

Remediation Strategy

For a site at

Manchester Communication Academy, Manchester

Undertaken for

Lancaster Maloney Martin Ltd

on behalf of

Greater Manchester Academy Trusts

Report Title:	Manchester Communication Academy, Manchester Remediation Strategy
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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting has been commissioned by Lancaster Maloney Martin Ltd on behalf of Greater Manchester Academy Trusts to undertake a prepare a Remediation Strategy at the site referred to as Manchester Communication Academy.

Proposed Development

- 1.2 It is understood that the project involves the construction of two teaching blocks within the wider Manchester Communication Academy (MCA) site, namely a two-storey Science Block to the east of the main MCA building, and a one and two-storey Year 7 Block on the site of the current sports and recreation pitches north-east of the main MCA campus.
- 1.3 The proposed site plan is presented on drawing 2303-04-F01, in Appendix 01.

Background

- 1.4 WML were initially commissioned to undertake a Phase 1 Desk Study and Phase 2 Investigation and Assessment. These culminated in the following reports.
- WML, Phase 1 Desk Study and Preliminary Geoenvironmental Assessment, ref. 11258G-WML-00-XX-RP-G-0001, September 2023.
 - Phase 2 Geo-environmental Investigation and Assessment, reference 11258G-WML-XX-ZZ-RP-G-0002A, dated October 2023.
- 1.5 It is understood that the reports have been presented to Manchester City Council Planning Division in support of the relevant planning application.
- 1.6 This report has been compiled in consideration of the need for remedial measures to be outlined and agreed as a pre-development requirement.
- 1.7 The findings of the Phase 1 and Phase 2 reports are summarised in the following sections.

2.0 SITE LOCATION AND DESCRIPTION

Site Location

- 2.1 The site comprises two distinct areas within Manchester Communication Academy (MCA), located off Silchester Road and Lathbury Road in north Manchester, M40 8NT and is centred on approximate Ordnance Survey National Grid Reference 385752E, 400722N.

Site Description

- 2.2 The proposed Science Block is located within the western part of the wider MCA development. The area is bounded to the west and south by the main MCA building and asphalt hardstanding, to the east by an asphalt surfaced car park, and to the north by an area of maintained grass landscaping.
- 2.3 The site comprises an approximately square development footprint, currently within an area of asphalt hardstanding and grassed amenity land to the north-east of the main MCA building. Two semi-mature trees are present in the northern area of the site.
- 2.4 The proposed Year 7 Block is located within in the northern part of the wider MCA development north of Lathbury Road.
- 2.5 The proposed Year 7 Block area is bounded to the north and west by residential properties, to the east by sports and recreation grounds forming part of the MCA development. To the south the area is bounded by low rise buildings used for equipment storage and administration with Lathbury Road beyond. The area immediately surrounding the development area comprises footpaths and sloping grassed embankments accommodating changes in elevation across the site.
- 2.6 The site comprises an L-shaped plot of land, currently occupied by an asphalt cycling 'pump track' and sports pitch surrounded by chain link fencing, in addition to an area of maintained grassland and an asphalt access track. The area surrounding this comprises footpaths and sloping grassed embankments accommodating level platforms for the existing sports pitches. Two single storey buildings are located to the immediate south-east of the site, which are used for the storage of sports equipment.

Topography

- 2.7 The Science Block area slopes gently from approximately 65.39 metres Above Ordnance Datum (mAOD) in the west to approximately 63.75 mAOD in the east.
- 2.8 The Year 7 Block site slopes from approximately 66.27 mAOD in the north-east to approximately 64.33 mAOD. The asphalt sports and recreation areas within the Year 7 Block area are approximately level, and at the base of the grassed slopes.

Summary of Salient Environmental Considerations

- 2.9 The BGS plans indicate that the site is underlain by superficial Devensian Glacial Till deposits, comprising clay with occasional sand and silt horizons. The superficial deposits are indicated to be underlain by Newton Heath Sandstone and Pennine Middle Coal Measures Formation (Science Block Area) and Chester Formation comprising sandstone (Year 7 Block area).
- 2.10 The site is not located within a Radon Affected Area as defined by the UK Health Security Agency where less than 1% of properties are above the Action Level of exposure. Therefore, radon protection measures are not necessary for new structures as described in publication BR211 by the Building Research Establishment.
- 2.11 The site is not situated within a Development High Risk area, and there are no records of past known or probable shallow coal mine workings beneath the site.

