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Date: 12TH June 2008

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PROPOSED INDUSTRIAL UNITS

269-271 OLDHAM ROAD, MANCHESTER, M40 7PS

Desk Study

INTRODUCTION

It is proposed to build two industrial units on a former petrol station. Instructions were to carry out a desk study to consider contamination, landfill gas and geotechnical issues.

SITE DESCRIPTION

Measuring about 90 metres by 30 metres, the site is located to the northwest of Oldham Road in Manchester, centred on national grid reference 385580, 399560. The site is rectangular and comprises a former petrol station that is currently being used as a hand car wash.

Northeast Half of Site

Other than removing the pumps, very little work appears to have been done to decommission the petrol station and the main features can still be seen:

- Shop along the northeast boundary
- Canopy extending southwest from the shop towards the middle of the site
- Pump islands beneath the canopy and along the southeast side
- Cluster of manhole covers along the northwest side, likely to be the tank farm
- Vent pipes mid-way along the northwest side of the site

Southwest Half of Site

This was originally occupied by a building and was never redeveloped when the building was demolished, leaving an area of waste ground, part tarmac, part concrete and part unsurfaced.

The site (both halves) is generally level, but is on the low side of a 3-4 metre-high, brick, retaining wall, which forms the northwest boundary. The site fronts Oldham Road to the southeast, overgrown waste land to the northeast, where a club has been demolished in recent years, and a narrow tarmac-surfaced area to the southwest. Beyond the tarmac to the southwest is an old, asbestos clad, vehicle repair garage, a pub and shops. To the southeast, beyond Oldham Road, is a church. There is a mobile phone mast on the northwest boundary.

TREES

There are several scrub trees beyond the retaining wall to the northwest otherwise the site is clear.

PROPOSED DEVELOPMENT

It is proposed to build two industrial units, in the north and west corners. The remainder will be mostly car parking, but with narrow strips of landscaping around the perimeter.

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ENVIRONMENTAL DATA

A Landmark Envirocheck report has been obtained for the site and geological maps have been reviewed, and the following is a summary of the combined data. The Envirocheck report indicated none of the following within 250 metres:

- Contaminated land register entries
- Pollution incidents
- Substantiated pollution incidents
- Water abstraction points (none within 500 metres)
- Source protection zones
- Radioactive sites
- Areas of flooding from rivers

- Hazardous substances sites
- Trade directory entries
- Fuel Stations
- Sensitive land uses

Surface Water (Hydrology)

There are no rivers or streams close to the site.

The nearest discharge consent is 216 metres southeast, discharge of storm sewage overflow into the River Irk.*

* not relevant due to distance/severity/significance.

Groundwater (Hydrogeology)

The solid rocks under the site are indicated as a minor aquifer. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers.

Surface soils are given the HU classification used for most urban sites, indicating soils of a high leaching potential. The surface soils are also shown as having a low permeability.

* not relevant due to distance/severity/significance.

Landfill and Other Waste Sites

There is a registered waste transfer site 93 metres south, a very small transfer station authorised for aluminium cans and foil.*

* not relevant due to distance/severity/significance.

Geology of Site

The geological map indicates that the underlying solid rocks are undivided strata, likely to be mudstone and shale, in the Pennine Middle Coal Measures, dipping at about 14° to the southwest.

Surface drift is shown as glacial till (boulder clay) of unspecified thickness.

Natural subsidence hazards are shown as very low or no hazard.

Radon

Less than 1% of homes in the area are above the radon action level and radon protection measures are not required.

Mining

A Coal Authority mining report has been obtained, and a copy is enclosed with this report. The salient points are as follows:

- No present underground coal mining.
- No mine entries within 20 metres of the property.
- Mine workings are present in four seams of coal at shallow to 920 metres deep, last worked in 1967.
- Notice of entitlement to withdraw support was published in 1955, this has not been revoked.

The geological map suggests that The Bradford Three Quarters Mine coal seam outcrops east to west across the site, dipping to the southwest.

Nearby Industry

The site has a Local Authority PPC listing for an air pollution control at a petrol station which also has a fuel station entry listing.

There are four trade directory entries within 100 metres:

- Paint manufacturers, 6 metres northeast (should be 30 metres northeast)
- Garage services, 20 metres southwest
- Non-ferrous metals, 86 metres southwest*
- MOT testing centre, 86 metres southwest*
- Garage services, 106 metres southwest*

* not relevant due to distance/severity/significance.

SITE HISTORY

Date	On Site	Off Site
1848 (1:10560)	Cluster of buildings on the site	Oldham Road forms southeast boundary Buildings, probably houses and shops, immediately northeast, southwest and 25m southeast Brick field approx 200m south and 150m northwest Suspected ponds 170m northeast and 30m northwest Railway 60m northwest Coal pit 250m northwest and St Georges Colliery approx 260m northwest
1893 (1:2500)	The buildings on site are shown to almost fill the site except for the south corner. The buildings comprise a pub along the northeast side with numerous smaller buildings around the remainder of the site, possibly small workshops.	Brick fields to the south and northeast are not shown and terraced housing has been constructed over them, filling may have taken place. Ponds to the northeast and northwest have been filled Corporation Health (cleansing) Department works 140m southwest Railway sidings immediately northwest
1903 (1:2500)	Little or no change	Machine works 45m southeast
1922 (1:2500)	Little or no change	Houses demolished and cinema constructed immediately northeast
1951 (1:2500)	Pub remains along northeast side but the original buildings to the southwest of this have been demolished and a new building constructed along the southwest side.	Little relevant change
1984 (1:2500)	Pub demolished and new pub constructed towards the middle of the site.	Houses/buildings to the southeast of Oldham Road demolished, Church constructed 30m southeast Houses to southwest demolished and vehicle repair garage constructed 15m southwest Railway sidings to the northwest dismantled
1992 (1:2500)	Pub at centre and building on southwest of site demolished. Petrol station constructed with shop mid-way along northeast side having a canopy extending towards the middle of the site.	Little or no change
2008 (1:10000)	Little or no change	Little relevant change

DISCUSSION

Contamination

The site was originally occupied by several small buildings, including a pub and likely small workshops. These were all demolished in various stages between about 1940 and 1980 to be replaced by a building with an unknown use to the southwest and a new pub to the northeast; the new pub was demolished circa 1990 to make way for a petrol station. In recent years the petrol station has ceased trading and is now occupied by a hand car wash whilst the building to the southwest has been demolished.

Bearing in mind that two of the three former buildings were pubs, it is likely that these had cellars, and deep, possibly contaminated, made ground may be present.

The most obvious source for on-site contamination is the recent petrol station, and contaminants, mainly TPH, may be located in the following areas:

- Shallow soils around the pump islands at the middle and southeast from spills.
- Shallow soils around the top of tanks to the northwest from spills during refilling.
- Deeper beneath the site from leaking tanks. This may be concentrated around the tanks, thought to be to the northwest, but could also have spread further around the site.
- Following lines of pipes and drains due to leaks, however, the lines of these have not been determined.

Although there is obviously the potential for contaminants, especially TPH, from the petrol station, it is expected that the site will be underlain by clay and this sometimes acts to prevent spills migrating further around the site. Contaminants are therefore expected to be concentrated close to their source, i.e. spills at the surface or around the tank farm.

Considering the site has been redeveloped several times in the past, it is likely that made ground, possibly contaminated, will have been introduced onto the site and/or demolition rubble left behind.

