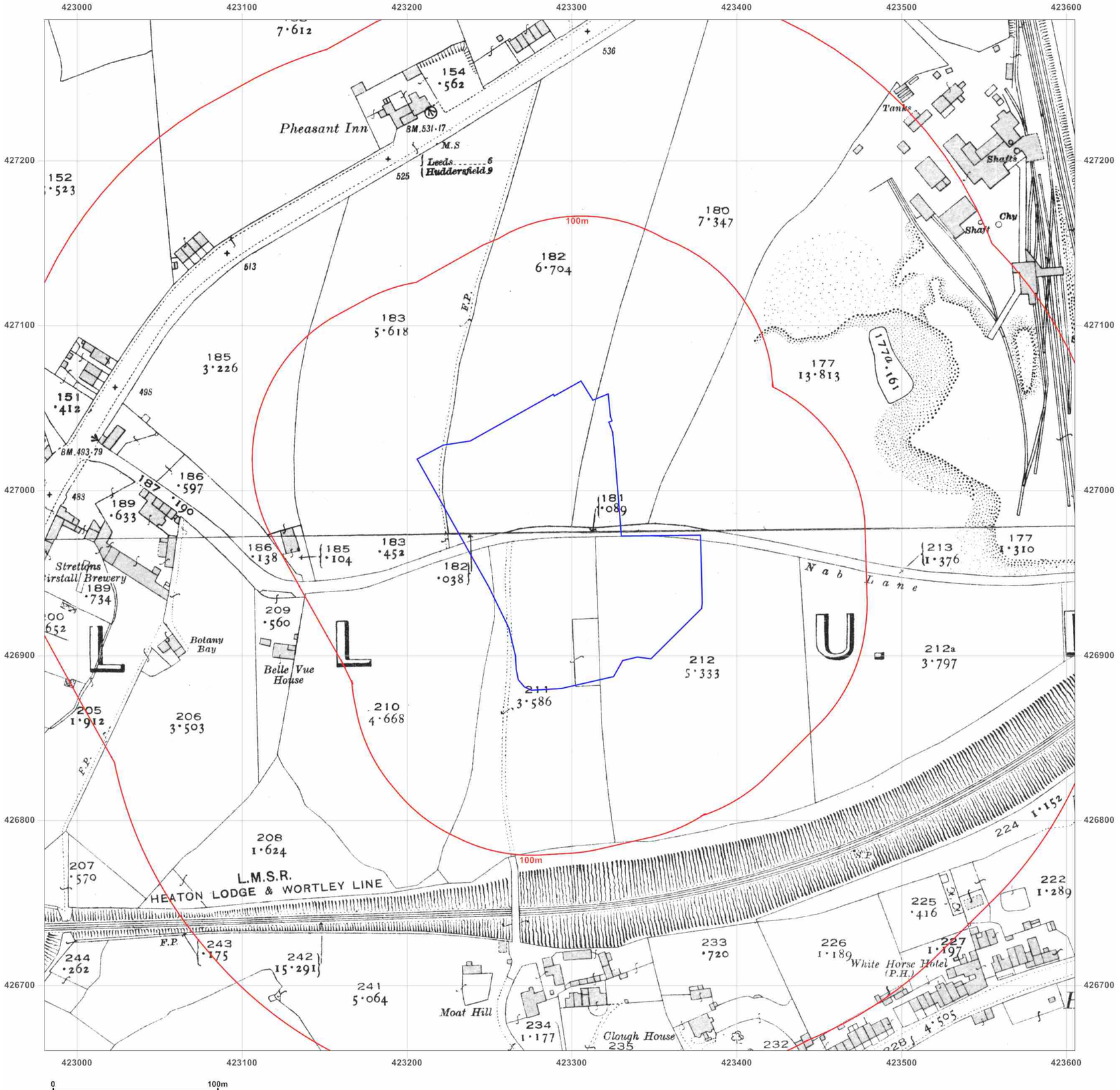

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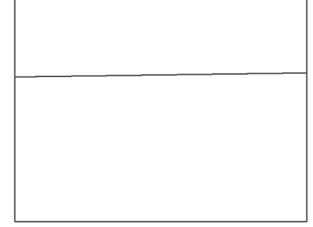