- 2.12 The superficial deposits beneath the site are classified as a 'Secondary Undifferentiated' Aquifer. The bedrock underlying the Science Block is classified as a Secondary 'A' Aquifer, and the bedrock underlying the Year 7 Block is classified as a 'Principal' Aquifer.
- 2.13 There are no Environment Agency Source Protection Zones within 500m of the site, and no groundwater abstraction licenses are located within 500m. Moston Brook is situated approximately 40-45m south-east of both development sites, and Moss Brook is situated approximately 174m south of the Science Block area.
- 2.14 Moston Brook landfill, located 202m north-east of the Year 7 Block development area, was licenced to receive inert, industrial, commercial, household, special wastes and liquid sludge between 1974 and 1977.

Site History

Science Block

- 2.15 The earliest map dated 1848 indicates the site to comprise undeveloped rural/agricultural land, with a possible small field pond in the centre of the site, a field boundary running approximately north-east to south-west across the central part, and an access track crossing the south-eastern corner. By 1891 the site had been developed with terraced residential housing either side of Anderton Street, which extended roughly east to west across the northern part.
- 2.16 The site remained unchanged until 1975, at which time it was shown to have been cleared of structures. No further change is evident on subsequent mapping until 2023, when it was shown to form an undeveloped part of the MCA campus.

Year 7 Block

- 2.17 The earliest map dated 1848 indicates the site to comprise undeveloped rural/agricultural land with a pond located immediately to the north. By 1891, embankments were marked to the east and south of the site, adjacent to Moston Brook. This suggests that infilling may have occurred at the site. By 1908, the site had been developed as allotments which remained until 1968, at which time the site was shown as undeveloped land.
- 2.18 By 1975 a footpath was shown extending through the site, which is inferred to have been redeveloped as grassed amenity land. No further changes are evident until 2023, when two small buildings – part of the current MCA sports facility - are shown immediately adjacent to the south-eastern boundary of the site.

3.0 SUMMARY OF PHASE 2 INVESTIGATION

Ground Investigation

- 3.1 Intrusive ground investigations were undertaken on the August and September 2023 and April 2024. These comprised the formation of 10no window sample probeholes (5no in each area of investigation) to a maximum depth of 5.00 metres below ground level (mbgl) and the formation of 2no cable percussive borehole to depths of between 15.20 and 17.10mbgl.
- 3.2 Science Block - Ground conditions generally comprised a surface horizon of grass overlying topsoil, or asphalt and a granular sub base. This was underlain by made ground to depths of between 2.40 and 3.50mbgl and in turn by cohesive glacial till to a depth of 13.10mbgl, where it was in turn underlain by mudstone and sandstone of the Pennine Coal Measures Strata to proven depths of 15.20mbgl.
- 3.3 Year 7 Block - Ground conditions generally comprised a surface horizon of asphalt overlying a granular sub base. This was underlain by made ground to depths of between 2.80 and 3.50m but locally in excess of 5.00mbgl. The made ground was underlain by glacial deposits to a depth of 16.40mbgl below which sandstone of the Chester Formation extended to a proven depth of 17.10mbgl.
- 3.4 Perched groundwater was encountered between 3.00 and 4.00mbgl, near the interface between the made ground and underlying glacial deposits. Longer term monitoring recorded standing groundwater at depths of between 0.92 and 4.72mbgl, with WS09 in the area of the proposed Year 7 Block in this area noted to be dry. It is considered that this represents perched water within the made ground with true phreatic groundwater levels are within the solid strata below depths of 15.20 and 17.10mbgl.

Chemical Analysis

- 3.5 In total 12no soil samples from depths of up to 2.00mbgl (6no from the Science Block area and 6no from the Year 7 Block area) were analysed for a suite of typical Contaminants of Concern (CoC). The results concluded that made ground on the site contains very localised elevated concentrations of lead (1no sample) and PAHs (4no samples). However, these were considered to be primarily associated with the presence of deposits of ash and clinker, which typically are not a significant source of mobile contamination. The 'PAH - Double Ratio Plots' for different congeners also suggested urban background combustion/pyrolytic signatures, for example where organic materials such as wood and coal have been burned at high temperatures resulting in ash and soot and more locally clinker.
- 3.6 In addition, asbestos in the form of amosite and chrysotile fibres were detected in 3no samples at concentrations of between <0.001% and 0.005% weight/weight within WS02, WS04 and WS05 within the area of the proposed Science Block.
- 3.7 In view of the sensitivity of the underlying bedrock aquifer beneath the area of the proposed Science Block, 5no samples of made ground, from across the two site areas, were submitted for leachate preparation and testing for a range of contaminants of concern. Although localised slight exceedances been identified from leachability testing, associated with copper and a single PAH, the exceedances are typically minor. Leachability data also represent a conservative assessment of the leachate generation potential of contaminated soils, and significant dilution and retardation of any mobile contamination generated by site soils would be anticipated before impact to any Controlled Waters receptor could occur. Risks to controlled waters from the site were considered low with no specific environmental remediation considered necessary.

