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Remediation Strategy

Proposed Residential Development

Cowm Top, Rochdale

October 2025



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Issuing office: Soiltechnics Ltd
Unit 9, Clarence Avenue, Westpoint Enterprise Park, Trafford Park, Manchester M17 1QS
Tel: 0161 9470270 E-mail: mail@soiltechnics.net

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Drawing Register

Title	Produced by	Date	Reference
Location Plan	Barratts Homes Manchester	March 2022	496-P-LP-01
Preliminary Foundation Plan Sheet 1+2	Barratts Homes Manchester	August 2022	496/ED/05
Exploratory Hole Location Plan A	Soiltechnics Ltd	December 2024	STV5936-D01A-A
Exploratory Hole Location Plan B	Soiltechnics Ltd	December 2024	STV5936-D01B-A

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Non-technical Summary

Task No.	Remediation Task
Pre-Commencement	
-	None
Pre-Construction	
PC1 – Surface water monitoring	Monitoring of springs and adjacent ponds to the south, before during and after cut/fill works. Two baseline visits are required.
Construction Works Phase	
CW1 – Discovery Strategy	Notify Soiltechnics upon encountering any unexpected contamination or ground conditions.
CW2 – Surface water monitoring	Fortnightly monitoring of spring and ponds during enabling works and piling phases. Monthly monitoring thereafter, until completion.
CW3 – Reuse of Made Ground	Made Ground in areas identified as SL01 and SL02 were seen to be impacted with asbestos. This material must be excavated and either reused at depth (>1m below FFL) or taken off-site for landfill disposal. Any other areas of Made Ground requires testing and assessment to determine their suitability for reuse, in terms of risks to health and the environment.
CW4 – Clean Cover System	The placement of Made Ground at depth will effectively require a >1m clean cover system over the material. The clean cover system requires independent verification by the consultant comprising physical inspection and chemical testing.
CW5 – Drinking water infrastructure	Clean service corridors must be installed where drinking water pipe runs cross localised areas of Made Ground. Alternatively, the Made Ground should be removed entirely.
CW6 – Material management	Maintain records for all soils and liquids imported, exported, and disposed of. Made Ground materials on site are not suitable for use within the upper 600mm of garden and soft landscaped areas.
CW7 – Material verification	Any imported soil must be subject to chemical and physical testing for compliance and verification purposes.
CW8 – Verification	Soiltechnics (the consultant) to review contractor supplied information and provide site inspections and sampling to verify all tasks outlined above. A Remediation Verification Report must be produced upon completion.
Long Term / After Completion	
-	None

1 Introduction

1.1 Scheme Outline

- 1.1.1 The site is located on a parcel of grazing land known as 'Cowm Top', in Castleton, on the south-western outskirts of Rochdale. It is understood that the development comprises construction of 445 No. low rise residential dwellings. As part of the scheme, earthworks reprofiling will be undertaken to facilitate development due to the hummocky terrain. Current development layouts are presented in Appendix A.
- 1.1.2 It is understood that the development is controlled under the Rochdale Borough Council planning regime, under application reference 22/01190/FUL.
- 1.1.3 The proposed development plan is included in Appendix A.
- 1.1.4 The report is based on the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

1.2 Brief

- 1.2.1 This report has been prepared following instructions received from Barratts Homes Manchester. This report details a Remediation Strategy to support the development of the scheme outlined above.
- 1.2.2 The Remediation Strategy will be carried out following the principles of BS10175: 2011+A2:2017 'Investigation of potentially contaminated sites – Code of Practice' and the Environment Agency's Land Contamination Risk Management guidance.

1.3 Aims and Objectives

- 1.3.1 The principal aim of this report is to satisfy the brief outlined above and thereby provide information to facilitate the safe development of the project.
- 1.3.2 The objectives of this report are outlined below:
- Confirm if sufficient information is available to inform the remediation.
 - State the relevant pollutant linkages which require remediation.
 - Identify a feasible remediation option to break the pollutant linkages.
 - Set remediation objectives and criteria.
 - Outline how the remediation will be implemented.
 - Identify any monitoring and maintenance requirements.
 - Establish a verification plan.
 - Recommend any further works.

1.4 Limitations

- 1.4.1** Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

2 The Site

2.1 Site Description

- 2.1.1 The site comprises open fields used for grazing, located just north of Trows Farm, and approximately 2.3km to the southwest of Rochdale town centre. The approximate postcode for the site is OL11 2UF. An aerial image of the site, with site boundary, is presented below.



Figure 2-A: Current Site Plan

- 2.1.2 A series of surface water springs are situated within the site boundary, noted to be flowing towards the south and a number of ponds situated just off Trows Lane. An unnamed brook is noted immediately adjacent to Trows Lane, flowing to the southwest, and towards Trub Brook. The Rochdale Canal is located approximately 600m to the west of the site.

2.2 Historic Land Use

- 2.2.1 The site has remained largely undeveloped throughout its history and has been utilised as grazing land. A building associated with was present on the southern boundary of the site before being demolished in the circa late 1990s. A pond was present in the centre of the site from circa early 1900s before being infilled circa 1950s.

2.3 Previous Reports

- 2.3.1 The key ground investigation reports undertaken in support of the development are as follows.
- Land at Trows Farm, Castleton: Ground Investigation (Smith Grant LLP, September 2017)
Document reference: R2392-R01-v2
 - Cowm Top, Castleton: Preliminary Phase I & II Contamination and Geotechnical Assessment (Smith Grant LLP, February 2021)
Document reference: R2228-R02-v3

- Trows Farm: Investigation and monitoring of site water seepages (RSK, May 2020)
Document reference: 11440 L01
- Cowm Top, Rochdale: Ground Investigation Report (Soiltechnics Ltd, December 2024)
Document reference: STV5936-R04-Rev_A

2.3.2 The Ground Investigation Report identified relevant pollutant linkages which posed a risk to identified receptors, and therefore a Remediation Strategy is required to establish the remedial measures and verification plan necessary to ensure the site is suitable for use.

2.4 Ground Conditions

2.4.1 The tables below present our generalised interpretation of geological and hydrogeological conditions at the site.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Topsoil	Dark brown sandy gravelly clay or clayey gravelly sand.	G.L.	G.L.	0.20 to 0.40
Made Ground	Firm sandy gravelly clay with brick, concrete, coal and occasional timber/fragments (SE corner of site).	0.20 to 0.40	0.30	0.45 to 2.50
	Soft grey gravelly clay with occasional brick (TP19 & TP20 only, north of Trows Farm).			1.05 to 1.40
	Black silty sandy gravel of clinker, brick and ceramic (TP01, TP03, NE corner of site).			0.30 to 1.10
Alluvium (TP17, TP19 & TP20 only)	Soft dark grey sandy silt.	0.30	-	0.55 to 0.60
Hummocky Glacial Deposits	Interbedded gravelly sands, silts and clays.	0.20 to 1.60	0.50	>15.15

Table 2-A: Ground model

Type	Stratum	Groundwater depth and range	Comments
Perched water table	Alluvium	1.95 – 2.00m	Slow flow.
Groundwater	Hummocky Glacial Deposits	8.60m – 15.0m	Groundwater strike.

Table 2-B: Hydrogeological model

2.5 Contamination Encountered

2.5.1 Based on testing to date, existing topsoil resources are considered suitable for reuse in a residential setting without any remedial action from a human health perspective.

2.5.2 All significant GAC exceedances arose from two localised areas of Made Ground, targeted by exploratory holes SL01 and SL02, where Made Ground was visible from the surface. This material contained elevated levels of metals and PAHs, along with microscopic fragments of bound ACMs. Made Ground in this area did not appear to be laterally extensive and was only recorded as 0.3m deep.