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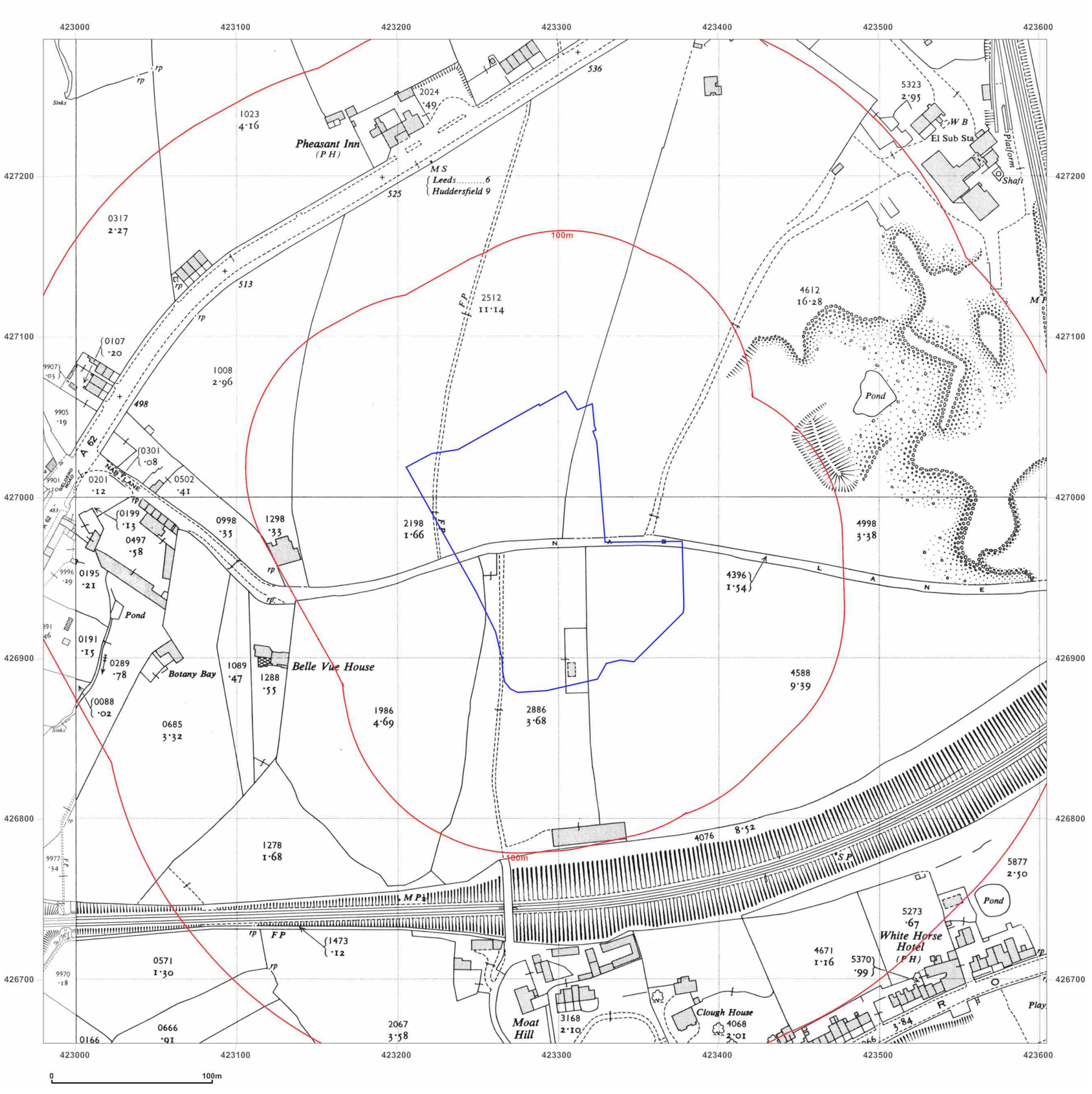

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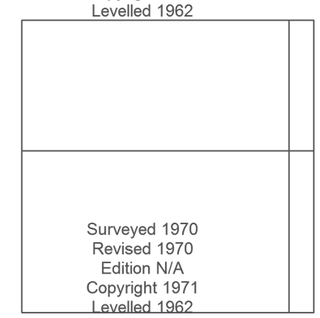