Ground Gas Risk Assessment

- 3.8 Six monitoring visits have been undertaken, between 13th and 22nd November 2023.

- 3.9 The results within the Science Block area did not recorded concentrations of methane above the instrument limit of detection (0.1% volume by volume (v/v)), with a maximum steady state carbon dioxide concentration of 5.4% v/v (5.4% v/v peak) but generally below 4.8% in all bar a single visit.
- 3.10 No positive steady state gas flow rates were recorded at any of the monitoring wells a single peak flow of 25.7l/hr in WS04 is considered to represent the peak flow is considered to represent pumping conditions where the perched water is at or close to the unslotted section of the standpipe rather than being characteristic of the ground gas regime at the site.
- 3.11 On the basis of the monitoring data, the calculated Q_{hg} for the Science Block is 0.005l/hr (based on the highest detected carbon dioxide concentration and a lower bound flow of 0.1l/hr) which indicates the site would classify as Characteristic Situation (CS) 1 – Very Low Gas Risk' for which no specific gas protection measures are likely to be required. However, where carbon dioxide exceeds 5% an increase to CS2 should be considered. It can be noted that noted that the single elevated carbon dioxide concentrations within WS02 is considered to reflect respiration by soils microorganisms from the decomposition of the active Soil Organic Matter (SOM) rather than a significant active source. Therefore, it was considered that specific gas protection measures are not required within the proposed new science block.
- 3.12 However, in the Year 7 area the results recorded concentrations of methane to range from below the instrument limit of detection (0.1% volume by volume (v/v)) to 1.8% (peak and steady states. Concentrations of carbon dioxide generally ranged from 0.1% to 13.90% v/v (peak and steady state). No positive steady state gas flow rates were recorded within the initial five monitoring visits. However, during the final visit a steady state flow of 0.4l/hr was recorded within WS09.
- 3.13 On the basis of the monitoring data, and as the carbon dioxide exceeded 5% during the majority of monitoring visits an increase to CS2 was considered it would be prudent to allow for gas protection measures are to be incorporated into the structure to achieve the required score of 2.5 in accordance with Table 4 in BS8485:2019.

4.0 REMEDIATION STRATEGY

Gas Protection Measures - Year 7 Block-

- 4.1 The site is indicated to classify as Characteristic Gas Situation (CGS) 2 – 'Low' in accordance with BS8485:2019.
- 4.2 Consequently, all proposed new structures will require ground gas protection measures to ensure an adequate score of protection is provided. In light of current structural design considerations, the following site specific gas protection measures are to be incorporated into the required structures to satisfy Characteristic Gas Situation 2 as outlined in BS8485.
- Passive sub-floor dispersal (minimum 150mm clear void) with cross ventilation to internal sleeper walls of very good performance which meets all criteria as set out in Appendix B of BS 8485:2019.
 - To achieve 'very good performance' the minimum area of side ventilation should be 2000mm²/m run of wall on at least two opposite sides, assuming a structure of >15m average width.
 - Sleeper walls should include cross vents totalling at least double the area of the side ventilation.
 - Lapped and taped proprietary gas membrane in the floor slab construction, installed in accordance with the manufacturer's instructions and to reasonable levels of workmanship in line with current good practice and Table 7 of BS8485:2019.
- 4.3 The membrane would need to be compliant with BS8485:2015+A1:2019.
- 4.4 The gas protection system as outlined above will also require verification as outlined in Section 5.0.

Capping Requirements for Landscaped Areas

- 4.5 where made ground is to remain beneath any new/ modified landscaped areas, it was considered prudent to provide a 600mm clean cover to break any potential exposure pathway to future site users.
- 4.6 Therefore, any new landscaping will need to be capped with a nominal 600mm clean cover over the existing made ground to break the direct contact pollution linkage. The make-up of the 600mm cover would be expected to consist of:
- 150mm of clean imported Topsoil;
 - 400mm of clean imported sub-soil.
- 4.7 The surrounding landscaped areas, outside the current development zone, are to be retained unmodified.