2.5.3 No elevated contamination posing a risk to controlled waters has been identified on site.

2.6 Sufficiency of Information

- 2.6.1 The Conceptual Site Model and contaminated land risk assessments are considered thorough and robust; however, as with the development of any brownfield site, an element of uncertainty remains, and a contamination discovery strategy should be established to support the construction works.

3 Site Considerations

3.1 Unexploded Ordnance (UXO)

- 3.1.1 The site was assessed to have a low risk of encountering UXO and were supervised by a site engineer who has had UXO awareness training.
- 3.1.2 No items of suspected UXO were observed during fieldworks.
- 3.1.3 No mitigation measures are required as part of the remedial works.

3.2 Adjacent Residents

- 3.2.1 Predominantly residential properties are present adjacent to the west and south of the site and commercial properties are adjacent to the north. Whilst they are not currently considered to be put at significant risk by the development of the site, dust suppression measures should be maintained throughout all demolition and construction phases to mitigate risks associated with asbestos and chemical contamination.
- 3.2.2 No significant odours are anticipated to be generated as a result of the works.

3.3 Dust Control Measures

- 3.3.1 Standard dust control measures should be always maintained across the site, including the dampening down of roadways, materials stockpiles, and any screening or crushing areas.
- 3.3.2 Stockpiles should be bladed down to reduce infiltration and minimise dust infiltration.
- 3.3.3 Routine dust monitoring is not considered necessary, except for any crushing activities; however, the Principal Contractor may wish to conduct such monitoring for reassurance and due diligence purposes.

3.4 Wastewater Disposal

- 3.4.1 Wastewater generated from site operations will require off-site disposal via tankers, or to sewer. Any disposal to sewer must be made under prior consent with the water authority by the operator.
- 3.4.2 Should discharge to sewer be considered, the wastewater provider must be consulted prior to mobilisation to obtain a discharge consent, along with establishing any compliance and monitoring targets.

4 Outline Remediation Strategy

4.1 General

- 4.1.1 This remediation strategy only considers the process of remedial action in terms of addressing the contamination recognised to date.
- 4.1.2 If during development or further investigation works, contamination not previously identified is found to be present, then an addendum method statement will be required, and the appropriate measures put in place. This is discussed further in the following report sections.
- 4.1.3 Laboratory analysis must be commissioned with testing houses that are suitably experienced and are MCERTS accredited with a quality assurance system.

4.2 Relevant Pollutant Linkages

- 4.2.1 The relevant pollutant linkages identified within the previous Ground Investigation Report are as follows:

Source	Pathway	Receptor
Asbestos within Made Ground soils	Inhalation of dust	Proposed end users
PAH and Hydrocarbon contamination within Made Ground at pipeline depth	Direct contact and permeation into potable water pipes	End users (via drinking water)
Unexpected contamination	Unknown	Unknown
Construction works generating dusts, silts, oils and cement	Surface runoff	Surface water

Table 4-A: Relevant pollutant linkages

4.3 Options Appraisal

- 4.3.1 Known areas of shallow asbestos containing Made Ground are present on site and there is the potential for the discovery within further areas. Remedial options to mitigate against the risk from asbestos impacted Made Ground are as follows.
- The complete removal of the impacted Made Ground followed by the disposal from site.
 - The reuse of impacted Made Ground with placement at depth (>1m bgl). Reuse of Made Ground must fall within the scope of a Materials Management Plan or a deposit for recovery permit.
- 4.3.2 Given that the cut/fill scheme on site will result in a deficit of approx. 28,000m³ of material, the preferred options is to reuse Made Ground to avoid creating a larger deficit. The placement of Made Ground at depth will effectively require a cover system over the material and will result in the requirement for the verification of the cover soils.
- ### 4.4 Outline Remediation strategy
- 4.4.1 The remediation strategy has been determined in view of the previous ground investigation report findings and the proposed development scheme. The overall strategy can be summarised as setting out the design, installation, and verification requirements for the following:

- i. Prepare a discovery strategy in the event of encountering unexpected or previously unencountered contamination.
- ii. Removal of shallow impacted asbestos containing soils within the vicinity of SL01 and SL02, and other identified comparable material, and disposal off-site or reuse at depth (>1m bgl) within the cut/fill scheme.
- iii. Creation of cover system in soft landscaped areas by way of placement of impacted Made Ground at depth.
- iv. Establish strategy for mitigating against risk to drinking water pipes in areas of deepened Made Ground.
- v. Monitoring of on site spring locations, and adjacent ponds to the south, before during and after cut/fill works to ensure development it not causing detrimental impact to surface waters.

5 Discovery Strategy

5.1 General

- 5.1.1 With the development of any site, there is a residual risk of contamination being found that is unexpected or has not been previously encountered.
- 5.1.2 As a precaution, the Principal Contractor should adopt the contamination Discovery Strategy, contained within Appendix B for dealing with unexpected contamination.
- 5.1.3 The Principal Contractor should also ensure it is distributed and communicated appropriately to all relevant ground workers.
- 5.1.4 A discovery event shall be triggered if any of the following observations are made.

Contaminant	Criteria - Description
Petroleum Hydrocarbons and chlorinated solvents in soils	Indications of suspected gross contamination: Black liquid, liquid oil, oil saturated soils in veins or zones, heavily stained or coated surfaces (e.g. sheens), solid tar, strong hydrocarbon odours (e.g. pungent, acrid, pleasant, sweet smells) Indications of possibly significant contamination, where these haven't been fully delineated: Light to moderate staining in soils, slight to moderate hydrocarbon odours.
Petroleum Hydrocarbons and chlorinated solvents in groundwater	Indications of suspected gross contamination: A visible free oil phase seeping from soils or floating on top of groundwater at a measurable thickness, strong odours. Indications of possibly significant contamination where these haven't been fully delineated: Oily seen, slight odours.
Asbestos containing materials	Suspected bound ACMs identified where frequency of ACMs is greater than sporadic or infrequent inclusions. Any occurrence of suspected loose or friable ACM material (such as AIB, pipe lagging or insulation).
Other sources of contamination	Unusual smells or colours. Bound or degraded macadam materials (e.g. possible coal-tar bound road planings). Potentially contaminating buried artefacts, such as oil drums, machine and car parts, uncontrolled demolition material, domestic refuse, etc.
Underground Storage Tanks (UST)	USTs and associated infrastructure (pipes, valves, inlets etc) being encountered on site and during excavation

Table 5-A: Contamination Triggers

5.2 Site Observations

- 5.2.1 Localised areas of Made Ground have been encountered at SL01 and SL02. Further areas of Made Ground, including similar asbestos impacted or illegally tipped wastes could be present elsewhere on site. A discovery event shall be triggered if any further material of this type is encountered.

6 Asbestos Impacted Made Ground

6.1 General

- 6.1.1 Asbestos impacted Made Ground has been identified within the vicinity of SL01 and SL02. These materials should be excavated and removed to a minimum of one metre below finish level, thereby removing the source or severing the pathway of risk to the end users.
- 6.1.2 Asbestos impacted material should either be taken off-site for disposal, or reused at a depth of greater than 1m below FFL if it is otherwise chemically and geotechnically suitable.
- 6.1.3 Made Ground materials within SL01 and SL02 are considered chemically suitable for reuse at depth.
- 6.1.4 Any other Made Ground materials encountered on site should undergo sampling and a land contamination risk assessment to determine if the material is chemically suitable for reuse. This must include consideration of the risk to both controlled waters and human health.
- 6.1.5 The general procedure for hotspot removal is included in Appendix C.