Other than the pubs on the northeast of the site, the uses of the original and more recent buildings on the southwest of the site are not known. The layout of these buildings suggests possible small workshops and contaminants may be possible on the southwest half from these uses.

Regarding nearby industries there are three from which contaminants may be present:

- Historical railway sidings immediately northwest
- Paint manufacturer about 30 metres northeast
- Vehicle repair garage 15 metres southwest

There have been no pollution incidents on or close to the site.

The proposed development will be industrial units with associated car parking and landscaped areas that will allow future site users direct contact with the surface soils.

Groundwater/Rivers

There is an underlying minor aquifer beneath low permeability clay and there are no nearby rivers or streams.

Although the site will be mostly hard surfaced on completion, the small landscaped areas will allow opportunity for rainwater to pass through the surface soils and leach out contaminants that may migrate towards the underlying aquifer. The underlying clay would be expected to impede the downward migration of leachate and it is anticipated that any shallow, perched, groundwater would be most at risk.

Bearing in mind the site has been a petrol station and the majority of contaminants might be liquid fuels, there is the potential for contaminants to be present as free product on shallow groundwater.

Landfill Gas

There are several areas within 250 metres of the site where filling may have occurred, and landfill gases generated in these features could migrate to the site and present a risk to the development.

There may be filled cellars on site with the potential for generation of gases.

A shallow coal seam is expected beneath the site and coal gases may be present, and if deep made ground is also present there is potential for gases to be generated on the site itself.

Radon

Radon protection measures are not required.

Coal Mining

There is a shallow, possibly worked coal seam beneath the site.

Foundations

There is a retaining wall along the northwest boundary and the stability of this will need to be checked before construction commences.

Although it is expected that the site will be underlain by clay, which often provides a good bearing stratum for traditional strip or pad foundations, this may be overlain by made ground and deeper foundations may be necessary. There is likely to be deep made ground, old tanks, buried features to walls and old foundations to overcome.

INDUSTRY PROFILE

The site which formerly housed a pub and small buildings, possibly workshops, is currently occupied by an unused petrol station. Potential off-site sources of contamination are railway sidings, a paint manufacturers and a vehicle repair garage.

Filling Stations

Petrol and diesel would have been delivered to the tanks by road tankers and pumped into the underground storage tanks and pipework.

There is likely contamination associated with these tanks and pumps due to the spillage, leakage or disposal of waste products. In former years, contamination of the ground from spillage was common, due to over filling, faulty pipes or caps etc. Contamination of the ground may also have occurred from petrol or diesel leaking from underground tanks and pipework.

Petrol tanks that are no longer in use may pose a risk of explosion, fire and ground or surface water contamination, unless they have been de-commissioned by filling with concrete, water or foam.

Likely contaminants associated with fuel stations include petroleum spirit, including simple aromatics such as benzene, additives such as MTBE, organo lead compounds, general hydrocarbons and diesel.

Industry	Possible Contaminants
Garage services	Metals: lead, chromium, copper Volatile organic compounds/solvents (VOC) Fuel: petrol, diesel, MTBE (TPH) Polycyclic aromatic hydrocarbons (PAH) Asbestos
Petrol Station	Fuel: petrol, diesel, MTBE (PAH)
Paint manufacture	Dyes VOC Metals Organotin Asbestos PCB's Fuels, oil
Railway sidings	Fuel: petrol, diesel, MTBE (PAH)
General contaminants in made ground	Heavy metals: e.g. arsenic Inorganic compounds: e.g. cyanide, sulphate (TPH) (PAH) Asbestos

CONCEPTUAL MODEL

A conceptual model based on the source-pathway-receptor concept is included with this desk study to show the potential pollutant linkages with this site.

Source	Receptors	Pathway	Potential Pollutant Linkage
Asbestos	Construction workers and end-users	Inhalation	Yes
Inorganic contaminants: eg. Arsenic	Construction workers	Short-term direct contact, inhalation of dust, ingestion	Yes
	End-users	Direct contact, ingestion, inhalation of dust	Yes
	Service pipes	Seeping into drinking water pipes	Yes
	Groundwater	Leaching toward	Yes
Sulphate	Building fabric	Concrete directly in contact with soil.	Yes
Hydrocarbons e.g. benzo(a)pyrene, fuel e.g. diesel	Construction workers	Short-term direct contact, inhalation of dust, ingestion	Yes
	End-users	Direct contact, ingestion, inhalation of dust	Yes
	Service pipes	Seeping into drinking water pipes	Yes
	Groundwater	Migrating towards	Yes
Hydrocarbon vapours e.g. Naphthalene (PAH), fuel e.g. petrol	Construction workers	Short-term inhalation	Yes
	End-users	Inhalation of vapours indoors and outdoors	Yes
Landfill gas	End-users - in buildings.	Seeping into buildings, explosion, asphyxiation	Yes

CONCLUSION

Contamination

Considering the history of the site and surrounding area, it is likely that significant contamination will be present at both shallow depth and deeper beneath the site, especially near the former fuel tanks.

An intrusive investigation is required, consisting of boreholes, trial holes and tests to confirm the presence and extent of contamination on the site. Testing will need to provide all round coverage of the site and also target:

- Pump islands on the middle/south east of the petrol station
- Tank farm along the northwest of the petrol station
- Spreading out from the tank farm
- Paint manufacturer to the northeast
- Vehicle repair garage to the southwest
- Railway sidings to the northwest

Further details on the layout of the petrol station have been requested from the Petroleum Licensing Officer and these will be forwarded when available. The details of the tanks often prove extremely useful when designing the intrusive investigation.

Groundwater/ Rivers

Tests will be required on shallow, perched, groundwater samples to check for the downward migration of contaminants. If groundwater samples are not available, leachate tests on the surface soils may be considered to determine if any contamination present is able to leach out towards the aquifer.

Landfill Gas - A landfill gas testing programme is required.

Radon - Radon protection measures are not required.

Coal Mining

There is a shallow, possibly worked coal seam, and a series of rotary boreholes are required to check the depth and thickness of the underlying coal seams and to determine if mine workings are present. At least one borehole to 20+ metres should provide an adequate depth for the shallowest seams.

Flooding

The Environment Agency maps suggest that the site is clear of areas of flooding from rivers and no further action is required.

Foundations

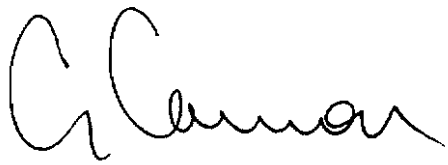
A series of boreholes are required in the area of the proposed buildings to allow the most suitable foundations to be designed. The deep tanks and old cellars are likely to give rise to deep made ground, suggesting that conventional footings will be unsuitable.

The structural stability of the adjacent retaining wall may also need to be checked to ensure that there are no difficulties and that the construction works will not affect the stability of the wall.

Underground storage tanks

To allow any significant redevelopment to take place, it is likely that the tanks will require removal.