Asbestos

- 4.8 Asbestos in the form of amosite and chrysotile fibres were detected in 3no samples of made ground at concentrations of between <0.001% and 0.005% weight/weight in the area of the proposed Science Block.
- 4.9 Although not considered to be particularly widespread being encountered only in the Science Block area, there is always the risk that further asbestos could be encountered during earthworks. Therefore, site operations will be under the full-time control of Site Manager who will ensure that all asbestos management personnel hold necessary certificates relating to asbestos awareness.
- 4.10 Site induction for site operatives and visitors will include a specific tool box talk relating to asbestos. This will cover basic identification of possible Asbestos Containing Material (ACM) and the procedure to be adopted if any such material is suspected.

- 4.11 If / where significant and or further asbestos contamination is identified or suspected, a specialist consultant in the identification of ACM would need to be present during any significant earth moving operations.
- 4.12 The asbestos specialist will be UKAS accredited and will set up perimeter background monitoring stations around the site boundary and at strategic locations within the site as considered necessary during the earthworks. In addition, personal monitoring equipment will be deployed around working areas for work location monitoring.
- 4.13 It is envisaged that, during earthworks within these areas, air tests will be undertaken with asbestos fibre counting being undertaken in consultation with the asbestos specialist.
- 4.14 Furthermore, during periods of dry weather, the site surface will be dampened down to minimise the potential for airborne dust. Water sprays may also be employed at excavation locations to minimise the production of airborne dust. A detailed Method Statement for the control and management of dust on site will be contained within the main contractor's Environmental Management Plan.
- 4.15 The asbestos consultant will initially undertake a detailed walk-over of the site with selected samples of any suspected fibrous material so identified on the surface being sent to the laboratory for asbestos identification.
- 4.16 Where such materials are identified as ACM, similar fragments identified by further inspection will be located on plan and marked on site for subsequent removal by a licensed asbestos contractor. Where considered appropriate, further samples of such materials will be taken for laboratory identification.
- 4.17 The consultant will similarly identify any suspected ACM during the subsequent earthworks/groundworks. Where obvious fragments of ACM are identified, they will be hand-picked where practical and removal from site by the licensed asbestos contractor as soon as reasonably practical. Where such materials cannot be removed immediately, the ACM will be covered by impermeable membrane and clearly marked on site for subsequent removal.
- 4.18 Following the surface hand-picking exercise, samples of soil will be taken from the surface over the site and subjected to asbestos quantification analysis in the laboratory. Where the percentage of asbestos fibres are identified to be in excess of 0.1% by volume of the sample, further inspection of the soil in that area will be undertaken with removal of identified ACM where appropriate.
- 4.19 At the discretion of the asbestos consultant further samples may also be taken for quantification analysis at the laboratory.
- 4.20 The licensed asbestos contractor will arrange for the necessary disposal of hand-picked ACM to an appropriately licensed landfill facility. Records in the form of Duty of Care documentation will be kept by the site manager for presentation where required.

Unexpected Ground Contamination

- 4.21 It cannot be wholly discounted that unidentified contamination sources could be encountered during site development across any area of the site.
- 4.22 Should any visual / olfactory evidence of contamination be encountered, WML will advise of the most appropriate measures to deal with such contamination. This may include taking samples for chemical analysis and advising of appropriate routes for disposal to landfill.
- 4.23 Any unsuitable contaminated soil encountered will be segregated and stockpiled on impermeable sheeting and demarcated as contaminated soil for removal off-site.

- 4.24 Any contaminated soil will be stockpiled a sufficient distance from any other stockpiled clean soil such as arisings of natural soils, to prevent cross-contamination if immediate disposal to landfill is not possible.
- 4.25 A photographic record of any should be made available for inclusion within the validation report.
- 4.26 Removal dockets and receiving landfill information for any contaminated materials removed from the site will need to be retained for inclusion in the validation report.

