

Remediation Strategy

For a site at

Dob Brook Close, Failsworth

Undertaken for

The Guinness Partnership

Report Title:	Dob Brook Close, Failsworth Remediation Strategy
Report Reference:	8948G/03
Client:	The Guinness Partnership
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Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
-	25/09/2020	Final	TPB	SCS	SCS
A	08/10/2020	Revised Layout	-	-	SCS

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting has been commissioned by The Guinness Partnership to prepare a Remediation Strategy in relation to development of a site referred to as Dob Brook Close, Failsworth.

Proposed Development

- 1.2 It is understood that the currently proposed development will comprise 16no residential apartment units and 3no houses, together with external hardstanding for access and parking. The development will also include private gardens to the houses and shared landscaped garden areas to the apartments.
- 1.3 A drawing indicating the proposed layout by Bowker Sadler Architecture, referenced 18-079-1002, is presented in Appendix 01.

Background

- 1.4 WML were initially commissioned by The Guinness Partnership to undertake a Phase 1 Desk Study and Phase 2 Investigation and Assessment. These culminated in the following reports.
- Phase 1 Desk Study and Preliminary Geo-environmental Assessment, Reference 8948G/01, dated August 2019.
 - Phase 2 Geo-environmental Investigation and Assessment, Reference 8948G/02, dated October 2019.
 - Updated Ground Gas Risk Assessment, Reference 8948G/TPB/SCS, dated 23rd January 2012.
- 1.5 The reports have been presented to Manchester City Council Planning Division in support of Planning Application No. 126281/FO/2020.
- 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 land located off Dob Brook Close, Failsworth, Manchester. It is centred on approximate Ordnance Survey National Grid Reference 388340E, 400675N with an indicative postcode of M40 1DB.
- 2.2 The proposed development site is bounded to the north and east by residential properties on Dob Brook Close, to the south by the Rochdale Canal and to the west by a scrap yard and car showroom.

Site Description

- 2.3 At the time of the investigation on 11th September 2019, the site was undeveloped and fenced-off from the general public.
- 2.4 The north-western, western and southern area of the site was surfaced with overgrown grass and low-lying vegetation.
- 2.5 The central and south-eastern area was surface with dense semi-mature and mature trees of varying species. Further mature trees were located sporadically within the northern and western sections of the site.
- 2.6 Historically the western and south-western section of the site included large stands of Japanese Knotweed. It is understood that these have been treated by a Japanese Knotweed specialist and evidence of dead stems and the base of large stands were visible in this section of the site. However, locally small volumes of re-growth were noted during the site inspection in August 2019.
- 2.7 An area of localised fly tipping, located in the north-western corner of the site, mainly comprised plastic, broken windscreen glass, vegetation and metal sheeting. No obvious signs of Asbestos Containing Material (ACM) was evident within the fly-tipped material.
- 2.8 The brick wall which forms the western boundary with the scrap yard included a metal door which historically provided access between the adjacent site into a former structure within the site boundary (demolished in 1980).
- 2.9 The site reduces in elevation from approximately 89.00m Above Ordnance Datum (AOD) in the west to around 88.50mAOD in the north-east.

Summary of Salient Environmental Considerations

- 2.10 British Geological Survey (BGS) plans indicate the site to be underlain by Devensian Glacial Till which mainly comprises clay with occasional sand and silt. The superficial deposits are indicated to be underlain by strata of the Permian Collyhurst Sandstone which is recorded to comprise mainly red sandstone.
- 2.11 The property is not in a radon affected area as defined by the BGS/Public Health England as less than 1% of properties are above the action level of exposure.
- 2.12 The superficial deposits underlying the site are classified as a 'Secondary (Undifferentiated) Aquifer'. The underlying bedrock is classified as a 'Principal Aquifer'.
- 2.13 The nearest surface water feature is the Rochdale Canal which forms the southern site boundary.
- 2.14 The nearest historic landfill is located over 250m to the north off Mill Lane. A vehicle scrap yard is located at the south-western site boundary.