6.2 Excavation of Soils

- 6.2.1 Field observations indicate the unsuitable material is localised within both the SL01 and SL02 areas, with the Made Ground visible at surface. The unsuitable soils are expected to be easily delineated by visual inspections due to its composition, which can be described as the following in both locations:

Dark brown very sandy GRAVEL, containing brick, clinker, glass, ceramics, metal and timber.

- 6.2.2 The locations of SL01 and SL02 are shown on the drawing below based on correlating walkover observations with intrusive work and aerial imagery.

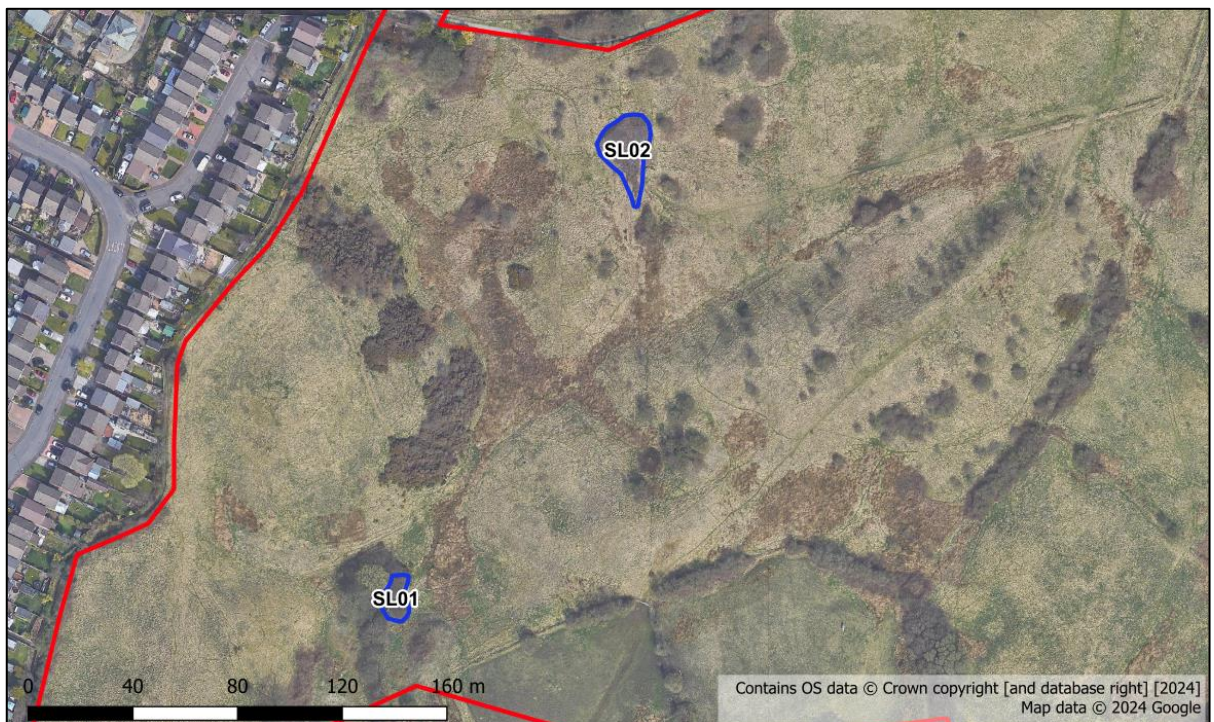


Figure 6-A: Observed extents of SL01 and SL02

- 6.2.3 The below image show surface material within the observed extent of SL01.



Figure 6-B: *Made Ground at surface within SL01*

6.2.4

Within the vicinity of SL02 the extent of the contaminated material can be clearly seen on the surface as shown in the photo below. The lateral extent is approximately 25m x 25m and the vertical extent of the impacted material has not been proven. The surrounding land profile suggests that material may have been placed to fill a hollow and raise levels.



Figure 6-C: *Made Ground at surface within SL02*

6.2.5

The material in both areas should be excavated to its full depth and lateral extent. Excavated material can either be disposed of offsite, or placed beneath soft landscaped areas as non-engineered fill at a depth of >1m bgl as part of the cut/fill scheme. This will effectively break the pathway of non-volatile contaminants to the proposed end users of the site.

- 6.2.6 All excavation works should be supervised by a Consultant, who will provide a watching brief. The location of the hotspots is indicated below, shaded in red.

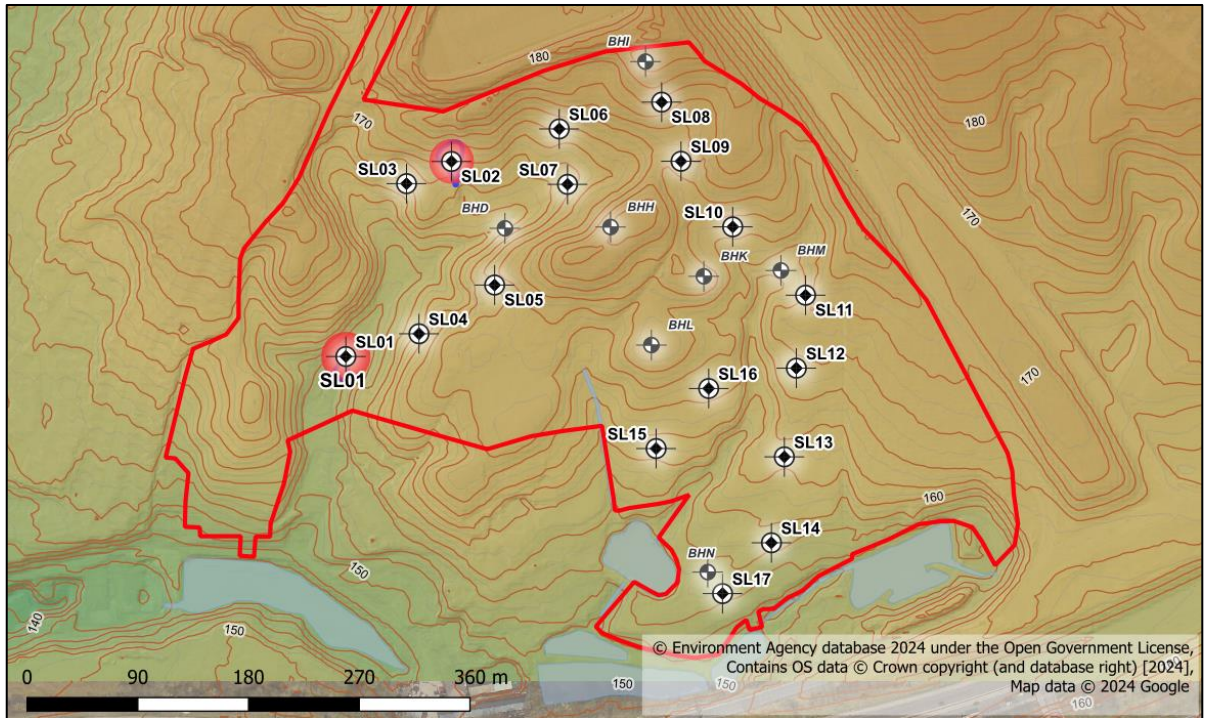


Figure 6-D: Hotspot removal areas (SL01 and SL02)

6.3 Asbestos Control During Removal of Soils

- 6.3.1 The presence of asbestos fibres in the area of SL01 and SL02 will require consideration in the construction phase health and safety plan. Special precautions are likely to be required in these areas, including the adoption of RPE (P3 half masks), the use of decontamination facilities, in combination with localised mechanical dust suppression. Good working practices for working on brownfield sites and for dust mitigation should be adhered to at all times, including;
- Asbestos awareness training.
 - A watching brief during enabling works.
 - A site-specific asbestos awareness briefing as part of the site inductions.
 - Establishing an appropriate action plan in the event of encountering unexpected contamination and suspected asbestos containing materials.
 - Control of material movements to minimise dust generation, for example by reducing drop heights and ensuring buckets are not over-loaded.
 - Excavated materials should be dampened down.
 - Blading or covering short-term stockpiles.
 - Covering or seeding long-term stockpiles.
- 6.3.2 With the exception of asbestos, the risk posed to construction workers from other contaminants in the ground is considered low and providing standard PPE and hygiene protocols are maintained for working on brownfield sites, no further special precautions are required.