Unexpected Ground Contamination – Groundwater

- 4.27 If mobile contaminants, or localised groundwater suspected to be contaminated, were encountered during the redevelopment ground works' either site area, the following actions should be undertaken.
- 4.28 Works should cease and the suspect groundwater should be sampled and submitted for chemical analyses. The results of which would allow the most appropriate remedial action to be determined and undertaken.
- 4.29 A photographic record of any groundwater removal should be made available for inclusion within the validation report.
- 4.30 Removal dockets and disposal information for any contaminated materials removed from the site will need to be retained for inclusion in the Validation report.

5.0 VALIDATION

Gas Protection Measures – Year 7 Block

- 5.1 The installation of the gas membrane will be undertaken by a suitably contractor who will be requested to issue all necessary specifications and method statements for the work prior to commencement. This will include adequate information on the specification of the materials to be used, including membrane type, sealing material, lapping thickness etc. Prior to any work commencing, the Site Manager or his advisor will inspect such specifications and method statements to check that they meet the works requirements.
- 5.2 The Site Manager and suitably trained contractor will agree lines of communication regarding programme, issues regarding installation, inspection and validation. Appropriate lines of communication will be set up for record keeping, daily reporting etc.
- 5.3 The Site Manager/ suitably trained contractor will keep a record of all delivery notes for the materials which will be inspected to confirm that they comply with the specification. Photographs of the product and packaging will also be taken by the Site Manager in the event that delivery notes are mislaid.
- 5.4 The Site Manager and WML will visually inspect (where practical) internal and external details to witness appropriate installation and integrity. Sample photographs of details for the validation file will then be taken. Where possible, this process will be repeated on all internal and external details. Any defects will be recorded and made good for subsequent inspection.
- 5.5 The Site Manager / geoenvironmental engineer will together carry out inspection (where practical) to all pipe/duct penetrations to witness appropriate integrity of the seal. Sample photographs of pipe penetrations for the validation file will then be taken.
- 5.6 The date of all inspections will be recorded together with all observations made on the gas validation records in Appendix 02. Any defects will be recorded and made good for subsequent inspection.
- 5.7 The Site Manager / geoenvironmental engineer will visually inspect the floor membrane joints to witness appropriate lapping and sealing measures. Sample photographs of membrane joints for the validation file will then be taken. The date of the inspection will be recorded together with all observations made. Any defects will be recorded and made good for subsequent inspection.
- 5.8 The Site Manager / geoenvironmental engineer together will carry out a thorough visual inspection of the gas barrier to check for any damage and check any repairs that have already been requested and carried out. Sample photographs of any repairs for the validation file will then be taken. The date of the inspection will be recorded together with all observations made.
- 5.9 The Site Manager will inform the Installation Contractor's supervisor on any remedial and/or repair work required. Where practical, the Installation Contractor's supervisor will remain on site while the works are undertaken if practicable. All remedial and repair work will then be re-inspected and photographs taken for the validation file.
- 5.10 Immediately on completion of the installation and any repair works, a general inspection will be carried out by the Site Manager, and Installation Contractor's supervisor to agree that all works have been satisfactorily completed. Where practical, a written record of completion will be signed by all parties prior to any further construction works on the floor commencing. The membrane will then, where practical, be covered immediately by the insulation and/or floor screed construction or alternatively, be protected from further damage as agreed by all parties.

Imported Topsoil / Subsoil

- 5.11 The source of all imported materials will be clearly identified by reference to the site of origin. This will be accompanied by the results of appropriate chemical analysis from the supplier to certify material suitability. Certificates will be required for inspection prior to any imported material being brought to site.
- 5.12 Imported Topsoil and sub-soil will be stockpiled separately from other materials and clearly marked on site.
- 5.13 The site manager will keep records of the volumes of all imported Topsoil and sub-soil delivered to site in the form of delivery slips. The records will be presented as confirmation that sufficient analysis has been undertaken on imported Topsoil/sub-soil.
- 5.14 Notwithstanding the above, material delivered to site will be subject to further chemical analysis to confirm suitability. In this respect, the following testing regime per soil source will be required as outlined in the MCC Planning Guidance Document, dated 2021.

Source	Soils	Testing Regime
Greenfield	Topsoil / subsoil	1:200m ³ (minimum 3no samples per source)
Remediated		1:100m ³ (minimum 3no samples per source)
Brownfield/unknown		1:50m ³ (minimum 3no samples per source)

- 5.15 The results of the analysis will be compared against Site Specific Assessment Criteria for 'Residential without home-grown produce' as presented in Appendix 03.
- 5.16 Should the results of such analysis exceed the relevant Site Specific Assessment Criteria the soil may require additional sampling in order to further assess its suitability for use at the site and may ultimately need be removed from site and replaced with material which meets the criteria.