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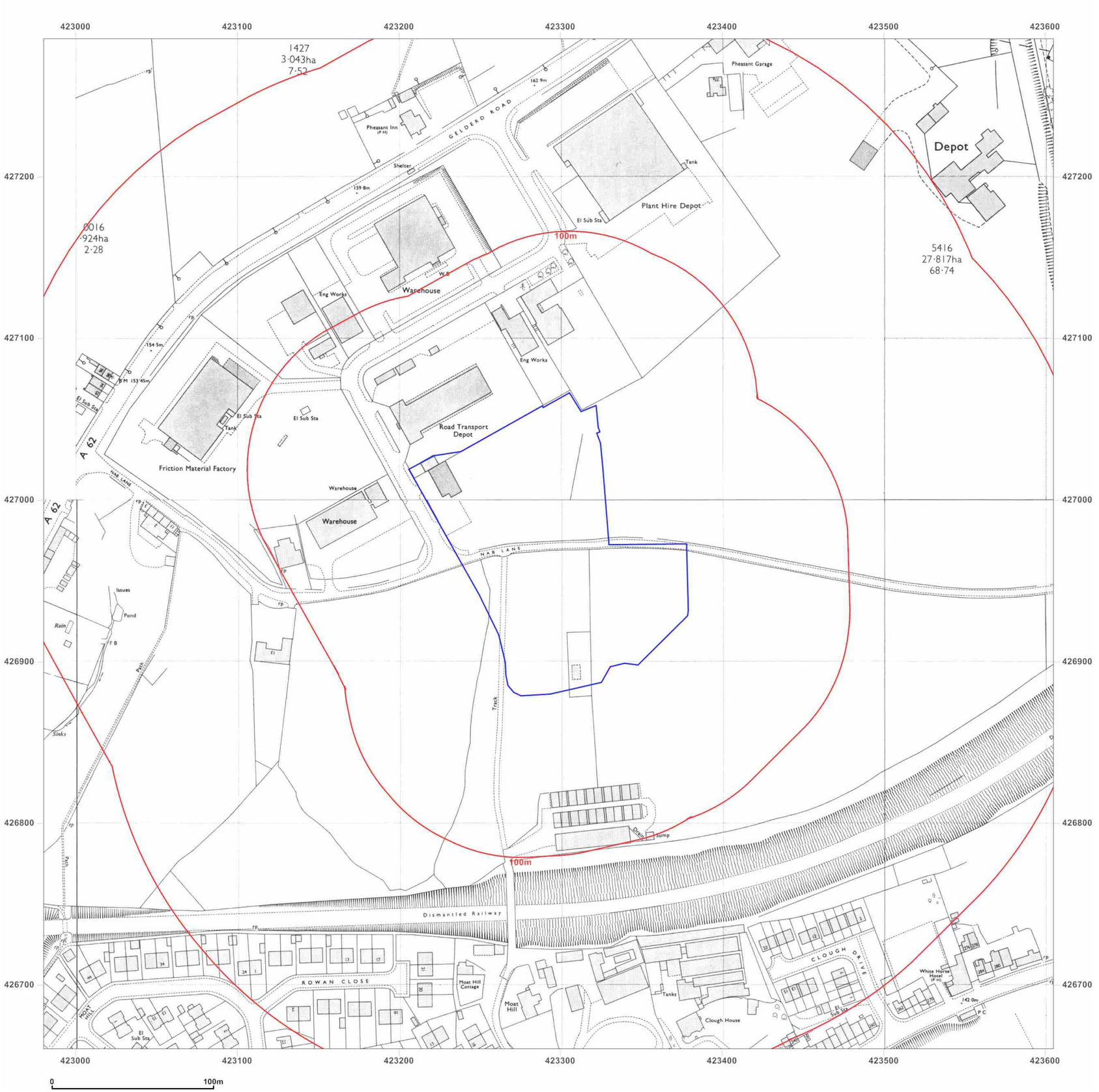