- 6.3.3 Further sampling and analysis of asbestos in soils may allow the risk to be refined. Consideration could also be given to the natural dust suppression provided by wet weather, which is likely to be effective give the deposits are exposed and at shallow depth, and chrysotile is a hydrophilic fibre.

6.4 Visual Inspection

- 6.4.1 Visual inspection and record of the hotspot removals should include a daily site diary and photographic record of works undertaken. The records must be included within the validation report.

6.5 Chemical Verification

- 6.5.1 Previous chemical testing results of materials at SL01 and SL02 show the material is chemically suitable to be placed at depth on site.
- 6.5.2 Where further areas of Made Ground are identified and intend to be placed at depth, chemical testing should be undertaken to confirm they are suitable for use. Testing must include a metal suite, PAHs, banded TPH and asbestos and be undertaken at a frequency of 1 sample per 100m³ of material.
- 6.5.3 Given that after the excavation of the impacted Made Ground surrounding soils will likely be excavated as part of the cut/fill scheme, it not considered conducive to take verification samples from the base or sides of the excavation. Chemical verification of insitu material will be completed after the completion of the cut/fill scheme by way of inspection and sampling of cover system materials, as outlined in section 9.

6.6 Waste Records

- 6.6.1 Waste disposal records must be provided to the Consultant for inclusion in the Verification Report to demonstrate the materials have been taken off site to an appropriately licensed facility.

6.7 Placement Records

- 6.7.1 Where the material is placed at depth (>1m bgl) within the cut/fill scheme on site, the contractor must provide a photographic record and location of all impacted materials placed at depth.

6.8 Material Management Protocols

- 6.8.1 All stockpiles should be clearly segregated and labelled.
- 6.8.2 The reuse of Made Ground can be controlled under a Materials Management Plan, providing the material does not pose a risk to health or the environment, is suitable for use, and there is a demonstrable certainty and purpose that the material can be used at the intended volumes.
- 6.8.3 A Materials Management Plan is not appropriate to control the reuse of wastes. Where it is suspected Made Ground has arisen from illegal waste activities or fly tipping on site, a deposit for recovery permit is likely to be required to facilitate reuse.

7 Risk To Drinking Water Pipes

7.1 Water Pipeline Risk Assessment

- 7.1.1 Soiltechnics have completed a United Utilities Risk Assessment (UURA) to inform the chosen pipe on site.
- 7.1.2 Within areas of natural soils no exceedances of contaminants above standard PE pipe thresholds have been encountered.
- 7.1.3 Within areas of deep Made Ground exceedances of PAHs and TPHs have been encountered within materials at pipeline depth. Exceedances are outlined in the UURA included in Appendix D.

7.2 Proposed Remedial Works

- 7.2.1 It is currently proposed to remove the Made Ground materials from the SL01 and SL02 hotspots. Thereby removing the source of contamination within these areas.
- 7.2.2 Extensive cut and fill works are proposed to create the development platform to support the scheme, and elevated levels of contaminants are present sporadically across other areas of Made Ground on site.
- 7.2.3 To mitigate against the risk to drinking water pipes in areas of Made Ground, it is proposed that clean service corridors comprising site won natural soils or imported aggregates are to be installed where Made Ground is present within any service trench excavations, with all arisings being disposed of off-site.

8 Surface Water Monitoring

8.1 General

8.1.1 During the cut and fill enabling works, surface water monitoring of on site springs and off site surface water is required, to ensure that construction works are not causing detrimental impact to surface waters.

8.2 Surface Water Monitoring Locations

8.2.1 As part of the monitoring strategy surface water sampling is required from four on site springs, and three ponds located adjacent to the southern boundary of the site, as shown below.

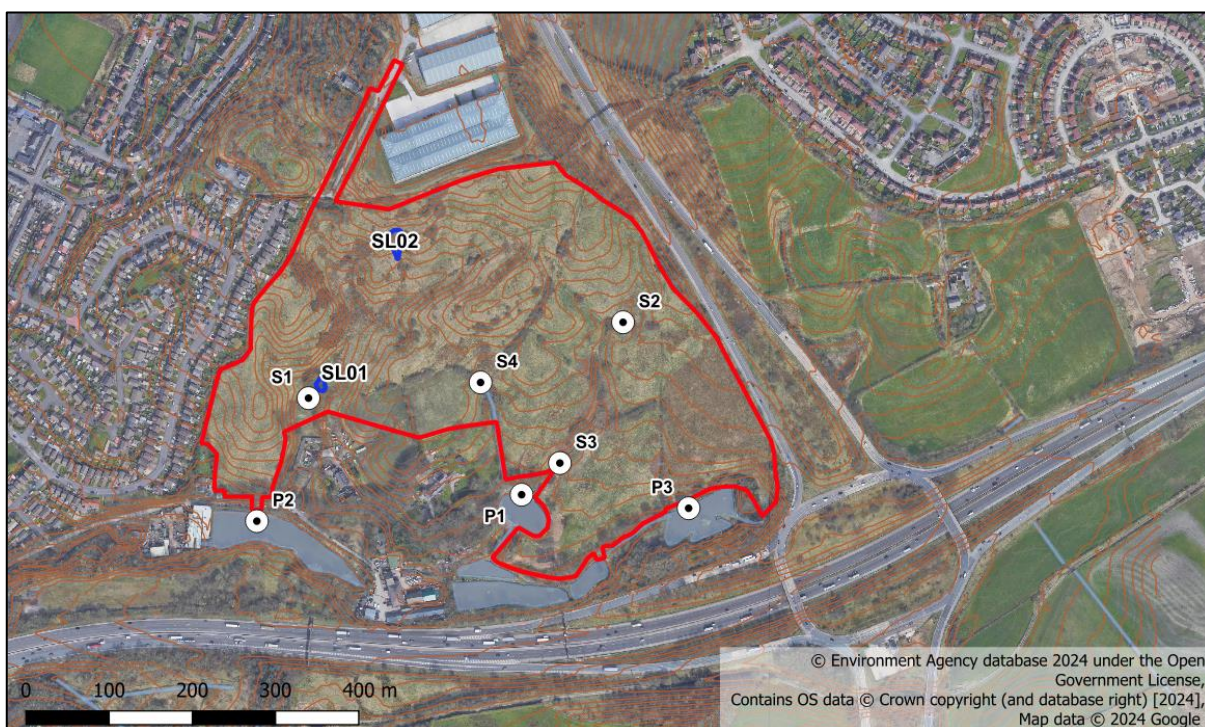


Figure 8-A: Location of surface water samples

8.2.2 The monitoring technician must take all reasonable measures to ensure consistency of spot sampling points. The following table provides additional information on the designated locations.