Clean Cover Thickness

- 5.17 Where a clean cover is to be incorporated over areas of remaining Made Ground, the thickness of sub-soil and Topsoil will be validated by undertaking hand-dug trial pits with photographic records following placement.
- 5.18 Hand dug trial pits will be undertaken through the full thickness of the capping soils at a frequency of one in each landscaped area or 1 per 25m linear metres of landscaping.
- 5.19 The photographic record will confirm the required clean cover thickness by use of a levelling staff. Each photograph will also clearly show the plot number relating to each trial pit excavation.

Asbestos Control Measures

- 5.20 Validation that the asbestos control measures have been successfully implemented in the area of the proposed Science Block (but also the Year 7 area – if where such is encountered during development) will be recorded in the Health and Safety File which will be held by the Client at their premises or other designated location.
- 5.21 Where relevant such documentation will primarily include:
- A record of the extent and results of all asbestos monitoring carried out to demonstrate that the concentration of asbestos in air have not exceeded the control limit of 0.1 fibres per cubic centimetre of air averaged over a continuous period of 4 hours.
 - A record of physical control measures which have been adopted to minimise the risk of the control limit being exceeded.

- A record of ACM encountered and the measures adopted to deal with such materials.
- A record of all ACM removed from site and details of the Duty of Care documentation identifying the licensed facility to which it has been disposed to.
- A record of any incidents, accidents and emergencies.
- Photographic evidence of material movement and remedial works such as hand-picking activities.

Unexpected Ground Contamination

- 5.22 It cannot be wholly discounted that unidentified contamination sources could be encountered during site works. The removal of ground contamination would need to be witnessed by a geoenvironmental engineer who would take independent site records, including photographs to demonstrate appropriate compliance with the Remediation Strategy and subsequent Method Statements.
- 5.23 Removal of hotspots would also need to be validated by visual inspection to include photographs and measurements of the resulting excavations and / or sampling of suspected groundwater. Samples will be taken from the sides and, where practical, the bases of excavations for chemical analysis to demonstrate that remaining soils do not exceed the SAC.
- 5.24 Records of all material removed from site will be kept by the Site Manager to demonstrate compliance with Duty of Care regulations. This will include a record of volumes of waste taken from site and details of the landfill facility receiving the waste.
- 5.25 Where necessary, EA pre-notification requirements will be complied with for the removal and disposal of waste considered to be Hazardous, backed up where necessary by Waste Acceptance Criteria (WAC) testing.