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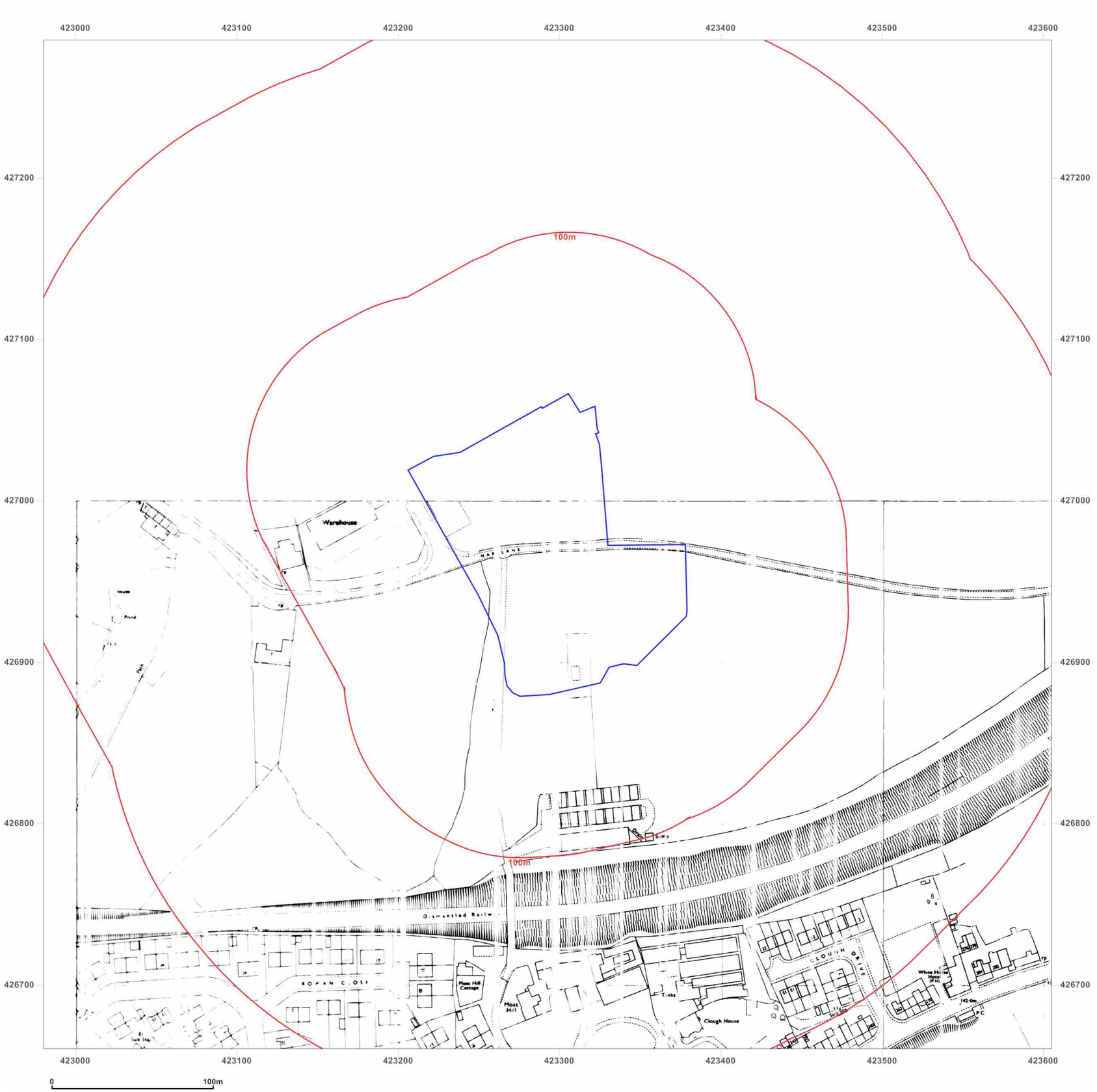

