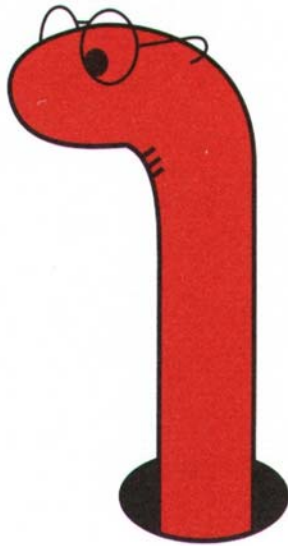


Electronic Report



WORMS EYE

**52 Bank Parade
Burnley
BB11 1TS
Phone
01282 414649 / 458410
Fax 01282 721916**

Our Ref: Ashton New Road/M11 4TQ/2021
Date: 25 August 2021

David Hamer
Bradshaw Gass & Hope LLP
23 Silverwell Street
Bolton
BL1 1PR

Copy to : Carmen Benito
carmen.pulido@mancity.com

d.hamer@BGHbolton.co.uk

MANCHESTER CITY FC ACADEMY, ASHTON NEW ROAD
MANCHESTER, M11 4TQ
PRELIMINARY RISK ASSESSMENT (DESK STUDY)

INTRODUCTION

A commercial development is proposed. The objective is to carry out a Preliminary Risk Assessment to consider contamination, landfill gas and geotechnical issues.

SITE DESCRIPTION

The Manchester City Academy is located to the southeast of Ashton New Road in Manchester, and at OS Grid Reference 387536, 398044. The site, 20 x 11m, is located towards the centre of the academy, south of the central stadium. Inspected on 19/8/21 by Mr D Lord, the site comprises a flowerbed and lawn, where three trees have been felled. There is a CCTV stand at the southeast corner, and a water hydrant point towards the south/middle. There are no signs of contamination.

The training academy extends on all sides around the site. To the east and south are access roads/paths, to the north is a small stadium and to the west is a crossover from the road to the stadium, with a lawn beyond. The area slopes down to the southwest.

LEGAL/COPYRIGHT

Material may be included in this report from Ordnance Survey (Licence No. AL100031635), Landmark, Environment Agency, Coal Authority and others. It may be copyright and the usual restrictions apply. This report can only be relied upon if the invoice has been paid promptly and in full. This report may be signed by an individual, but only on behalf of Worms Eye Limited.

PROPOSED DEVELOPMENT

It is proposed to build a media centre which will almost fill the site, having a narrow strip of block paving along the east, south and west sides.

NOT INCLUDED IN THE REPORT

- Arboricultural Survey.
- Asbestos Survey
- Invasive Plant Survey (Japanese Knotweed etc.).
- Mining Risk Assessment.
- Flood Risk Assessment.
- Underground Services Survey.

General comments may be made with regards to the above where they are applicable to this report. These general comments do not constitute a detailed risk assessment.

DATA SOURCES

The following data sources have been viewed in compiling this report.

- BGS, Geology Map, 1:50000 scale, Solid and Drift Edition
- Landmark Envirocheck Report, 5/8/21
- Ordnance Survey, Historical Maps, 1:10000 and 1:2500 scale
- Previous Reports
- Walkover Survey, 19/8/21

This report is referred to as a Preliminary Risk Assessment (PRA), alternative names for such reports are 'Phase I' Report (Phase II being the intrusive work involving boreholes etc.) or a Desk Study.

ENVIRONMENTAL DATA

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

- Contaminated land register entries
- Discharge consents
- Pollution incidents
- Source protection zones
- Landfill sites
- Fuel stations
- Sensitive land uses

Geology of Site

The geological map indicates that the underlying solid rocks are mudstone of the Pennine Upper Coal Measures.

Surface drift is shown as glacial till (boulder clay) and natural subsidence hazards are shown as very low to no hazard.

Radon

The site is in a lower probability radon area as less than 1% of homes in the area are above the radon action level. Radon protection measures are not required.