Yours faithfully
on behalf of Worms Eye Geotechnical Ltd



Graham Cannon
BSc MICE FGS
CEnv CEng

PROPOSED INDUSTRIAL UNITS

269-271 OLDHAM ROAD, MANCHESTER

List of Appendices – Desk Study

Site Location Plan

Existing Site Plan

Proposed Site Plan

Historical Maps

Coal Mining Report

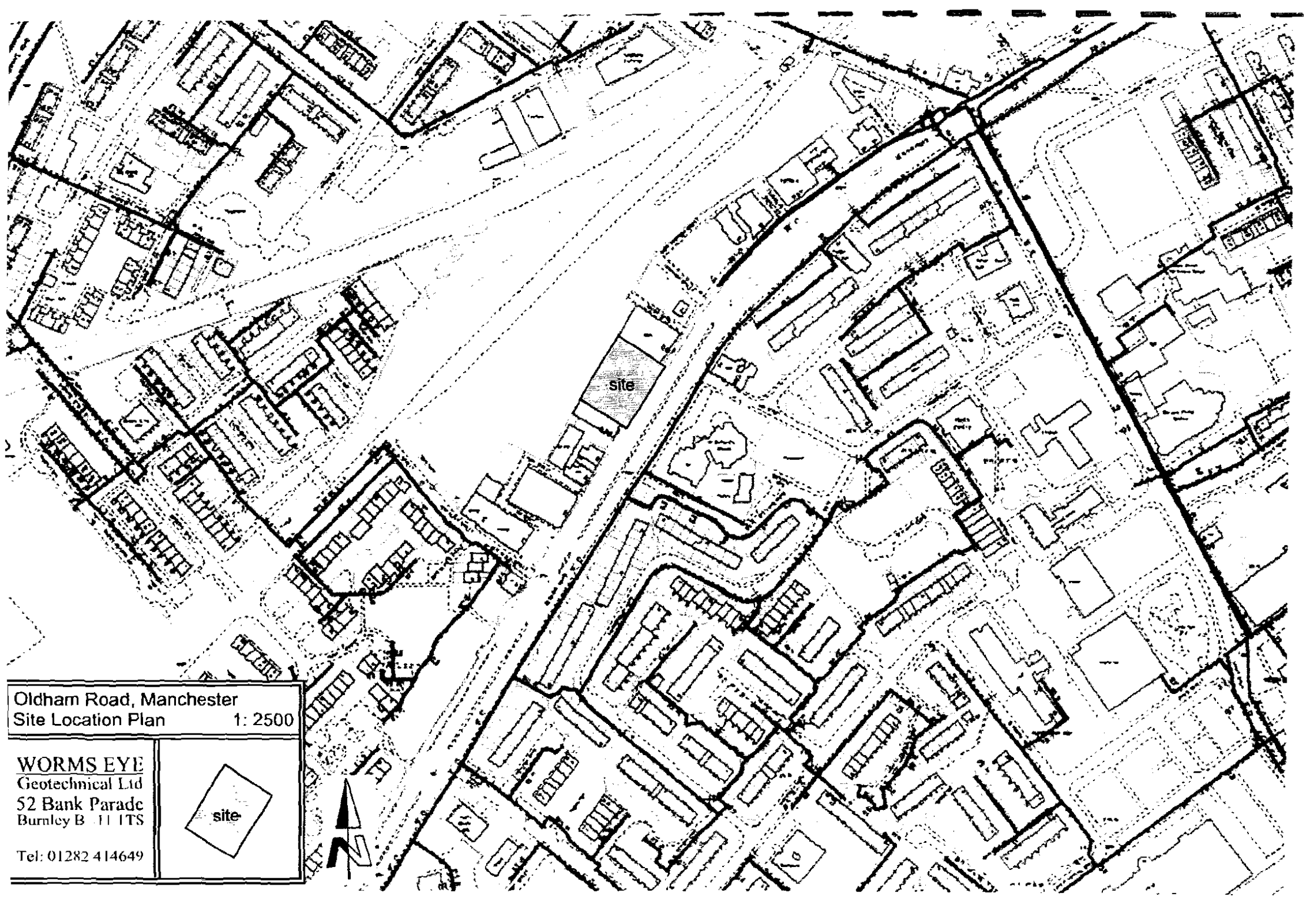
Landmark Envirocheck Report

Landmark Summary Map

Conceptual Model

ABBREVIATIONS

Chemical	BAP	Benzo(a)pyrene
	BTEX	Benzene, toluene, ethylbenzene, xylene
	DAHA	Dibenzo(ah)anthracene
	MTBE	Methyl tertiaryt-butyl ether (additive to petrol)
	EPH	Extractable Petroleum Hydrocarbons (formerly Diesel Range Organics – DRO)
	NFD	No fibres detected (asbestos test)
	PAH	Polycyclic aromatic hydrocarbons
	PCB	Polychlorinated biphenyls
	PID	Photo ionisation detector
	PRO/GRO	Petrol range organics/gasoline range organics
	SVOC	Semi-volatile organic compounds
	TCE	Trichloroethylene
	TPH	Total petroleum hydrocarbons
	VOC	Volatile organic compounds
Other	AGS	Association of Geotechnical Specialists
	BGS	British Geological Survey
	BRE	Building Research Establishment
	CBR	California Bearing Ratio
	CIEH	Chartered Institute of Environmental Health
	CIRIA	Construction Industry Research and Information Association
	CLEA	Contaminated Land Exposure Assessment (Environment Agency)
	CLR 8	Contaminated Land Research Report 8 (Environment Agency)
	DWQ	Drinking water quality
	EA	Environment Agency
	EQS	Environmental quality standards
	ICRCL	Inter-departmental Commission for the Reclamation of Contaminated Land
	LQM	Land Quality Management Ltd (Land and Environmental Consultancy)
	NHBC	National House Builders Council
	SGV	Soil Guideline Values
	SPT	Standard penetration test
	TPHWG	TPH Working Group