Ref.	Watercourse	Grid ref.	Comment
P1	Pond	388914, 410087	A record confirming safe access routes and photographs of the sampling must be established upon completion of the first visit.
P2	Pond	389232, 410119	
P3	Pond	389434, 410098	
S1	Spring	388976, 410235	Photographs of each sampling points much be taken on each visit to ensure consistency.
S2	Spring	389353, 410326	
S3	Spring	389277, 410156	
S4	Spring	389183, 410254	

Table 8-A: Surface water sampling points

8.3 Testing Suite

- 8.3.1 The testing suite for long term monitoring is to include a metal and PAH suite, along with suspended solids, pH, electrical conductivity, chemical oxygen demand and alkalinity, which can be generic indicators of surface water contamination. Surface water testing will also include calcium and DOC.

8.4 Monitoring Frequency

- 8.4.1 It is recommended to undertake monthly baseline surface water monitoring ahead of construction works, with a minimum of 2 rounds being undertaken prior to commencement.
- 8.4.2 The construction works comprise a site-wide programme of cut/fill works, followed by a phased piling and construction works scheme. The following monitoring frequency is recommended:
- Piling and earthworks phase: Fortnightly
 - General construction phase: Monthly

8.5 Sampling Methodology

- 8.5.1 Surface water sampling is to be undertaken using grab sampling techniques, using clean equipment.
- 8.5.2 All instruments and monitoring equipment used during the collection of samples will be calibrated prior to use where required. Samples obtained will be sent to independent accredited laboratories, with testing and analysis being undertaken following UKAS/MCERTS accredited procedures. Sampling containers used will be bespoke containers provided by the testing laboratory to ensure sample preservation is maintained.
- 8.5.3 All samples will be couriered to the testing laboratory within 48 hours.

8.6 Risk Assessment & Report Submissions

- 8.6.1 Soiltechnics will undertake a preliminary review of all laboratory and field data on completion of each monitoring round and provide a summary via e-mail to the developer every 3 months.
- 8.6.2 If any significant deterioration of groundwater has been detected, Soiltechnics is to inform the regulator, developer and Principal Contractor immediately, along with providing a report of all pertinent data collated to date.
- 8.6.3 A final groundwater monitoring verification report will be submitted on completion of the groundwater monitoring phase and submitted to the Local Authority.

8.7 Monitoring Summary

- 8.7.1 A summary of the proposed monitoring strategy is presented below.

Aspect	Monitoring Frequency	Reporting
Initial surface water baseline monitoring	2 No. visits	Internal review following every visit. Quarterly summary to the client.
Earthworks and piling phase	Every fortnight	Final verification report to be submitted to the Local Authority upon completion.
Construction works phase	Very month, until completion	

Table 8-B: Monitoring Programme Summary

8.8 Contingency Measures

- 8.8.1 Localised fluctuations in surface water quality may occur during and following significant earthwork and piling operations. In the event of a single significant fall, or a consistent gradual fall in water quality is detected, then Soiltechnics will advise the client to temporarily cease any activities being carried out on site which are considered to be impacting groundwater conditions. Soiltechnics will then liaise with the regulators and establish a strategy for the progression of works to ensure water quality is not compromised.
- 8.8.2 The outcome of deteriorating water quality being detected would be determined on a case specific basis, and could include any of the following:
- No action required.
 - An increase in the monitoring frequency to obtain a better understanding of trends.
 - Establishing further monitoring points to obtain a better resolution of conditions.
 - A full review of construction working practices along with identifying mitigation actions, to be submitted to all stakeholders.
- 8.8.3 Any proposed amendments to the construction or remedial schemes must be submitted to the regulatory and agreed regulators ahead of any works.

9 Soft Landscaping Clean Cover

9.1 Scope

- 9.1.1 Where asbestos impacted materials are excavated and removed off-site, there is no requirement for a remedial clean cover.
- 9.1.2 The placement of asbestos impacted Made Ground at depth (>1m bgl) will effectively require a cover system in overlying soft landscaping areas to break the contaminant pathway to proposed end users.
- 9.1.3 In proposed landscaped areas, soils will require verification to ensure no impacted material has been placed at shallow depth. All soils used within the clean cover system should be inspected and tested to confirm they are chemically and physically suitable for use, in terms of the risk to human health.

9.2 Clean Cover Design

- 9.2.1 At least 1m of suitable materials must overly asbestos impacted materials. The cover system should comprise of topsoil between 150mm and 300mm thick, with the remainder of the cover comprising of loosened subsoil.
- 9.2.2 The cut and fill earthworks for the scheme involves areas of substantial fill, and it is expected this can be accommodated within the cut and fill exercise without the need for a separate remedial action.

9.3 Contractor Requirements

- 9.3.1 The location and depth of any Made Ground placement on site must be clearly documented. This will be verified through the consultant's watching brief during the earthworks.
- 9.3.2 The contractor must also provide records and photographs demonstrating the placement of suitable overlying materials.

9.4 Verification Strategy

- 9.4.1 The placement of Made Ground materials and overlying fill should be verified during the earthworks watching brief and evidenced by a combination of site records, surveys, plans, and photographs.
- 9.4.2 Upon completion of the earthworks, the Consultant must undertake a series of inspection pits to visually inspect, document, sample, and photograph soils to verify at least 1m of cover has been provided.
- 9.4.3 Inspection pits are required for 1 pit in every 5 plots.
- 9.4.4 The inspection pits should demonstrate an adequate thickness of cover, confirm physical suitability, and obtain samples so the chemical suitability can be confirmed through laboratory analysis.
- 9.4.5 Verification must be completed by a competent geoenvironmental consultant, with a record of each visit made for inclusion in the Verification Report

10 Soils and Material Compliance

10.1 Material Sourcing

- 10.1.1 Imported, and site-won materials may be utilised as general fill and/or as topsoil within the cover system and will be done so under a Materials Management Plan.

10.2 Contractor Pre-delivery Compliance Checks

- 10.2.1 The Contractor should confirm the origin of all imported materials and request available chemical testing results from suppliers prior to delivery, to provide confidence of suitability. All associated records should be provided to Soiltechnics ahead of delivery. Materials suitability assessments will be required to confirm the donor site suitability.

10.3 Contractor Requirements Upon Delivery

- 10.3.1 The source and volume of all imported fill and soil materials used in the development must be clearly documented, with records provided for inclusion in the Verification Report.
- 10.3.2 For all imported materials, the Principal Contractor should maintain records sufficient to evidence the following:
- The supplier
 - Material source (address)
 - Material origin (e.g., virgin material, recycled, manufactured)
 - Material type (e.g., topsoil, subsoil, recycled aggregate, 6F2, etc.)
 - The overall volume of each material type imported.
 - Delivery dates.
 - The overall volume of each material type imported, as part of each batch.
 - Inspection records of the materials to confirm the physical, visual, and olfactory suitability of the material, at the following frequencies:
 - **Growing medium:** An inspection of every other delivery of landscaping soil (1 in 2).
 - **Fill materials:** An inspection of each “batch” of fill materials.
- 10.3.3 A ‘batch’, in the context used above can comprise of multiple deliveries from the same source, delivered over consecutive days for a period of no more than one working week.

10.4 Material Suitability Criteria

- 10.4.1 All imported soils and fill material should be inspected and tested to confirm they are chemically and physically suitable for use, in terms of the risks to human health.
- 10.4.2 The physical composition of materials must be free of harmful and injurious artefacts (such as sharps), over-sized materials (such as cobbles and boulders) and show no visual or olfactory evidence of contamination.
- 10.4.3 Materials should also be chemically suitable, with concentrations of contaminants falling within widely recognised and published soil guideline values (such as the C4SLs and S4ULs), with the following models being applied.

- Residential, with plant uptake, at 2.5% SOM, for all landscaping soils.
- Residential, without plant uptake, at 1% SOM, for all general fill soils.