Surface Water (Hydrology)

There are no rivers or streams close to the site, the nearest being the Ashton Canal 384m northeast.

The area slopes down to the southwest, the flow of surface water is expected to be in this direction.

Flooding

Information from the EA flood maps suggests areas where rivers would flood. There are two zones:

- 'normal' flooding, based on a 1 in 100 chance of it happening in any year (1:200 if flooding is from the sea). This is normally closer to the river.
- 'extreme' flooding, further away from the river and having a 1 in 1000 chance.

Flooding can occur for many reasons other than those dealt with by the EA maps. These include:

- burst pipes, blocked drains, sewers and culverts
- inadequate drainage, cloudbursts/flash flooding overwhelming drainage systems

Statements in this report such as 'clear of flooding/flood plain' and 'flooding – no further action' are references to the EA river and sea flood maps and are no guarantee that flooding will not occur.

Groundwater Flooding

The site is shown to be in an area with potential for groundwater flooding to occur at the surface.

Flooding from Rivers

The site is shown to be clear of flooding from rivers.

Surface Water Flooding

The site is shown to be clear of surface water flooding.

Groundwater (Hydrogeology)

The solid rocks under the site are indicated as a Secondary A aquifer.

Superficial (drift) deposits are classed as a Secondary Undifferentiated aquifer.

There are the following water abstraction points nearby:

- Manchester City Football Club, abstraction from borehole 134m east for spray irrigation and horticultural watering.
- CIBA speciality chemicals, abstraction from borehole 162m east for process water.

Groundwater flow is likely to follow the topography and move to the southwest.

Mining

The football academy is in an area underlain by shallow mining, with mineshafts present around the complex. Investigations and remedial works were carried out, by others, when the academy was constructed (see Previous Reports - Coal Mining).

Nearby Industry

Air Products (Chemicals) Plc, 180m east, have IPC listings for manufacture and use of organic chemicals within the chemical industry*

CIB speciality Chemicals, 198m northwest, have IPC listings for manufacture and use of organic chemicals within the chemical industry, and a Planning Hazardous Substance Consent (revoked/cancelled) for toxic substances*

Rhodia Industrial Specialities, 198m northwest, have an IPPC listing for polymers and for oxygen containing compounds (e.g. alcohols), 198m northwest*

AS Waste Removals operate a Licensed Waste Management Facility 175m south, vehicle depollution/end of life vehicles*

Clayton Aniline are a registered waste treatment/disposal site 162m east, for special wastes*

There are no trade directory entries within 150m.

* not relevant due to distance/severity/significance

PREVIOUS INVESTIGATIONS

The site forms a very small part of the larger football academy which was subject to extensive investigations Circa 2013. The salient points from previous reports are as follows.

Ground Conditions

A geological fault is located close to the site, running north to south with the down throw to the east. The solid rocks comprise Coal Measures to the west of the fault, with Sherwood Sandstone to the east. It has, historically, been good practice to avoid building over faults in mining areas because of movement issues from deep mine workings close to faults. The level of movement might be expected to be in mm, unlikely to affect the integrity of structures, but superficial cracking may be possible.

Previous reports indicate up to 5m of engineered fill (though to generally consist cohesive material), underlain by up to 20m of stiff, sandy, slightly gravelly clay with rare bands of silty sand.

Foundations in places were founded on engineered fill with a bearing capacity of 150KN/m². Mass concrete fill was used in places to allow interaction between adjacent structures and service trenches.

Ground bearing slabs, founded on vibro stone columns designed to support a bearing pressure of 50 KN/m² were proposed.

Groundwater

Groundwater was identified within the made ground, permeable bands within the clay and in the sandstone aquifer. The groundwater in the made ground is likely to comprise localised perched water.

Coal Mining

As faulting is anticipated either side of the fault line, it was considered fairly unlikely that mining would have taken place close to the fault at shallow depth.