- 2.15 There are 3no petrol filling stations located within 250m of the site, the closest being 105m west which is obsolete.
- 2.16 The earliest complete maps dated 1848 indicate the site to have been predominantly undeveloped and in rural / agricultural use. A watercourse, presumably Dob Brook, extended north-west to south-east across the central section of the site, before being culverted to the south-east. By 1892 Dob Brook had been either been culverted or diverted.
- 2.17 The site then remained unchanged until 1906 when it formed the south-western section of a larger football ground. With the exception of a small structure in the south-western corner of the site between 1931 and 1980 the site has never been further developed.
- 2.18 The area immediately surrounding the site historically comprised undeveloped rural/agricultural land before being developed for mixed industrial, commercial and residential uses. The closest historical industrial development in the wider surrounding area included a cotton mill, brewery and later a vehicle scrap yard which is still in use.

3.0 SUMMARY OF PHASE 2 INVESTIGATION

Ground Investigation

- 3.1 Ground investigation work was undertaken by LOT Geotechnics Ltd on the 11th September 2019. This comprised the formation of 6no window sample probeholes to a maximum depth of 5.00 metres below ground level (mbgl).
- 3.2 WML also oversaw the formation of 4no machine excavated trial pits on 11th September 2019 to a maximum depth of 2.70mbgl.

Ground Conditions

- 3.3 Ground conditions encountered during the intrusive investigation comprise made ground to depths of between 1.30m and 3.80mbgl, this being underlain by Glacial Till which has been proven to a maximum depth of 5.00mbgl.
- 3.4 No significant visual and/or olfactory evidence of significant ground contamination was identified during the investigation.
- 3.5 Groundwater seepages were encountered within the majority of exploratory holes at depths of between 1.00m and 2.40mbgl and mainly within the granular horizons of made ground.
- 3.6 During the initial monitoring visits, standing water was recorded at depths of between 1.25m and 2.80mbgl. This is considered to represent water perched within the made ground with true phreatic groundwater levels anticipated to be in excess of 5.00mbgl.

Chemical Analysis

- 3.7 Chemical analysis indicated several exceedances of CoCs within the Made Ground, when compared to the current LQM/CIEH (Suitable 4 Use Levels (S4ULs) reference values for residential with plant uptake. These relate in the main to very slightly elevated and localised concentrations of lead and mercury within a single sample of made ground (TP1 0.40mbgl) and several slightly elevated PAH compounds. These are considered to be most likely due to the presence of ash and clinker within the made ground matrix.
- 3.8 Slightly elevated leachable concentrations of lead were recorded within a single sample of made ground when compared to the stringent drinking water standards. In addition, when the results were compared against the EQS values for surface water, slight exceedances of copper were recorded in 2no samples of made ground.
- 3.9 No asbestos fibres were detected in any of the samples analysed.

Ground Gas

- 3.10 Ground gas monitoring, primarily for methane and carbon dioxide, with associated flow rates, was undertaken on 6no occasions, between 17th September and 4th December 2019.
- 3.11 The results indicate concentrations of methane not exceeding 0.1% by volume in air (v/v). Peak and steady state carbon dioxide concentrations generally range from 0.1% to 8.1%. A maximum positive steady state flow of 1.5l/hr was recorded in WS4 on the fifth visit.
- 3.12 The results provide a maximum Q_{hg} value of <0.021l/hr and indicate that the site classifies as Characteristic Situation (CS) 1 – Very Low Gas Risk'. However, as carbon dioxide concentrations exceed 5% on a number of occasions it was considered that the classification would need to be increased to Characteristic Situation (CS) 2 – 'Low Gas Risk' in accordance with BS8485:2015.

4.0 REMEDIATION STRATEGY

Gas Protection Measures

- 4.1 The site is indicated to classify as Characteristic Gas Situation (CGS) 2 – 'Low' in accordance with BS8485:2015.
- 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 out in Paragraph B.6 of BS8485:2015.
 - Sub-slab ventilation, swan neck pipes connected to external airbrick, at maximum 1500mm centres to at least opposing sides of the structure.
 - Lapped and taped gas resistant membranes (tested to BS8485), in the floor slab construction which meets all the criteria as set out in Table 7 of BS 8485:2015 and installed to reasonable levels of workmanship in line with current good practice.
 - Membrane to be sealed around all penetrations and to damp proof course and taken over cavity walls.
- 4.3 The gas protection system as outlined above will also require verification as outlined in Section 5.0.