10.4.4 Both asbestos Containing Materials (ACMs) and asbestos fibres are not permitted.

10.5 Unsuitable Materials

10.5.1 If an inspection of a materials proves or suspects it to be unsuitable, the load should be quarantined on site, pending collection or off-site disposal. The Consultant should be notified, and a record made for inclusion into the Verification Report.

10.5.2 Alternatively, the Consultant should undertake an investigation and risk assessment to delineate the areas of impacted soils and/or to identify a possible alternative use for the materials.

10.6 Chemical Verification Strategy

10.6.1 All verification sampling must be undertaken by the Consultant. In addition, an inspection of the soils at the time of sampling must confirm the physical, visual, and olfactory suitability of the material.

10.6.2 The following table summarises the sampling and chemical verification requirements.

Material Type	Sampling Frequency	Sampling Timing	Testing Schedule
Site-won topsoil and subsoil used as landscaping soil.	1 per 250m ³ . Minimum of 3 per source and material type	During or after placement.	
Imported topsoil and subsoils	1 per 100m ³ . Minimum of 3 per source and material type	After importing to site, before, during or after placement. Reassurance compliance testing recommended prior to delivery.	Metals Suite, Cyanide (free and complex) Asbestos screen, PAHs (USEPA 16) Banded TPH
Imported soil fill	1 per 250m ³ , Minimum of 3 per source	After importing to site, before, during or after placement.	
Recycled Aggregate	1 per 500m ³ , Minimum of 2 per batch		
Virgin Quarried Materials	N/A	N/A	N/A

Table 10-A: Verification Sampling Plan

10.6.3 A metals suite must include arsenic, beryllium, boron, cadmium, chromium (total and VI), copper, lead, mercury, nickel, selenium, and zinc.

11 Verification Report

11.1 General Requirements

11.1.1 The verification requirements discussed above should be compiled into a Verification Report, which is to be produced on completion of the remedial works and prior to occupation of the development. The following sets out the general requirements for reporting of the verification works.

11.2 Client / Contractor Requirements

11.2.1 Supporting information will be required from the client and their contractors. This includes the following:

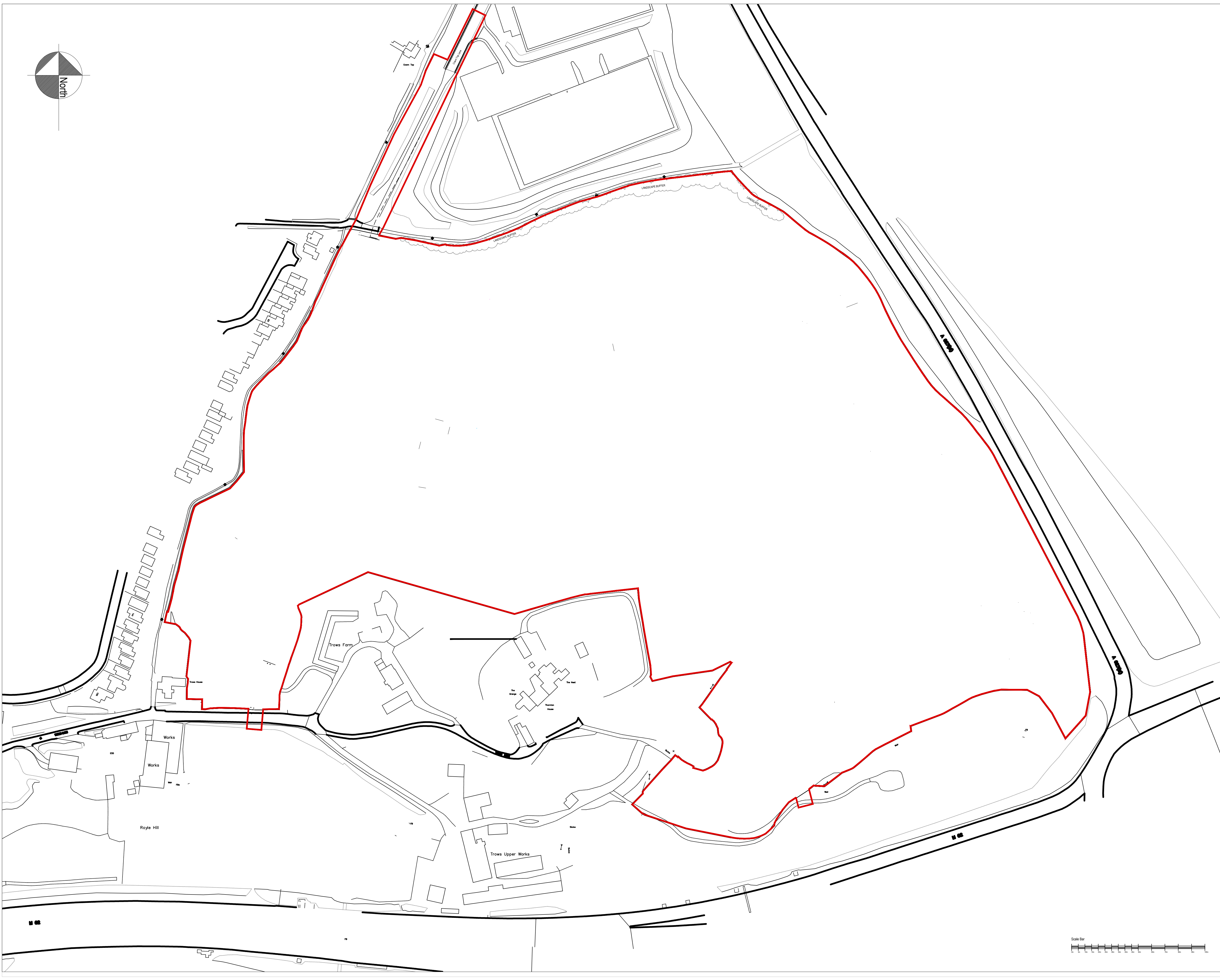
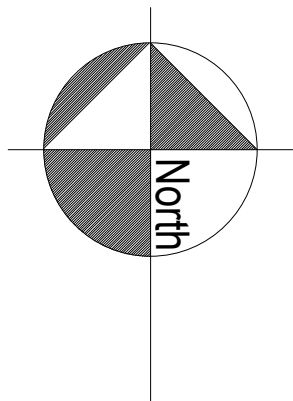
- Appropriate site plans confirming the as-built layout of the site.
- Signed delivery tickets, or an alternative reference system to track imported loads, including a statement on the type and volume of materials imported.
- All waste transfer documentation, including a statement on the type and volume of materials taken off-site.
- Details on any unexpected ground conditions encountered and contingency arrangements that had to be implemented.

11.3 Report Requirements

11.3.1 The Validation Report will include the following, where appropriate:

- A summary of all remedial works undertaken.
- A concise summary of material types, sources and volumes imported.
- Lines of evidence to demonstrate compliant and effective material management, including confirmation of source, volumes and suitability of all imported materials, delivery notes, waste transfer and consignment notes and chemical testing records.
- Site inspection records, including hole location plans, logs of excavations and photographic records as necessary.
- Details of any unexpected or unencountered materials encountered, along with further investigative and remedial action undertaken.
- Details of the hotspot removal works, including site diaries, photographic records, chemical verification testing and location of placement at depth.
- Detailed records of the location, extent and depth of any Made Ground materials reused must be kept.
- Records of verification of cover system.
- Details of the surface water monitoring data, including a summary of the data and discussion of any trends.
- Statements confirming if the remedial objectives have been met, and if the site is suitable for its proposed use.