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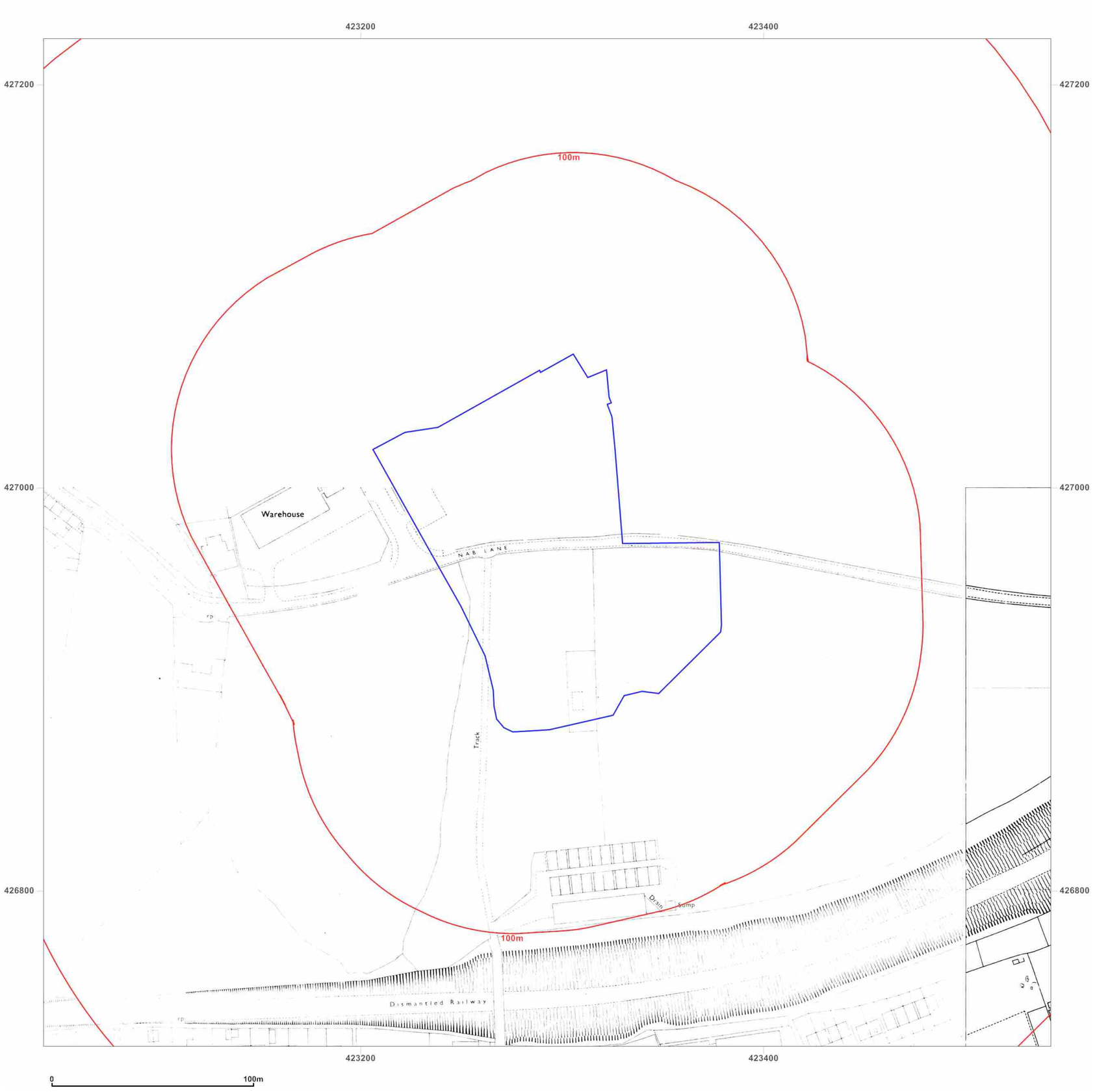

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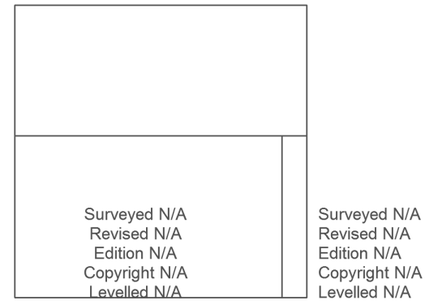