Capping Requirements for Private Gardens and Landscaped Areas

- 4.4 As the level of contamination in the Made Ground renders it unsuitable for direct use beneath proposed private gardens and shared landscaped garden areas, development will need to include the provision of a clean cover over the Made Ground to break the direct contact pollution linkage as set out below.
- 4.5 Therefore, all soft 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;
 - 450mm of clean imported sub-soil.
- 4.6 However, soils thickness associated with plant maintenance requirements are not covered within this report and would need to be confirmed with the landscape architect.

Unexpected Ground Contamination - Soils

- 4.7 Due to the historical use of the site, it cannot be wholly discounted that unidentified contamination sources could be encountered during site enabling works.
- 4.8 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.
- 4.9 Any unsuitable contaminated soil encountered during the site strip/enabling works will be segregated and stockpiled on impermeable sheeting and demarcated as contaminated soil for removal off-site.
- 4.10 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.
- 4.11 A photographic record of any should be made available for inclusion within the validation report.

- 4.12 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

- 4.13 If mobile contaminants, or localised groundwater suspected to be contaminated, were encountered during the redevelopment ground works', the following actions should be undertaken.
- 4.14 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.
- 4.15 A photographic record of any groundwater removal should be made available for inclusion within the validation report.
- 4.16 Removal dockets and disposal information for any contaminated materials removed from the site will need to be retained for inclusion in the Validation report.

Water Supply Pipes

- 4.17 United Utilities Water will need to be consulted with regards the selection of suitable water supply pipe materials for the development. However, in light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination is not anticipated.
- 4.18 A copy of the United Utilities Risk Assessment is included within Appendix 04.

5.0 VALIDATION

Gas Protection Measures

- 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.

Unexpected Ground Contamination

- 5.11 It cannot be wholly discounted that unidentified contamination sources could be encountered during site enabling 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.
- 5.12 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.
- 5.13 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.
- 5.14 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.

Imported Topsoil / Subsoil

- 5.15 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.
- 5.16 Imported Topsoil and sub-soil will be stockpiled separately from other materials and clearly marked on site.
- 5.17 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.
- 5.18 Notwithstanding the above, material delivered to site will be subject to further chemical analysis to confirm suitability. In this respect, the following testing strata per soil source will be required as outlined in the MCC Planning Guidance Document.

Source	Soils	Testing Regime
Greenfield	Topsoil / subsoil	1:200m ³
Remediated		1:100m ³
Brownfield/unknown		1:50m ³

- 5.19 The results of the analysis will be compared against Site Specific Assessment Criteria for 'Residential with home-grown produce' as presented in Appendix 03.
- 5.20 Should the results of such analysis significantly exceed the relevant Site Specific Assessment Criteria in a significant number of samples the soil will be removed from site and replaced with material which meets the site requirements.

Clean Cover Thickness

- 5.21 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.
- 5.22 Hand dug trial pits will be undertaken through the full thickness of the capping soils at a frequency of one per linear 25m in landscaped areas along the canal and one per two landscaped areas or every 25 linear meters where smallest in landscaped areas surrounding the apartments. Within private gardens validation pits will be formed at rate of 1no pot per two plots.
- 5.23 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.

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 MCC for approval.
- 6.2 Where applicable the Validation Report will include:
- 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.
 - 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 gardens where underlain by Made Ground.
 - Confirmation of potable water supply pipe materials.
- 6.3 The Validation Report will also incorporate details of the as built ground gas protection measures, 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.