Oldham Road, Manchester
Site Location Plan 1: 2500

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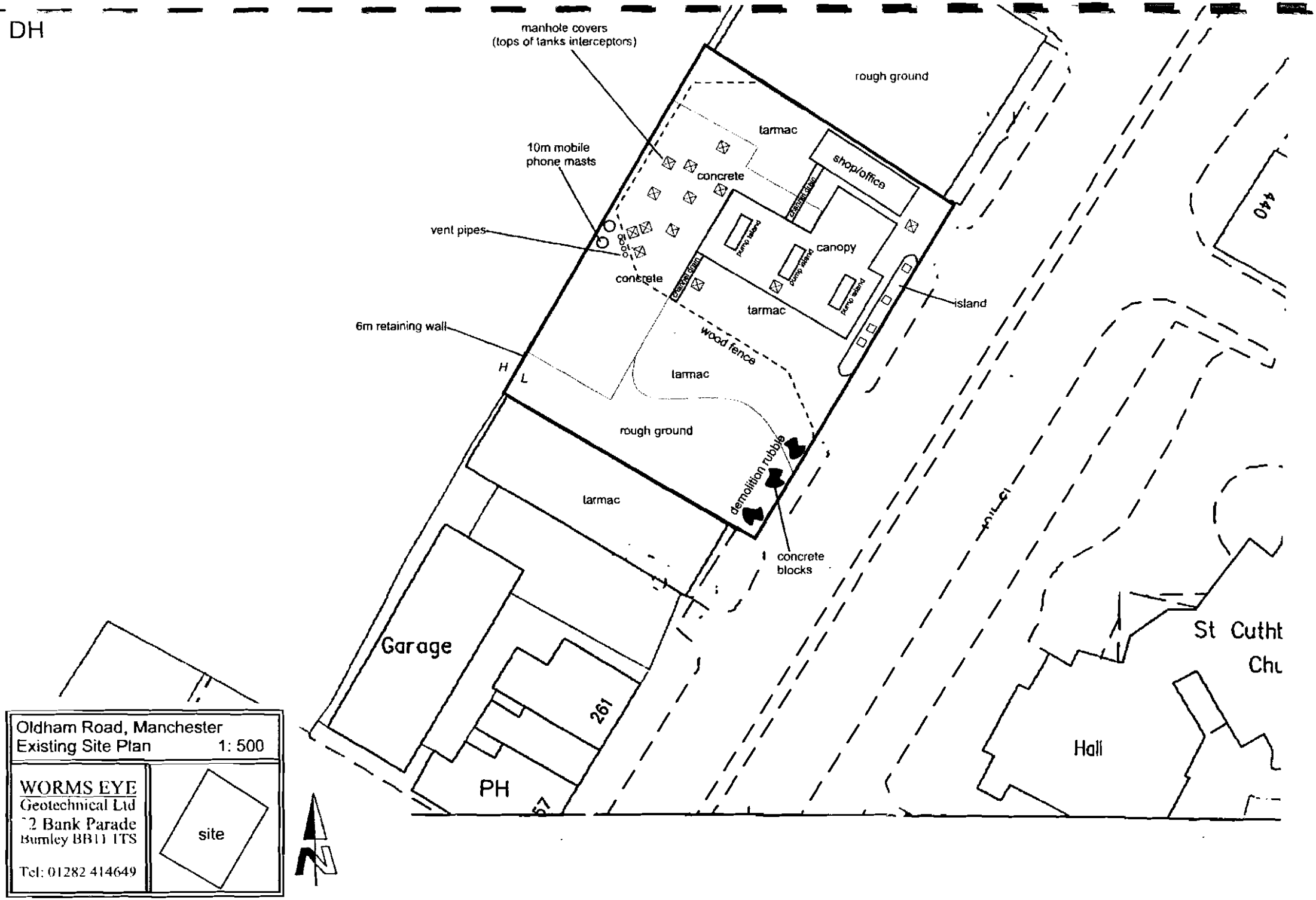
DH
manhole covers
(tops of tanks interceptors)
rough ground
tarmac
10m mobile
phone masts
concrete
shop/office
vent pipes
canopy
pump island
concrete
tarmac
island
6m retaining wall
wood fence
H
L
tarmac
rough ground
demolition rubble
tarmac
concrete
blocks
Garage
261
PH
57
Hall
St Cuthl
Chu
440
Oldham Road, Manchester
Existing Site Plan 1: 500
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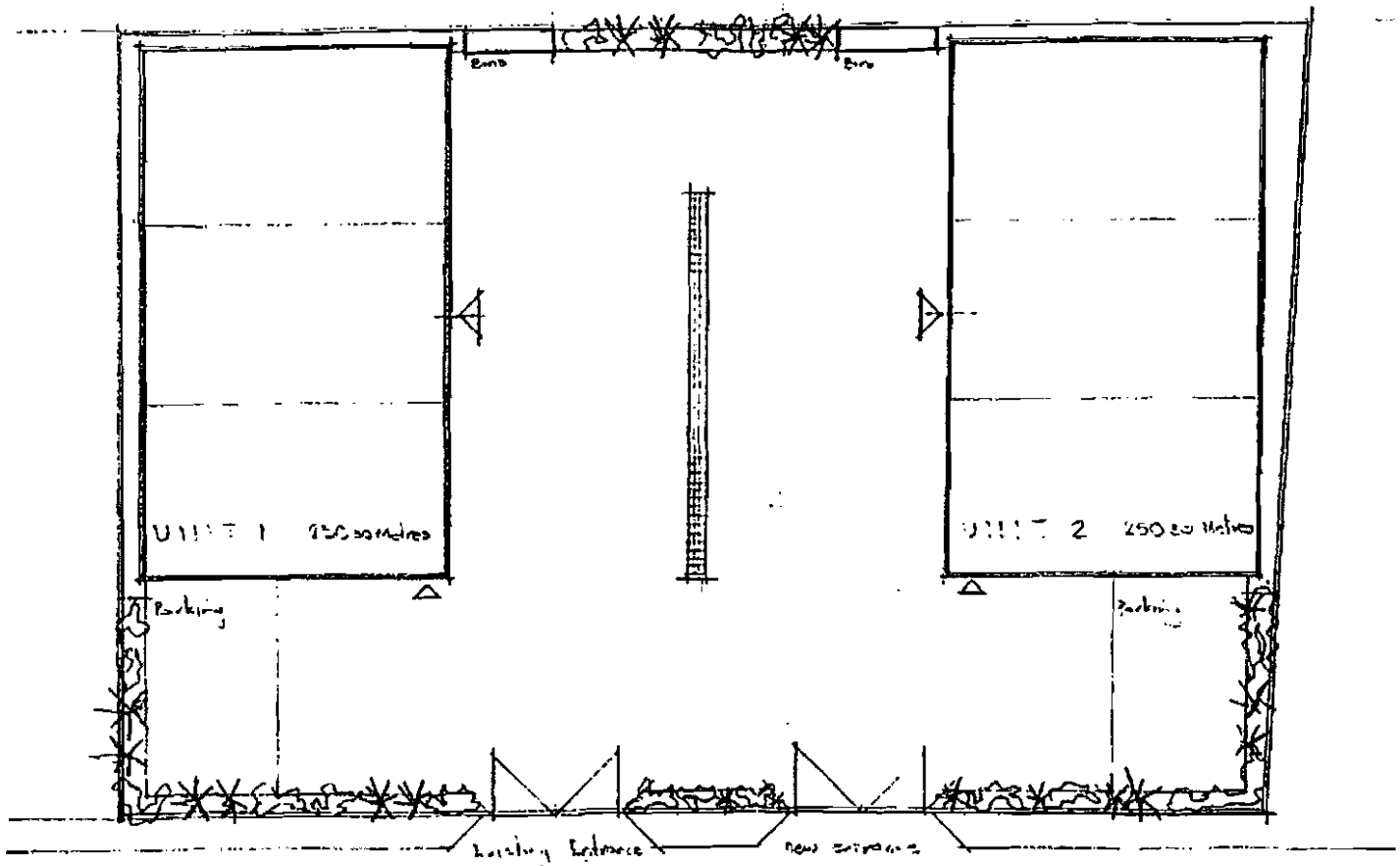
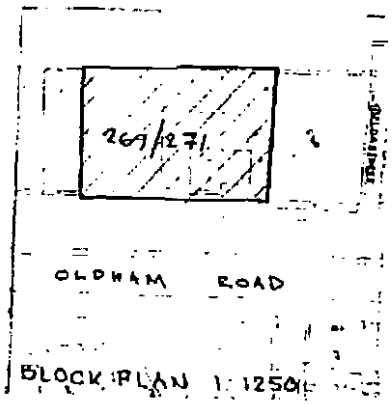
site
N

DEVELOPMENT AT 269/271 OLDHAM ROAD MANCHESTER



ELEVATION TO OLDHAM ROAD





BLOCK PLAN 1:1250

PDC ARCHITECTS

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269/271, Oldham Road, Manchester. M40 7PS
proposed plan