Shallow coal seams outcrop to the west of the geological fault and are reported to have been treated where they were found to pose a risk. The treatment is reported as grout, up to 10x the seam thickness, below bed rock, carried out on a 12m grid, with a 6m grid where notable grout takes were observed.

Four mine shafts were expected, and all four were identified and treated. These are reported as being grouted with a ration of 10:1 PFA to OPC grout and capped with 4m x 4m concrete caps.

Another shaft (Shaft S) was deemed unlikely to be a coal shaft. This was infilled and grouted but no cap was constructed.

Previous Investigation Re-Cap Continued

Contamination

Concrete specification from original investigations was to AC-4 and DS-4 classifications. Since the original investigation it is understood that site won material was placed as engineered fill, which may have altered the concrete classification requirements.

Additional testing may allow the concrete classification to be relaxed.

Landfill/Ground Gas

A gas/vapour membrane was proposed for buildings around the academy, with gas protection measures required to be suitable for a Characteristic Situation 2.

End of Previous Report Re-Cap

SITE HISTORY

Date	On Site	Off Site
1848 (1:10,560)	Undeveloped.	Stream 25m south. Mill 30m west. Colliery >50m northwest. Chemical works 170m northwest.
1893 (1:2,500)	Undeveloped.	Clayton Cotton Mill 20m northwest. Filled ground at chemical works 95m north. Pond 110m northeast. Size Works 100m northwest.
1908 (1:2,500)	Undeveloped.	Oil tanks 125m northeast, over former pond. Motor Car Works 100m southeast. Aniline Works 80m north.
1922-33 (1:2,500)	Building from Clayton Aniline Works fills the site, and extends northeast and southwest.	Motor Works 70m southeast.
1950 (1:2,500)	No change.	Aniline Chemical Works covers a wide area on all sides. Slag heap 105m northwest.
1977-88 (1:2,500)	No change.	No relevant change.
1999 (1:10,000)	Building demolished.	Building to southeast and several buildings in wider area demolished.
2009 (1:10,000)	Vacant land.	Buildings in surrounding area largely demolished.
2021 (1:10,000)	Site remediated and forms part of football academy.	Football academy stretching on all sides.

DISCUSSION

Contamination

The site was originally part of a chemical works, from which contamination will have entered the ground over the years. However, the academy was remediated when developed and it is assumed engineered fill will have been remediated to a standard appropriate for a commercial development, to the satisfaction of the Local Authority. As the current use is a lawn and flower bed it is assumed remediation was suitable for a site where end-users may have direct contact with shallow soils.

Although there have been nearby, historic, industrial sites the site is in the midst of the academy and remedial works will have removed the risks posed by historic, off-site, contaminants.

The development will be a media centre, potential pollutant linkages are:

- Sulphate attack on buried concrete.
- Contaminants entering drinking water pipes (if any).

Bearing in mind the history of the site, and the proposals, no risks are expected to end-users

Concrete specification from original investigations was to AC-4 and DS-4 classifications. However, this may have changed following placement of the engineered fill. Additional testing may allow the concrete classification to be relaxed.

Controlled Waters

There is an underlying Secondary A aquifer beneath engineered fill and clay. The nearest abstraction point is 134m east for spray irrigation and horticultural watering. There are no nearby water abstraction points for potable water, source protection zones, or nearby surface water receptors.

On completion, the building will cover the site, eliminating the risk of rainwater passing through the surface soils. Bearing in mind the engineered fill beneath the site is expected to have been remediated to an acceptable standard, high levels of contaminants are not expected, and the underlying clay (>15m) will impede the migration of water, no risks are expected to controlled waters.

Landfill Gas/Ground Gas

Although there are no landfill sites within 250 metres, there are nearby areas of filled ground where ground gases may be generated. Bearing in mind the remedial works carried out to the academy, and underlying clay which will impede the passage of gases from off-site sources, it is considered that there is a low risk to the development.

The proposal is small commercial building and, considering the anticipated low risk, it is considered gas precautions suitable for a CS2 site, as recommended elsewhere, are suitable for the site.