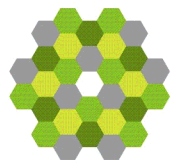
APPENDIX 01

Drawings

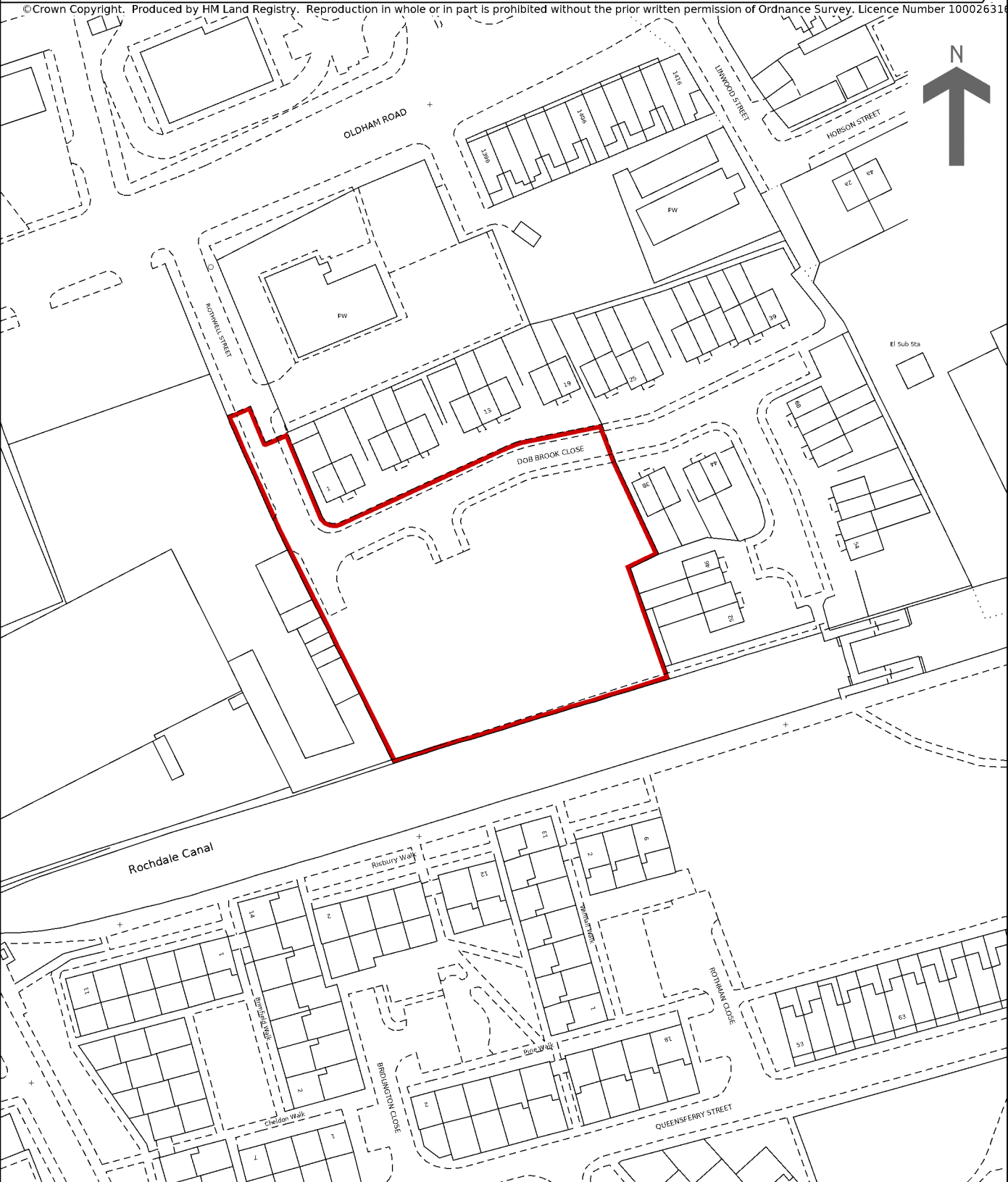
HM Land Registry

Current title plan

Title number **GM575031**
Ordnance Survey map reference **SD8800NW**
Scale **1:1250**
Administrative area **Greater Manchester :**
Manchester



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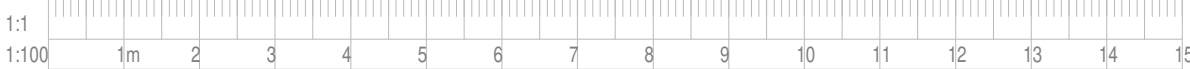
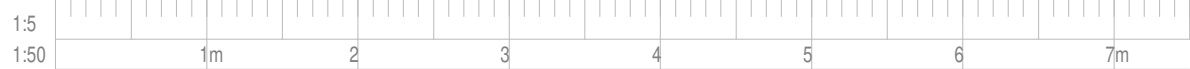
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■ CHECK ALL DIMENSIONS ON SITE
■ DRAWING TO BE READ IN CONJUNCTION WITH THE HEALTH AND SAFETY PLAN AND ALL RELEVANT RISK ASSESSMENTS

Schedule of Accommodation				
	7 N°	2B4P	House	~83m ²
	1 N°	3B5P	House	97m ²
8N° Houses Total				
	8 N°	2B3P	GF	Apartments 61.3m ²
	8 N°	2B4P	Duplex	FF Apartments 85.5m ²
16N° Apartments Total				