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Telephone +44 (0) 161 228 73
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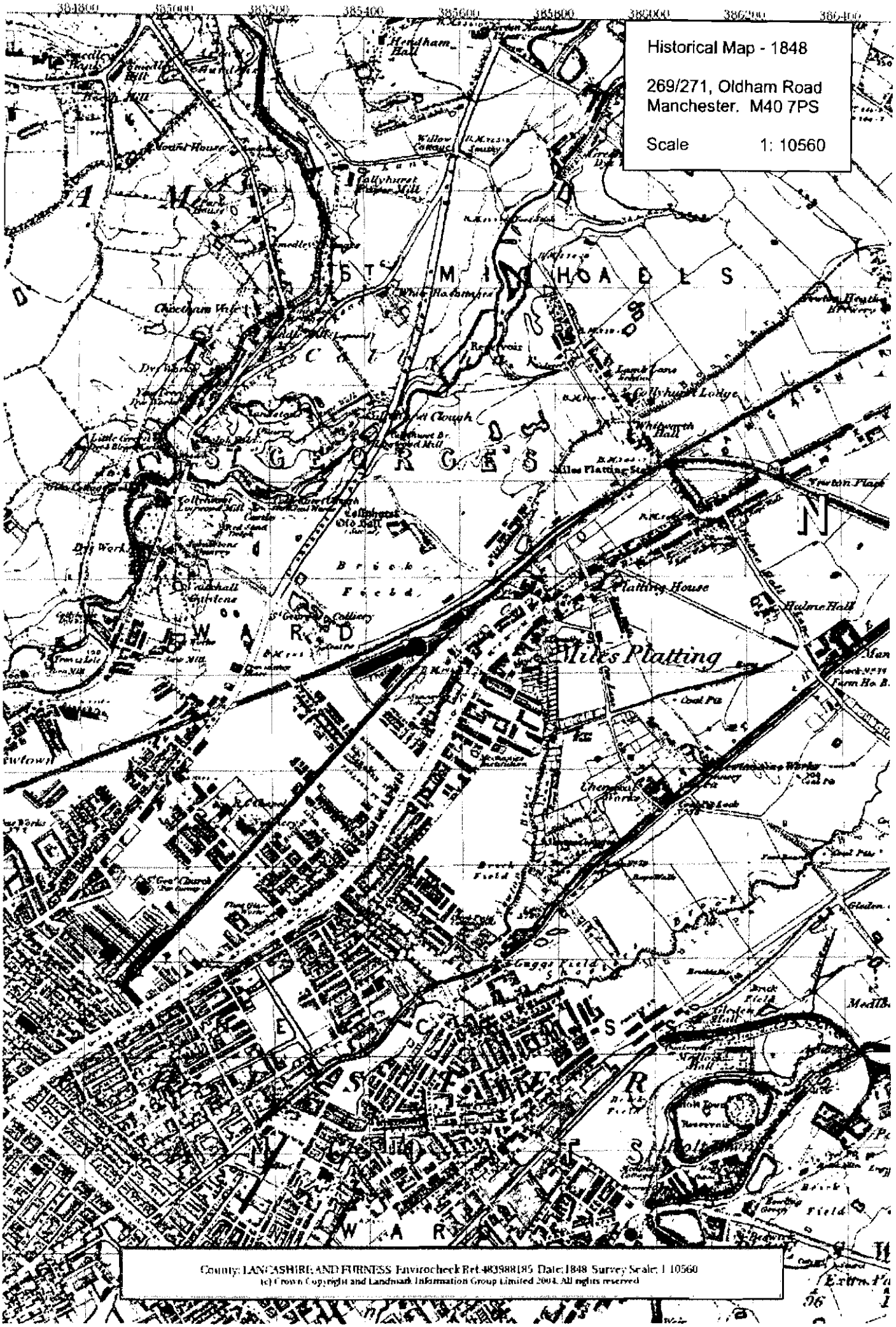
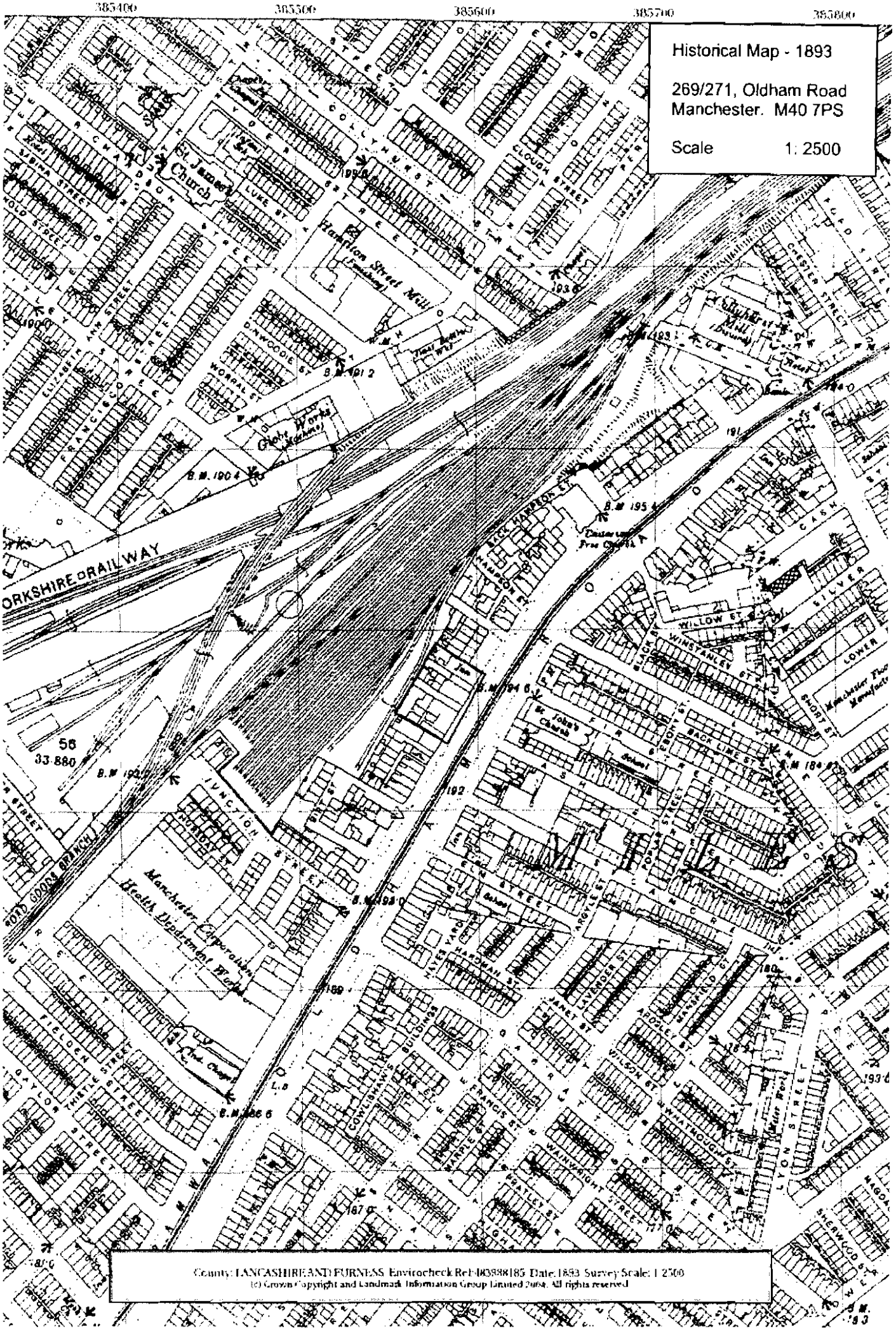