Appendix A Drawings



WARNING TO HOUSE PURCHASERS
Property Misdescriptions Act 1991

Buyers are warned that this is a working drawing and is not intended to be treated as descriptive material describing, in relation to any particular property or development, any of the specified matters prescribed by any Order made under the above act. The contents of this drawing may be subject to change at any time, and alterations and variations can occur during the progress of the works without revisions of the drawing. Consequently the layout, form, content and dimensions of the finished construction may differ materially from those shown. Nor do the contents of this drawing constitute a contract, part of any contract, or warranty.

 Red Edge Boundary

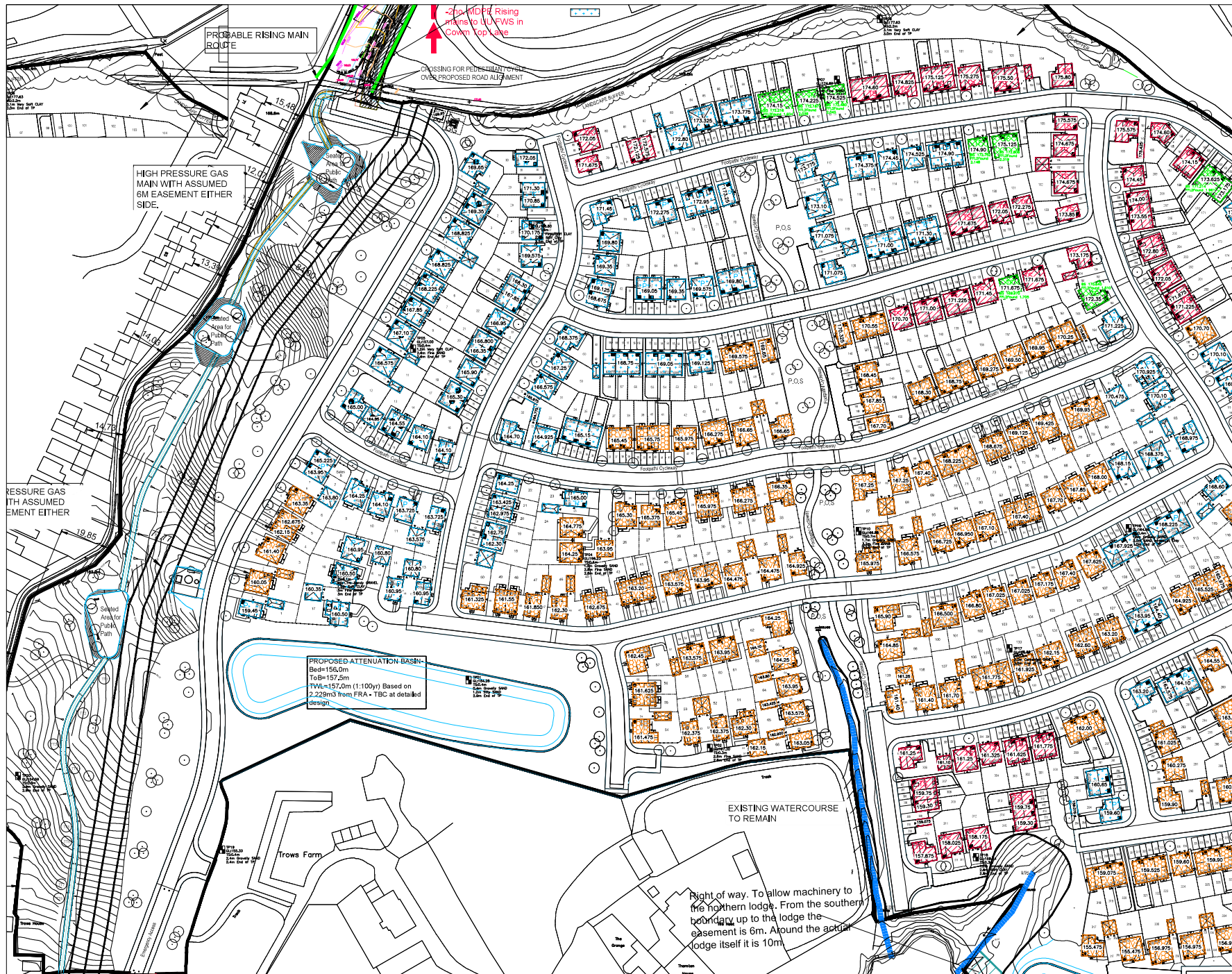
Rev	Description	Amended to I.P.A. Comments	Date	Drawn	Chk'd
04			02.08.22	CL	



**BARRATT
HOMES
MANCHESTER**

Barratt Homes Manchester
(A division of BDW Trading Ltd)
4 Brindley Road
City Park
Manchester
M16 9HQ
Tel: 0161 872 0161
Fax: 0161 855 2828

Job TROWS FARM CASTLETON			
Title LOCATION PLAN			
Design By NC	Date MAR 22	Drawing Number 496 - P - LP - 01	Rev 1



WARNING TO READER: PRELIMINARY
 This is a preliminary drawing and is not intended to be used for construction. It is the responsibility of the client to ensure that the design is suitable for the intended use and that all necessary permissions are obtained. The design is subject to change without notice. The client is advised to seek professional advice before using this drawing for any purpose.

Please note the foundations shown are just an indication. The type of foundation could alter, subject to detail design.

A. Issued for Foundations to inform preliminary construction and after approval of design by the client. Valid until 1st Dec 2021.

100% Foundation Plan
 Sheet 1 of 1

BARRATT HOMES
 MANCHESTER
 Barratt Homes Manchester
 A Division of BHR Trading Ltd
 4 Brindley Road
 City Park
 Manchester
 M16 9SD
 Tel: 0161 555 8800
 Fax: 0161 555 8800

Job: Cowm Top Castle Road
 Drawing Number: 496/ED/05
 Date: August 2021
 Scale: 1:500
 Author: LB
 Check: LB
 Draw: LB
 Rev: A

Please note the foundations shown are just an indication. The type of foundation could alter, subject to detail design.

	Traditional Strip Bearing on Natural Clay: to an allowable bearing pressure of 100Khsf. Approx. minimum depth of 1.50m from FFL for medium volume charge potential.
	Trench Fill Bearing on Natural Clay: to an allowable bearing pressure of 100Khsf. FFL2'ound depth specified.
	Pile & Ground Beam
	Vibro Pile - Re-inforced strip footings: situated on vibro improved ground. See Structural Engineers specialist - vibro design. Approx. minimum depth of 0.70m from FFL

Right of way. To allow machinery to the northern lodge. From the southern boundary up to the lodge the easement is 6m. Around the actual lodge itself it is 10m.

**PROPOSED
ATTENUATION BASIN-**
Bed=153.30m
ToB=165.80m
TWL=154.50m (1:100yr)
Based on 2590m³ - TBC
at detailed design stage

Potential 5m
easement / right of
way for last lodge.

PROPOSED EASTERN OUTFALL
Proposed new SW outfall
route and associated 8 metre
easement to existing
reservoir. Flow-rates to be
agreed with LLFA/EA.
*RISK - THROUGH THIRD
PARTY LAND- LAND DEPT TO
ADVISE

EXISTING FISHING
LODGEWATER-COURSE

A	Updated Foundations to latest preliminary contamination and geo-technical assessment by smith grant date Feb 2021.	Oct 2022	LS
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BARRATT
HOMES

MANCHESTER
Barratt Homes Manchester
(A division of BDM Trading Ltd)
4 Brindley Road
City Park
Manchester
M16 9HQ
Tel: 0161 872 0161
Fax: 0161 855 2828

Job
Crown Top,
Castleton
Rochdale

Title	Preliminary Foundation Plan Sheet 2
-------	--

Design By LB	Date August 2022	Drawing Number 496/ED/06	Rev A
CAD By LB	Scale (if A) 1:500		



Key

-  SL Topsoil sample locations
-  Extents of Made Ground mapped by Soiltechnics Ltd
-  Cadent HP Gas Main with 6m easement buffer

Notes

- Base drawing provided by Client.
- Exploratory locations are approximate.