Site Plan Proposed layout
1 : 200



REV.	DATE	DRN.	CHKD.
PROJECT Dob Brook Close			
CLIENT Guinness Developments Limited			
DRAWING Site Plan Proposed Layout			
SCALE 1 : 200	SHEET SIZE @ A1	DRAWN PC	CHECKED MD
DATE 13/02/20			
BOWKER SADLER ARCHITECTURE A: Hatherlow House, Hatherlow, Romiley, Stockport SK6 3DY T: 0161 406 7333 E: office@bowker-sadler.co.uk W: www.bowker-sadler.co.uk			
JOB No 18-079	DRAWING No 1002	REVISION	
STATUS		Planning	



Station	Easting	Northing	Level
1	388361.508	400715.560	88.568
2	388307.208	400695.132	88.311

GENERAL NOTES

- DO NOT SCALE FROM THIS DRAWING WORK TO FIGURED DIMENSIONS ONLY.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
- THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH & SAFETY PLAN.

KEY

- SITE BOUNDARY
- ✕ WS1 WINDOW SAMPLE PROBEHOLES
- ⊠ TP1 WINDOW SAMPLE PROBEHOLES
- AREA OF KNOWN JAPANESE KNOTWEED

P1	FIRST PRELIMINARY ISSUE	AUG '19	SCS	PGD
Rev.	Amendment	Date	By	Chkd

Project	DOB BROOK CLOSE			
Client	THE GUINNESS PARTNERSHIP			
Title	EXPLORATORY HOLE LOCATION PLAN			

Drawn	Checked	Date	Scale
SCS	PGD	2210-19	1:200

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Job No.	8949G	Drawing No.	SK-01
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APPENDIX 02

Gas Validation Template

General Guidance Notes for Validation of Ground Gas Protection Measures

No	Item	Checklist Guidance
1.1	Void Former Type	State manufacturer and specification. Check if any void former is correctly installed and record any damage.
1.2	Void Space	Describe formation surface soil type, 6F2/limestone/concrete/brick etc. Measure the height of proprietary void former or constructed ventilation space below the suspended floor. Is there any evidence of obstructions to air flow through the void?
1.3	Gravel Type	Record the gravel type, where used and dimensions (mm), fines content etc. Has the gravel been compacted?
1.4	Internal Sleeper Walls	Check that suitable ventilation holes or connection pipes have been installed in sleeper walls.
1.5	External wall Venting	Record the spacing to external walls and check for blockages.
1.6	Venting Pipe	Record diameter, material type, positioning and spacing of the venting pipes. Check that the pipes connect with external vents.
1.7	External Venting Trenches	Include dimensions of venting trenches, liners, type of venting stacks, maintenance precautions etc.
2.1	Venting System Detail	Obtain details of the venting system used, installation contractor and any maintenance precautions etc.
3.1	Membrane Type	Record manufacturer and product specification and check these are being correctly stored away from sunlight, temperature extremes etc.
3.2	Membrane Coverage	Is membrane coverage complete and has the membrane been attached to appropriate DPC through walls and across cavity's.
3.3	DPC/DPM	Is the DPC integrated with the membrane and has the membrane been suitably lapped and taped to this?
3.4	Underside of Membrane	Is the membrane laid onto a sand blinding, 50mm no fines concrete or a cleaned suspended slab etc?
3.5	Membrane Condition	Is the membrane intact or are there are areas of damage, debris of rough surfaces to the underside. Record if there are any sharp objects or heavy traffic such as could compromise the membrane integrity. Photographs should be taken of each plot inspected.
3.6	Lapped Joints to Membrane	Ensure that all the joints are lapped and sealed in accordance with manufacturer's requirements / specification. Lapped edges usually to have a minimum 150mm overlap with double-sided tape between sheets, and single-sided tape on top surface.
3.7	Service Entries	Are all of the service entries suitably lapped, taped and jubilee clipped to ensure seal between top-hat and floor membranes.

Additional Notes	
Defects / Damage to Membrane	Any defects, damage or incorrectly installed detailing should be immediately reported to the site manager to ensure such defects are rectified prior to additional inspections by the engineer.
Photographs	Plot(s) to be photographed throughout the gas protection installation and not limited to final membrane verification, where possible.
Completion of Gas Validation Forms	Once completed the gas protection measures should be validated on a pre-agreed plot basis and Proforma 001 completed, signed and dated by the engineer or specified relevant person(s).