Historical Map - 1848
269/271, Oldham Road
Manchester. M40 7PS
Scale 1: 10560
Miles Platting
Brook Field
Gaggs Field
Platting House
Halme Hall
Whitworth Hall
Collyhurst Lodge
Reservoirs
Chemical Works
Gas Works
Cemetery
Church
Colliery
Mill
Dye Works
Print Works
Bleach Works
Rope Walk
Tramway
Railway
Canal
Pit
Farm
Hall
Cottages
Terrace
Row
Square
Place
Street
Road
Lane
Bridge
Brook
Field
Fields
Green
Hill
Mount
Park
Wood
Grove
Cemetery
Church
Chapel
Vicarage
Rectory
Parsonage
Schools
Workhouse
Infirmary
Asylum
Prison
Barracks
Fort
Castle
Tower
Monument
Obelisk
Cross
Fountain
Pump
Well
Spring
Reservoir
Tank
Gasometer
Chimney
Kiln
Forge
Foundry
Smithy
Wheelwright
Saddler
Tailor
Shoemaker
Baker
Butcher
Grocer
Draper
Tailor
Milliner
Dressmaker
Hatter
Hosier
Glover
Shoemaker
Boot
Shoe
Clothier
Tailor
Draper
Mercer
Silk
Linen
Woollen
Cotton
Worsted
Flax
Hemp
Jute
Rope
Twine
Net
Sail
Canvas
Tent
Awning
Blind
Curtain
Carpet
Rug
Mat
Matting
Oilcloth
Linoleum
Floorcloth
Tablecloth
Napkin
Towel
Handkerchief
Shawl
Scarf
Tie
Cravat
Stock
Collar
Cuff
Glove
Mitten
Sock
Stocking
Garter
Suspender
Belt
Buckle
Button
Clasp
Pin
Needle
Thread
Yarn
Wool
Cotton
Silk
Linen



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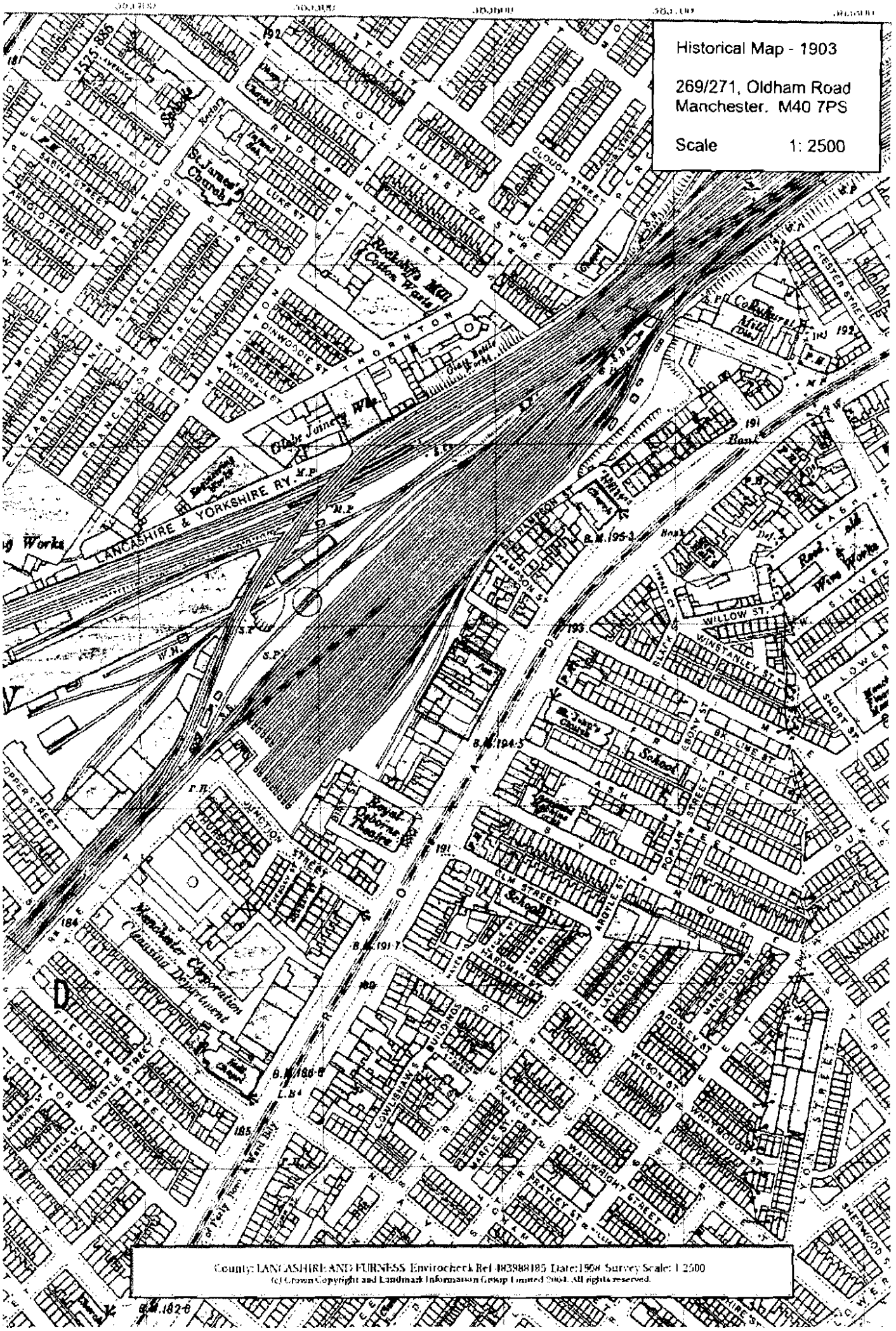