6.0 VALIDATION REPORT

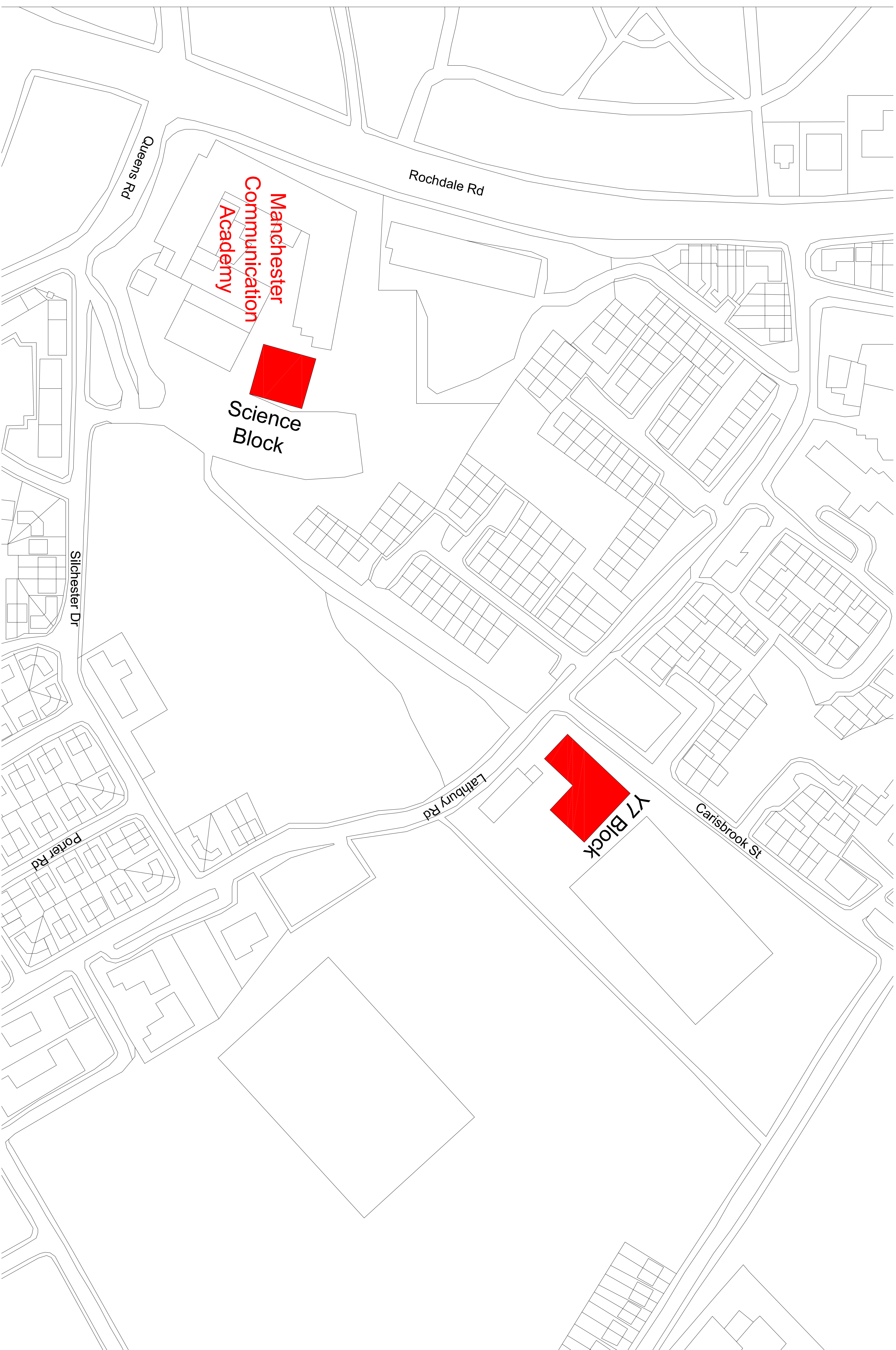
- 6.1 On completion of the Remediation Works to the site, a Validation Report will be produced by the geo-environmental engineer, which will be submitted to the Local Authority for approval.
- 6.2 Where applicable the Validation Report will include:
- Documentation in relation to asbestos control measures;
 - Details of any unexpected ground contamination and the measures undertaken to deal with this, to include records of excavation, the results of chemical analysis resulting from the removal of contaminated soil and / or groundwater.
 - Sample waste management records confirming compliance with Duty of Care regulations;
 - Results of subsequent chemical analysis of imported Topsoil/sub-soil to confirm compliance with the Site Specific Assessment Criteria.
 - Records of the volumes and suitability of all imported fill, Topsoil and sub-soil delivered to site in the form of delivery slips and certificates.
 - Sample waste management records confirming compliance with Duty of Care regulations;
 - Photographic evidence of suitable sub-soil/Topsoil cover in landscaped areas where underlain by Made Ground.
- 6.3 The Validation Report will also incorporate details of the as built ground gas protection measures with the Year 7 building, to include:
- As built drawings and records of the gas protection measures;
 - Materials specifications.
 - Gas Validation inspection records with photographs of the installations, to include sealing details to penetrations, corner details and joints, telescopic vent details etc.
 - Defect repair details and subsequent photographs.

APPENDIX 01

Drawings

This drawing is Copyright and the property of Lancaster Motorey Martin Limited and must not be reproduced in whole or in part without their written permission. Copyright is reserved. © This drawing must not be scaled. The Contractor is to report all dimensional discrepancies & errors to the Contract Administrator prior to commencing construction. It is essential that this drawing is read in conjunction with the specification and all works identified included for.

NOTES



Rev	Date	Comments	By

STATUS
FEASIBILITY

Client
**Manchester Communication
Academy**

Project Title
Expansion

Drawing Title
Site Plan

Scale 1:100@A1	Drawn by JM	Date 26 May 2023
Job no. 2303-04	Drawing no. F01	Revision no.