Radon

Radon protection measures are not required.

Flooding from Rivers

The Environment Agency maps show that this site is clear of flooding from rivers.

Groundwater and Surface Water Flooding

The site is shown to be clear of areas of surface water flooding.

The site is shown to be in an area with potential for groundwater flooding to occur at the surface.

Foundations

It is understood that the academy is underlain by up to 5m of engineered fill, with underlying clay. Buildings around the academy are reported to be founded on the engineered fill. This suggests that the engineered fill may be suitable for shallow foundations, subject to the bearing capacity being confirmed.

Bearing in mind the area of the proposed development was not initially planned to be built on, it would also be sensible to check the thickness of the engineered fill and nature of the underlying deposits.

Coal Mining

The nearest mine entries are reported to be filled and have a concrete cap.

Previous reports suggest shallow, worked, coal seams were suitably grouted to remove risks from a collapse. Furthermore, the site is close to a geological fault and it is unlikely the shallow seams were mined up to the fault.

INDUSTRY PROFILE

Although the site was part of a former chemical works, remedial works were carried out when the academy was constructed it is not expected that elevated levels of contaminants will now be present.

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/Likely Pollutant Linkage
Asbestos	End-users	No pathway	No
	Off-site	Migration off-site	No
Inorganic contaminants	End-users	No pathway	No
	Groundwater	Leaching towards	No
	River/stream	Leaching towards	No
Sulphate	Building fabric	Concrete directly in contact with soil	Possible
Hydrocarbons	End-users	No pathway	No
	Service pipes	Seeping into drinking water pipes (if new pipe proposed)	Yes
	Groundwater	Migrating towards	No
	River/stream	Migrating/leaching towards	No
Hydrocarbon vapours	End-users	Inhalation of vapours indoors	No
Landfill gas	End-users - in buildings	Seeping into buildings, explosion, asphyxiation	Yes
Radon	End-users - in buildings	Seeping into buildings	No

CONCLUSION

Contamination

Taking into account the past use of the site, and remedial works in recent years, it is considered that contaminants will not be present which pose a risk to end-users.

It was previously recommended that sulphate resistant concrete was required. However, this was before the engineered fill was laid, which may have changed the situation. A series of water soluble sulphate tests are suggest to confirm the requirement for sulphate resistant concrete.

A limited number of tests are also suggested, for a general suite of contaminants, to classify soils for disposal off-site.

Controlled Waters

No risk to controlled water is expected and no further action is considered necessary.

Landfill Gas/Ground Gas

Previous reports recommended gas precautions, suitable for a CS2 situation, to be used on buildings around the academy. Bearing in mind this is a single, commercial building it is considered a CS2 can be adopted, and the anticipated gas risk can be adequately dealt with by installing precautionary gas protection measures. The following are considered appropriate for the anticipated level of risk.

- Ventilation of confined spaces within building
- A well-constructed ground slab/suspended floor with sub-floor venting.
- Visqueen Gas Barrier (blue with foil layer – resists methane, carbon dioxide and radon)
- Minimum penetration of ground slab by services.
- Also gas precautions should continue across the cavity.

Each membrane should be used with the appropriate matching cavity tray (or cavity membrane), DPC and service duct 'top hat'. Joints to be lapped and sealed.

The gas membrane will need independent inspection and validation.

Radon

Radon protection measures are not required.

Coal Mining

Based on the information contained with previous reports, it is concluded that the issues associated with the past historical mining activity have been treated in accordance with requirements.

This is not a detailed, site specific, Coal Mining Risk Assessment.

Flooding

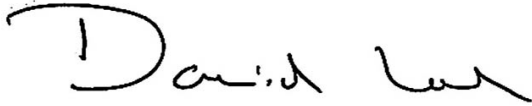
The EA maps indicate that the area is clear of flooding from rivers.

The maps indicate that the area is clear of surface water flooding.