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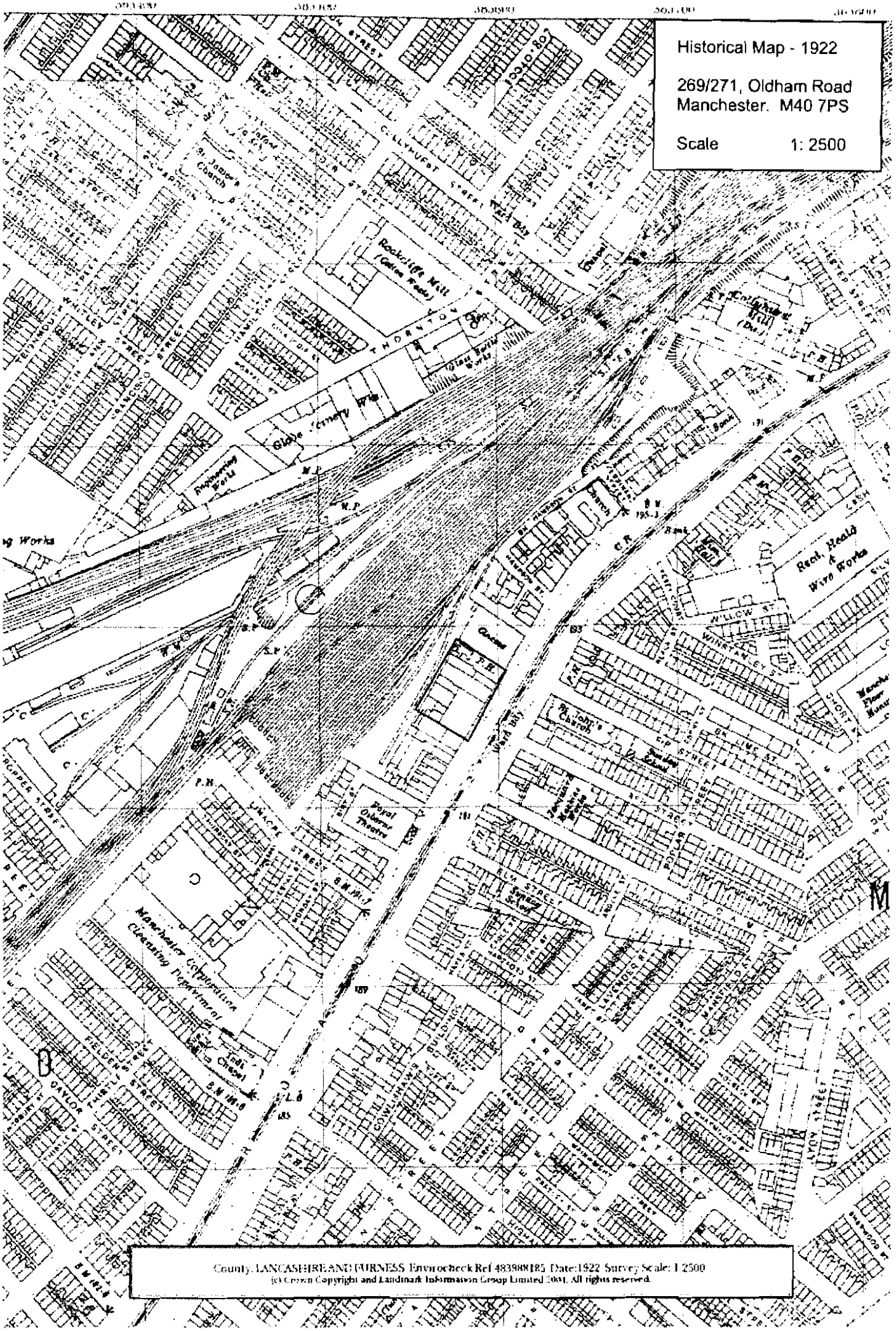
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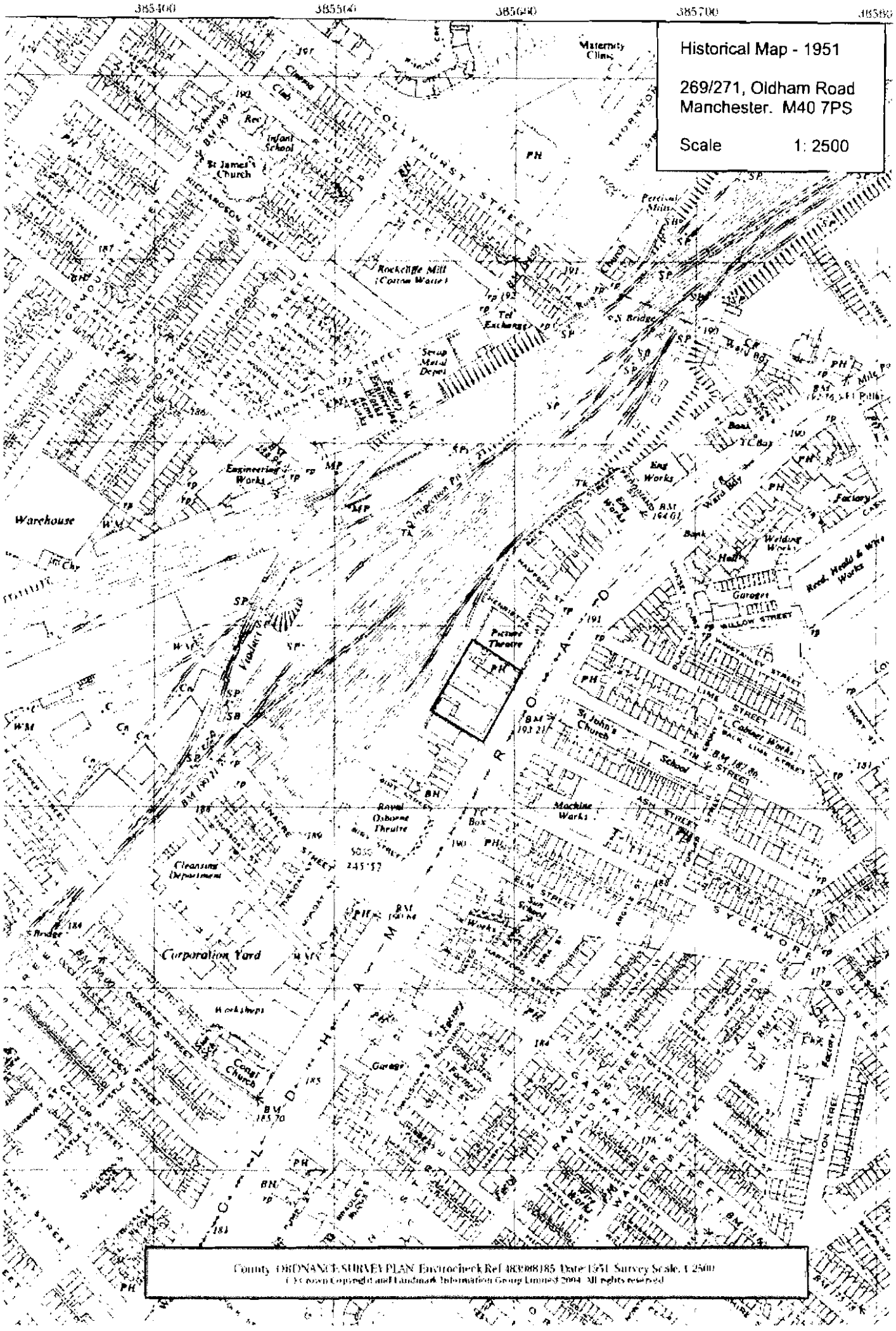
Historical Map - 1951
269/271, Oldham Road
Manchester. M40 7PS
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385400
385500
385600
385700
Maternity Clinic
Infant School
St James's Church
Rockcliffe Mill (Cotton Waste)
Tel Exchange
Scrap Metal Depot
Engineering Works
Warehouse
Picture Theatre
Eng Works
Welding Works
Garages
Reed, Heald & Wire Works
St John's Church
Cabinet Works
Machine Works
Royal Osborne Theatre
Cleansing Department
Corporation Yard
Workshops