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

Soil Assessment Criteria

Site Specific Assessment Criteria for Residential (with homegrown produce) assuming a 2.5% SOM for Hydrocarbons

Contaminant	Assessment Criteria for Residential (mg/kg)
Metals	
Arsenic	37
Boron	290
Cadmium	26
Chromium III	910
Chromium VI	6
Copper	2,400
Lead*	200
Mercury	1.2
Nickel	130
Selenium	250
Vanadium	410
Zinc	3,700
Non – Metals	
Phenol	200
Polyaromatic Hydrocarbons (PAH)	
Benz[a]anthracene	11
Benzo[a]pyrene	2.7
Benzo[b]fluoranthene	3.3
Benzo[ghi]perylene	340
Benzo[k]fluoranthene	93
Chrysene	22
Dibenz[ah]anthracene	0.28
Fluoranthene	560
Indeno[123-cd]pyrene	26
Naphthalene	5.6
Pyrene	1,200

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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	Criteria for Residential End Use (mg/kg)
Volatile Organic Compounds (VOCs)	
Benzene	0.17
Ethylbenzene	110
Toluene	290
Xylene	130
1,2-Dichloroethane	0.011
1,1,1-Trichloroethane	18
Tetrachloroethane	3.4
Tetrachloroethene (PCE)	0.39
Tetrachloromethane	0.056
Trichloroethene (TCE)	0.034
Trichloromethane	1.7
Vinyl Chloride	0.00087
Semi-Volatile Organic Compounds (SVOCs)	
1,2-Dichlorobenzene	55
1,4-Dichlorobenzene	150 ^f
1,2,4-Trichlorobenzene	6.4
Hexachlorobenzene	3.3 (0.5) ^{vap}
Total Petroleum Hydrocarbons (TPH)	
Aliphatic C5-6	78
Aliphatic C6-8	230
Aliphatic C8-10	65
Aliphatic C10-12	330(118) ^{vap}
Aliphatic C12-16	2,400(59) ^{sol}
Aliphatic C16-35	92,000(21) ^{f, sol}
Aliphatic C35 - 44	92,000(21) ^{f, sol}
Aromatic C5 – 7 (benzene)	140
Aromatic C7 – 8 (toluene)	290
Aromatic C8-10	83
Aromatic C10-12	180
Aromatic C12-16	330
Aromatic C16-21	540 ^f
Aromatic C21-35	1,500 ^f
Aromatic C35 - 44	1,500 ^f

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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.

APPENDIX 04

United Utilities Risk Assessment

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

Introduction

In January 2011, UK Water Industry Research (UKWIR) published “Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites” (Ref 10/WM/03/21; the ‘UKWIR Guidance’). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 “Laying Pipes in Contaminated Land” which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as “land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated.” The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions “*except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development*”.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the ‘UUW Guidance’) which includes the Risk Assessment for Water Pipes (the ‘RA’).

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication “Model Procedures for the Management of Land Contamination” (ref: CLR11) that sets out whether the land through

which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067

Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

- a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or
- b) more suitable pipe materials; or
- c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011

“Investigation of Potentially Contaminated Sites Code of Practice”

CLAIRE/CIEH

“Guidance on comparing soil contamination data with a critical concentration” 2008

Department of the Environment Contaminated Land Research Report

“Sampling strategies for contaminated land”
prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency

“Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination”
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency

“Model Procedures for the Management of Land Contamination” (ref: CLR11), 2004

Environment Agency P5-080/TR3

“The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils”, 2005

UK Water Industry Research (UKWIR)

“Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites” (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS)

Information and Guidance Note 9-04-03

“Laying Pipes in Contaminated Land” 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate

choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water

Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

Risk assessment for water pipes (RA)

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067**.