Foundations

A series of boreholes are required in the area of the proposed building to allow the most suitable foundations to be designed.

Yours faithfully
on behalf of Worms Eye Ltd

A handwritten signature in black ink, appearing to read "David Lord". The signature is written in a cursive style with a large initial 'D'.

David Lord
BSc (Hons)
FGS, MIEEnvSc, AIEEMA

MANCHESTER CITY FC ACADEMY, ASHTON NEW ROAD

MANCHESTER, M11 4TQ

LIST OF APPENDICES – PRELIMINARY RISK ASSESSMENT (Desk Study)

Existing Site Plan

Photographs of Site

Proposed Site Plan

Landmark Summary Map

Landmark Envirocheck Report

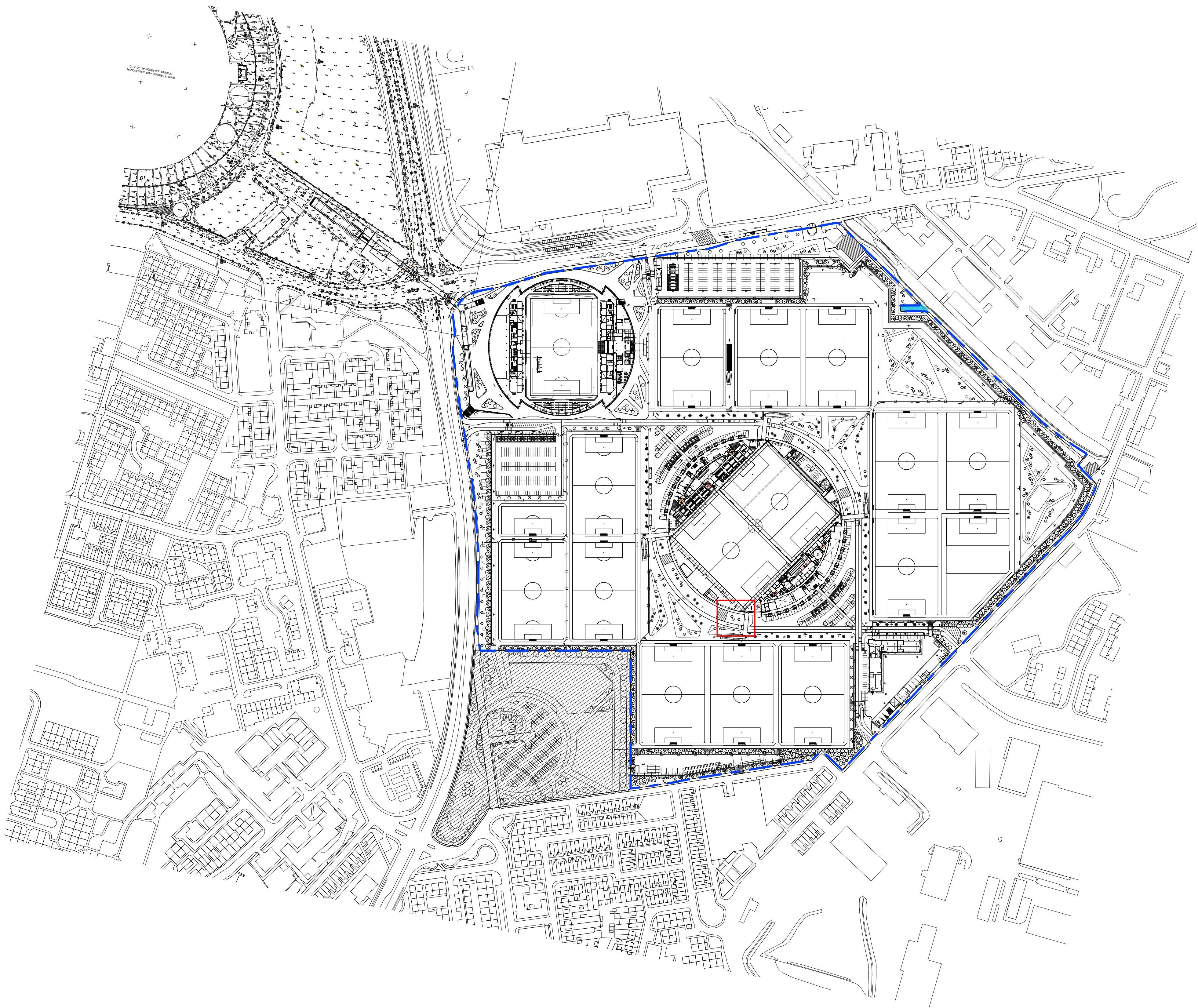
Historical Maps

Conceptual Model

ABBREVIATIONS

<u>Chemical</u>	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
<u>Other</u>	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

1. This report should be considered in relation to the objectives agreed between Worms Eye and the Client, outlined in the introduction.
2. For the work, reliance has been placed on publicly available data, obtained from the sources identified in the report. The information is not exhaustive and further information may be available from other sources. When using the information it has been assumed it is correct, and no attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and guidelines, for land and groundwater contamination, enforced by the Local Authority and the Environment Agency.
4. During the site walkover, reasonable effort was made to obtain an overview of the site. However, no attempt was made to enter areas that are unsafe, a risk to health and safety, locked, barricaded, overgrown, or areas not made accessible.
5. Access, the presence of services and activities on the site, limited locations where sampling could be carried out and the techniques that could be used.
6. Assessments are based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. The conclusions and recommendations provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
8. Worms Eye cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright of this report, and other plans or documents prepared by Worms Eye, is owned by them, and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies may be made and distributed by the client, as expected, in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability, or warranties, shall be extended to other parties by Worms Eye, without their written agreement.
9. New information, revised practices, or changes in legislation, may necessitate the re-interpretation of the report, in whole or in part.



status

PLANNING

This drawing is ©Bradshaw Gass & Hope LLP and is not to be copied, reproduced or re-distributed either in whole or in part without the prior written permission of the originator.

The originator shall have no responsibility for any liability, loss, cost, damage or expense arising from or relating to any use of this document other than for its intended purpose on this project.

This drawing shall be read in conjunction with all other relevant drawings, specifications and associated documentation. Any discrepancies, errors or omissions are to be reported to the originator before proceeding with work.

All dimensions are to be checked on site by the contractor prior to proceeding with any work.