Congl Church
Garage
Factory
County ORDNANCE SURVEY PLAN Envirocheck Ref 483988185 Date 1951 Survey Scale 1:2500
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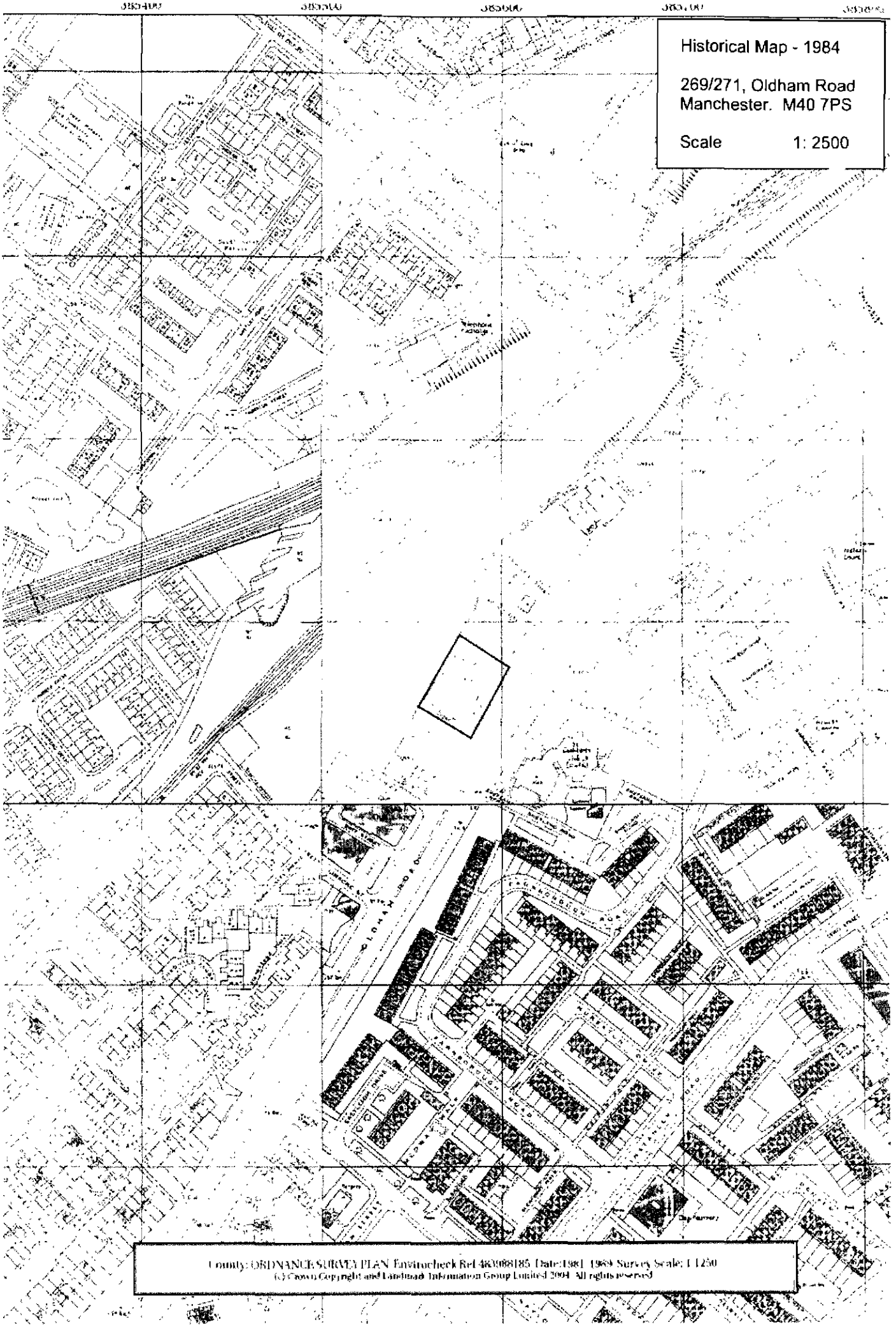
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Manchester. M40 7PS
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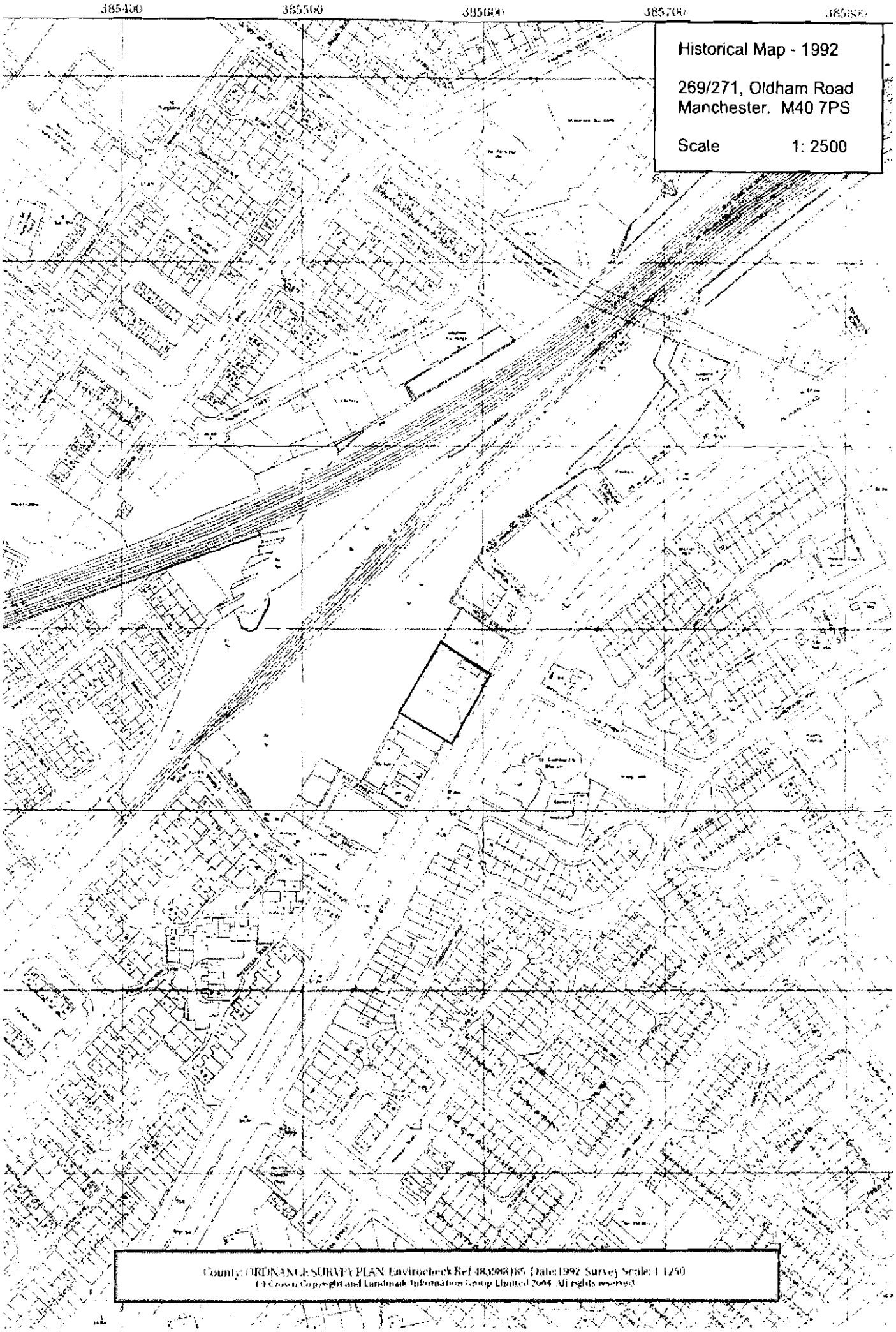
385400
385500
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385700
Historical Map - 1992
269/271, Oldham Road
Manchester. M40 7PS
Scale 1: 2500
County ORDINANCE SURVEY PLAN Envirocheck Ref 4800981/85 Date 1992 Survey Scale 1:1250
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