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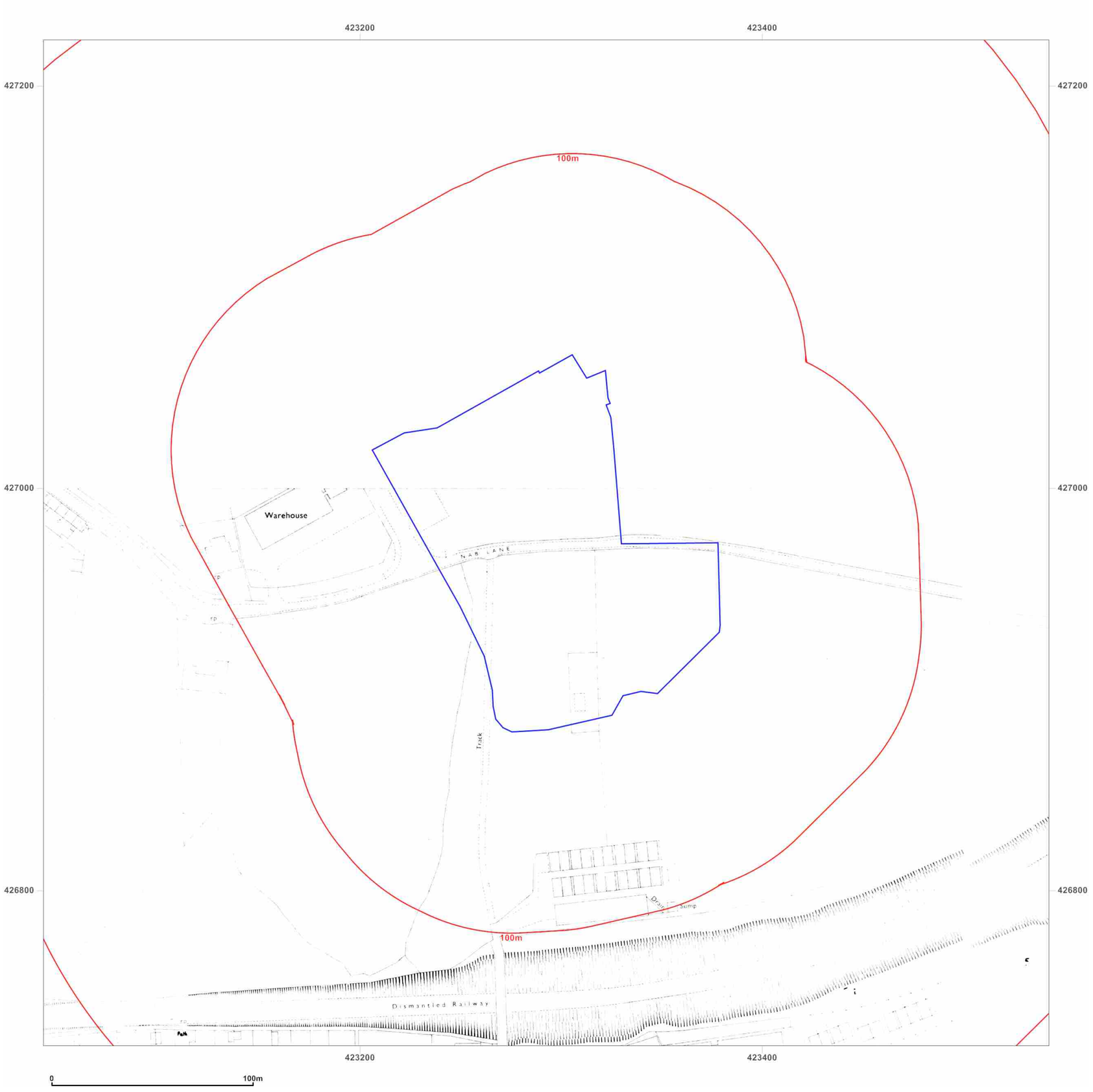

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Grid Ref: 423292, 426973

Map Name: National Grid

Map date: **1987**

Scale: 1:2,500

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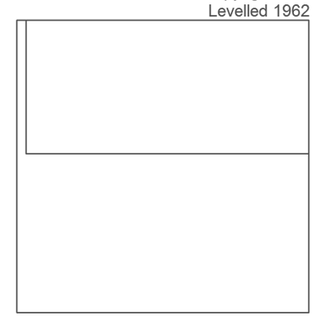

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Client Ref: PO000430
Report Ref: GS-6676104
Grid Ref: 423292, 426973

Map Name: National Grid

Map date: **1987**

Scale: 1:2,500

Printed at: 1:2,500

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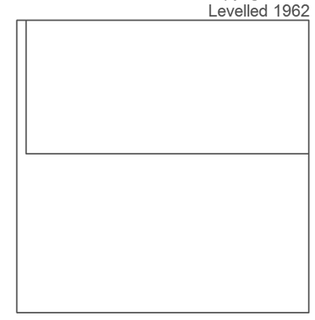

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Grid Ref: 423292, 426973

Map Name: National Grid

Map date: **1988**

Scale: 1:2,500

Printed at: 1:2,500

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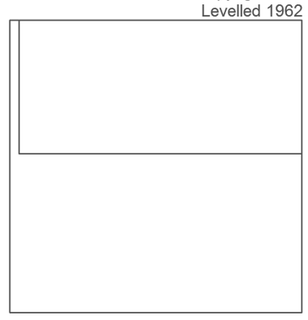

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