Section 1: Development details	
Development name (<i>if it has one</i>)	Dob Brook CLOse
Development address	Dob Brook Close, Failsworth, M40 1DB
OS Grid reference (<i>mid point</i>)	388340E, 400675N
Developer's name	The Guinness Partnership
UUW reference number (<i>for UU use only</i>)	
Please provide details below of the current and historical use of the site and adjacent sites. <i>If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.</i> The earliest complete maps dated 1848 indicate the site to have been predominantly undeveloped and in rural / agricultural use. A watercourse, presumably Dob Brook, extended north-west to south-east across the central section of the site, before being culverted to the south-east. By 1892 Dob Brook had been either been culverted or diverted. The site then remained unchanged until 1906 when it formed the south-western section of a larger football ground. With the exception of a small structure in the south-western corner of the site between 1931 and 1980 the site has never been further developed. The area immediately surrounding the site historically comprised undeveloped rural/agricultural land before being developed for mixed industrial, commercial and residential uses. The closest historical industrial development in the wider surrounding area included a cotton mill, brewery and later a vehicle scrap yard which is still in use. The Phase 1 desk study report concluded that potential pollution linkages are on the whole considered unlikely with associated preliminary risks being assessed generally as very low to low.	
Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☒ Yes ☐ No
If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i> Not Applicable, please refer to the Phase 2 report by WML. Phase 2 Geo-environmental Investigation and Assessment, referenced 8948G-WML-00-XX RP-G-0002, dated October 2019.	

Section 3: Intrusive site investigation																									
Have you completed any intrusive site investigation?	☒ Yes ☐ No																								
Have you completed any none intrusive site investigation?	☐ Yes ☒ No																								
Date(s) when the site investigation(s) undertaken	<table border="1"> <tr> <td>1</td><td>1</td> <td>0</td><td>9</td> <td>2</td><td>0</td><td>1</td><td>9</td> </tr> <tr> <td>D</td><td>D</td> <td>M</td><td>M</td> <td>Y</td><td>Y</td><td>Y</td><td>Y</td> </tr> <tr> <td>D</td><td>D</td> <td>M</td><td>M</td> <td>Y</td><td>Y</td><td>Y</td><td>Y</td> </tr> </table>	1	1	0	9	2	0	1	9	D	D	M	M	Y	Y	Y	Y	D	D	M	M	Y	Y	Y	Y
1	1	0	9	2	0	1	9																		
D	D	M	M	Y	Y	Y	Y																		
D	D	M	M	Y	Y	Y	Y																		
At what level has groundwater been encountered?	5.00m+ metres below ground level or ☐ Not encountered																								
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing. <i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i> The Phase 1 desk study report concluded that potential pollution linkages are on the whole considered unlikely with associated preliminary risks being assessed generally as very low to low with the site being historically used as a football pitch.																									
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i> Not Applicable																									
Section 4: Site remediation																									
Please provide details below of any site remediation (which may include a change in site levels) already completed. <i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i> None completed to date.																									
Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☐ No ☒ N/A																								
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. <i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i> No specific remedial measures required with the exception of suitbale capping to soft landscaped areas where underlain by made ground containing localised contaminants of concern associated with human health through inhalation or ingestion of soils.																									

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

The site is to be in use as residential apartment structures with no chemicals / hydrocarbons anticipated.

What water pipe materials are intended to be used on site?

☒ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B
Other (please specify):

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

Not Applicable

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes

Samantha Seddon BSc (Hons), MSc, EurGeol, CGeol, FGS

Name and address of risk assessor's company

WML Consulting, No. 8 Oak Green | Earl Road | Stanley Green Business Park | Cheadle Hulme | Cheshire | SK8 6QL

Date risk assessment performed

25/09/2020

Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.

Name	Samantha Seddon	Company	WML Consulting
Telephone	01614820600	Date	25/09/2020

Please email the completed form and supporting information to DeveloperServicesWater@uuplc.co.uk or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.



About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?

☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg								
Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	NA	NA	NA	NA	NA
Total BTEX & MTBE		0.1	Pass	NA	NA	NA	NA	NA
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	NA	NA	NA	NA	NA
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	NA	NA	NA	NA	NA
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	NA	NA	NA	NA	NA
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	NA	NA	NA	NA	NA
Phenols* (from SVOC analysis)		2	Pass	NA	NA	NA	NA	NA
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	NA	NA	NA	NA	NA
Ethers*	Only where identified	0.5	Pass	NA	NA	NA	NA	NA
Nitrobenzene*		0.5	Pass	NA	NA	NA	NA	NA
Ketones*		0.5	Pass	NA	NA	NA	NA	NA
Aldehydes*		0.5	Pass	NA	NA	NA	NA	NA
Amines		Fail	Pass	NA	NA	NA	NA	NA
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	NA	NA	NA	NA	NA

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.