Hazard Identification



ref	hazard	date

ref	revision	by	date
-----	----------	----	------



Architects
Consulting Engineers
Quantity Surveyors

21 Silverwell Street
Bolton
BL1 1PR
t: 01204 525321
email@bghbolton.co.uk
www.bghbolton.co.uk

Bradshaw Gass & Hope LLP

client
CITY BUILD LTD

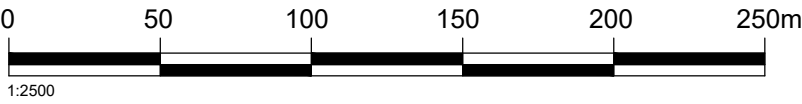
project
MEDIA STUDIO PROJECT - CFA

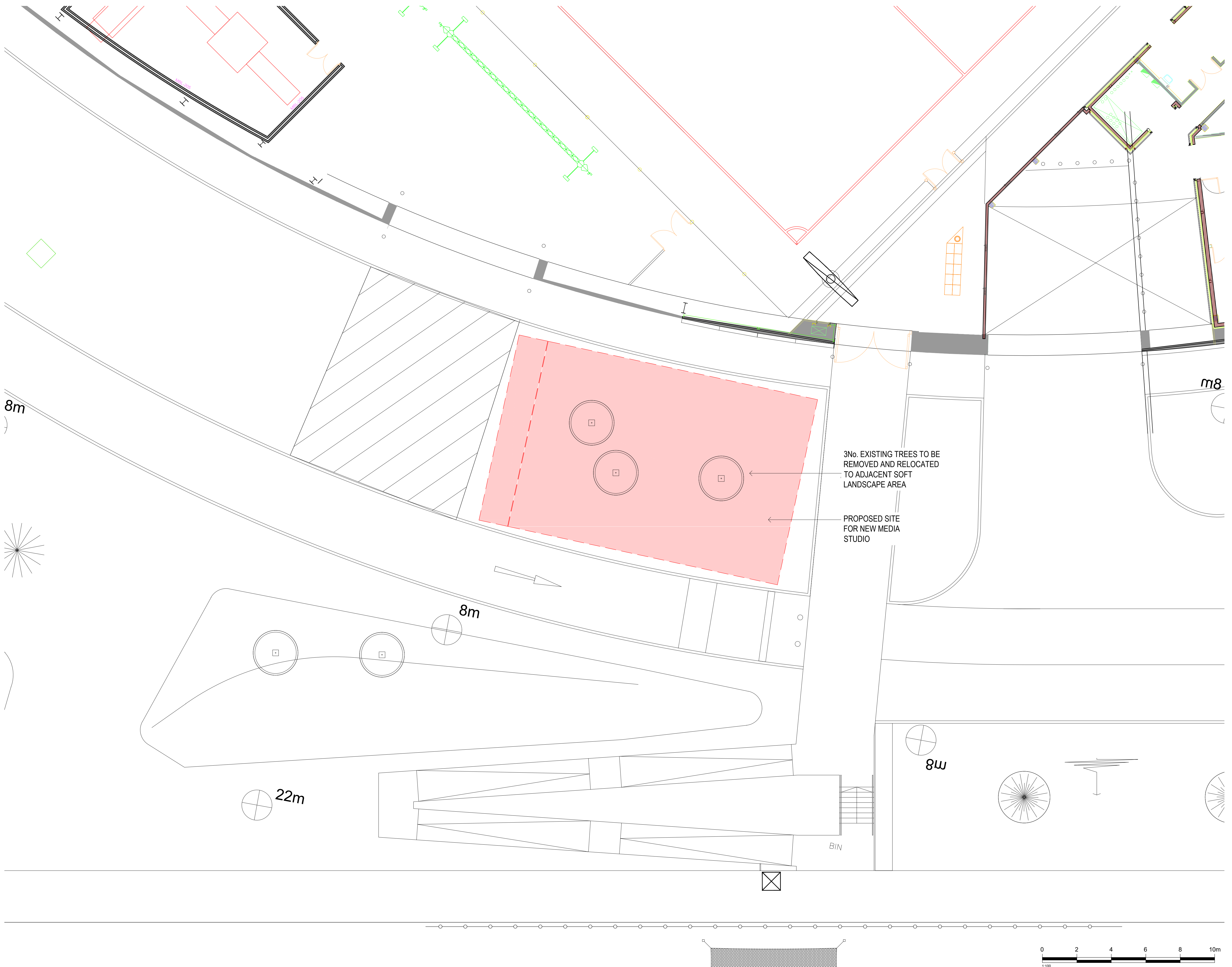
drawing
SITE LOCATION PLAN

drawn by	DJH	date	10.07.2021
checked by		date	

scale	1:2500	A1
-------	--------	----

dwg no	2024.33.201	rev	
--------	-------------	-----	--





Hazard Identification 		
ref	hazard	date

BGH Architects
Consulting Engineers
Quantity Surveyors

21 Silverwell Street
Bolton
BL1 1PR
t: 01204 525321
email@bghbolton.co.uk
www.bghbolton.co.uk

client
CITY BUILD LTD

drawing
EXISTING SITE PLAN

drawn by	DJH	date	09.07.2021
checked by		date	
scale	1:100	A1	
dwg no	2024.33.202		rev

MANCHESTER CITY FC ACADEMY, ASHTON NEW ROAD
MANCHESTER, M11 4TQ
19/8/21



Looking Northeast



Looking Southeast



Looking Northwest



Looking North