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Manchester
Communication
Academy

Science
Block

Y7 Block

Recreation Ground

Manchester Communication Primary Academy

Manchester Communication Academy

Electricity Distribution Site

The Hipp

ST EDMUND'S ROAD

ROCHDALE ROAD

68.0m

62.5m

Moston Brook

KIRKLINTON DRIVE

CARSBROOK STREET

LATHBURY ROAD

CHEVINGTON DRIVE

PENERLY DRIVE

KELVINGTON DRIVE

OLDERSHAW DRIVE

PARKSTEAD

10458

154

144

Shelter

Cycle Way

Stone

Shelter

El Sub Sta

El Sub Sta

Shelter

QUEENS ROAD

Posts

LATHBURY ROAD

PORTER

Blencarn Walk

Kingsbury Walk

Thornaby Walk

TCB

84 to 86

80 to 82

10

2

12

17

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APPENDIX 02

Gas Validation Template and Guidelines

Gas Validation Inspection Record

Site Name:	Click here to enter text.	Project Number:	Click here to enter text.
Installer:	Click here to enter text.	Date:	Click here to enter text.

Plot Number(s):	Click here to enter text.
Gas Characteristic Situation:	CGS1
Type of Development:	Residential / Commercial / Industrial
Floor and Substructure Design: (suspended / ground bearing)	Click here to enter text.
Gas Protection Type	Active / Passive
Weather	Dry / Raining / Sunny/ Other

VENTILATION		
Passive Venting to Sub Floors (if installed)		
No	Item	Comment / Description (<i>refer to WML Guidance Notes</i>)
1.1	Void Former Type	Click here to enter text.
1.2	Void Space	Click here to enter text.
1.3	Gravel Type	Click here to enter text.
1.4	Internal Sleeper Walls	Click here to enter text.
1.5	External Wall Venting	Click here to enter text.
1.6	Venting Pipe	Click here to enter text.
1.7	External Venting Trenches	Click here to enter text.

Active Venting (if installed)		
No	Item	Comment / Description (<i>refer to WML Guidance Notes</i>)
2.1	Venting System Details	Not Applicable

Gas Membrane		
No	Item	Comment / Description (<i>refer to WML Guidance Notes</i>)
3.1	Membrane Type	Click here to enter text.
3.2	Membrane Coverage	Click here to enter text.
3.3	DPC/DPM	Click here to enter text.
3.4	Underside of Membrane	Click here to enter text.
3.5	Membrane Condition	Click here to enter text.
3.6	Lapping and Double Taping Details	Click here to enter text.
3.7	Lapped Joints to membrane	Click here to enter text.
3.8	Service Entry Seals	Click here to enter text.

Additional Comments (Include comments on any remedial measures such as damage, repairs etc.)
Click here to enter text.

This Plot(s) has	Passed / Failed Inspection
Engineers Name	Click here to enter text.
Signature	Click here to enter text.
Date	Click here to enter text.

APPENDIX 03

Screening Levels

Screening Levels for Public Open Space (Residential) assuming a 1% SOM for Hydrocarbons.

Contaminant	Screening Levels for POS (Resi) (mg/kg)
Metals	
Arsenic	79
Boron	21,000
Cadmium	120
Chromium III	1,500
Chromium VI	23
Copper	12,000
Lead*	630
Mercury	16
Nickel	230
Selenium SGV	1,100
Vanadium	2,000
Zinc	81,000
Non Metals	
Phenol	440
Polyaromatic Hydrocarbons PAHs)	
Benz[a]anthracene	29
Benzo[a]pyrene	5.7
Benzo[b]fluoranthene	7.1
Benzo[ghi]perylene	640
Benzo[k]fluoranthene	190
Chrysene	57
Dibenz[ah]anthracene	0.57
Fluoranthene	3,100
Indeno[123-cd]pyrene	82
Naphthalene	4,900
Pyrene	7,400

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* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

Contaminant	Screening Levels for POS (Resi) End Use
Volatile Organic Compounds (VOCs)	
Benzene	72
Ethylbenzene	24,000
Toluene	56,000
Xylene	41,000
Total Petroleum Hydrocarbons (TPH)	
Aliphatic C5-6	570,000
Aliphatic C6-8	600,000
Aliphatic C8-10	13,000
Aliphatic C10-12	13,000
Aliphatic C12-16	13,000
Aliphatic C16-35	250,000
Aliphatic C35-44	250,000
Aromatic C5-7	56,000
Aromatic C7-8	56,000
Aromatic C8-10	5,000
Aromatic C10-12	5,000
Aromatic C12-16	5,100
Aromatic C16-21	3,800
Aromatic C21-35	3,800
Aromatic C35 - 44	3,800

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