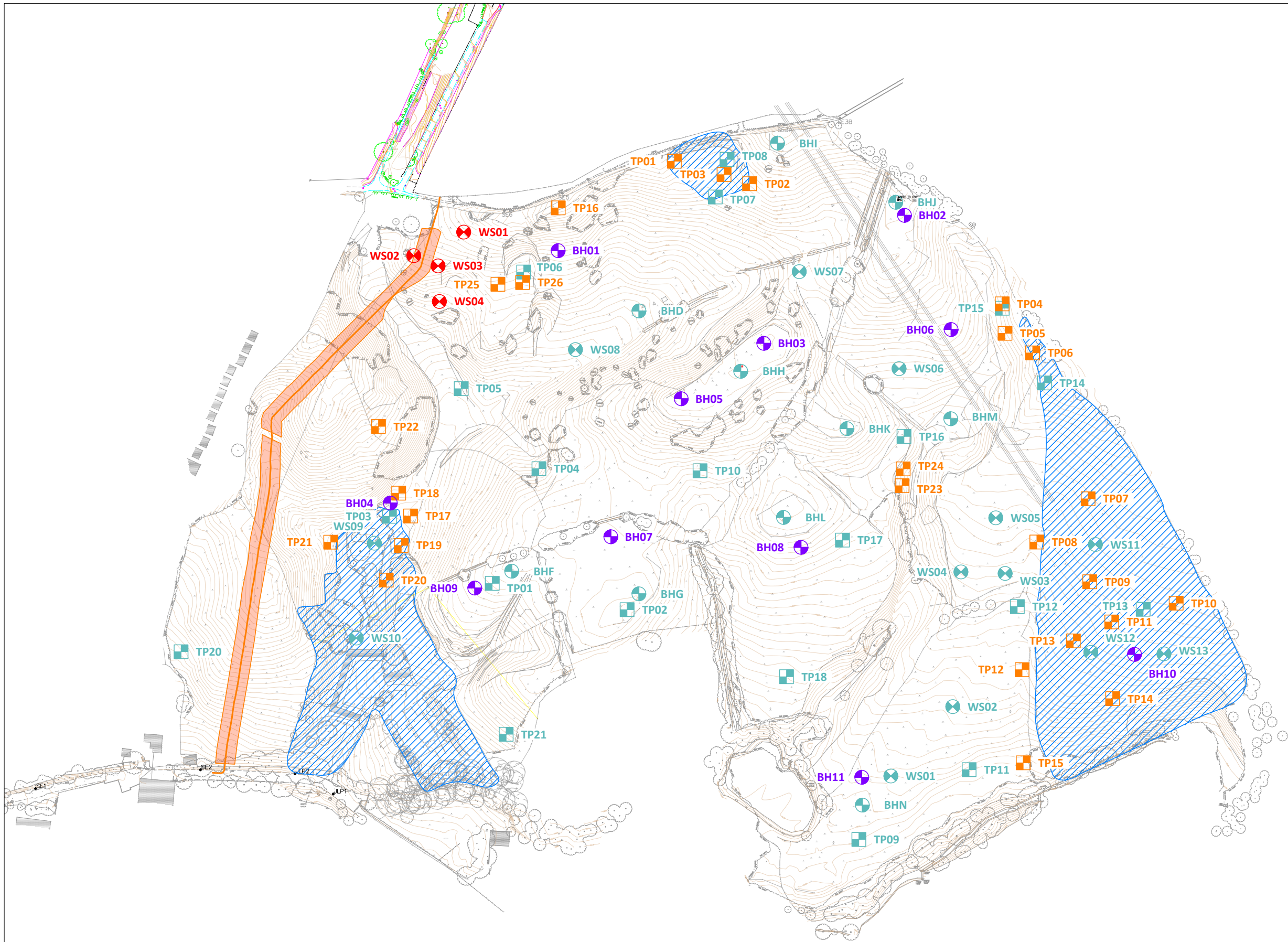
A	First issue	KD	03.07.2024
REV	DESCRIPTION	PREP	DATE

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Cown Top, Rochdale

TITLE
Shallow Soil Sampling Location Plan

DRAWING NO. STV5936-D01B-A	SCALE AT A3 1:2500
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Key

-  **BH** Cable percussive borehole (completed by Soiltechnics in July 2024)
-  **WS** Windowless sampling borehole (completed by Soiltechnics in July 2024)
-  **TP** Mechanically excavated trial pit completed by Soiltechnics in July 2024
-  **BH** Cable percussive borehole (undertaken by Smith Grant LLP, July 2017)
-  **WS** Windowless sampling borehole (undertaken by Smith Grant LLP, July 2017)
-  **TP** Mechanically excavated trial pits (undertaken by Smith Grant LLP, July 2017)
-  Extents of Made Ground mapped by Soiltechnics Ltd
-  Cadent HP Gas Main with 6m easement buffer

Notes

- Base drawing provided by Client.
- Exploratory locations are approximate.

A	First issue	KD	03.07.2024
REV	DESCRIPTION	PREP	DATE

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Cown Top, Rochdale

TITLE
Exploratory hole plan (current layout)

DRAWING NO. STV5936-D01A-A	SCALE AT A3 1:2500
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Appendix B Discovery Strategy

Contamination Discovery Strategy: Procedure

1 General

- 1.1 With the development of any site, there is a residual risk of contamination being found that is unexpected or has not previously been identified.
- 1.2 As a precaution, the Principal Contractor should adopt this Discovery Strategy for dealing with unexpected contamination or encountering underground storage tanks.
- 1.3 The Principal Contractor should also ensure it is distributed and communicated appropriately to all relevant ground workers.

2 Step 1: Halting Works & Consultant Notification

- 2.1 Should any previously unidentified contamination be encountered, works should be made safe then temporarily halted in the affected area, and Soiltechnics (The Consultant) informed within 24hrs.
- 2.2 If, due to site constraints, the contaminated materials need to be excavated prior to being assessed, the Contactor should segregate the material as best as is reasonably practicable, based upon visual and olfactory observations. The contaminated materials should then be stockpiled on an impermeable surface and covered with impermeable sheeting.

3 Step 2: Initial Assessment & Regulatory Notification

- 3.1 The Consultant must liaise with the contractor and undertake an initial assessment within 48 hours of notification to determine if the event qualifies as ‘potentially significant unexpected contamination’.
- 3.2 Where the initial assessment does not consider the contamination to be potentially significant and unexpected, works can recommence.
- 3.3 The Planning Authority and Pollution Regulatory Team must be contacted within 2 working days if the contamination poses a significant risk to health.

4 Step 3: Contamination Assessment and Remedial Strategy

- 4.1 Where *potentially significant unexpected contamination* is confirmed, the Consultant must produce a Discovery Event Report which includes a description and risk assessment of the contamination.
- 4.2 A phase of intrusive investigation works may be required to inform the risk assessment.
- 4.3 Where remediation is required, the report must include a remedial and verification strategy..
- 4.4 Within 24 hours of completion, the Discovery Event Report must be provided to the Local Authority for their approval, and a copy held for appending to the project Verification Report.

5 Step 4: Recommencement and Implementation

- 5.1 Works can only recommence upon specific instruction from the Consultant and once the Discovery Event Report has been submitted to the Local Authority.
- 5.2 All remedial works must be implemented and verified in full. The event-specific Verification Report (if required) must be submitted to the Local Authority for approval.

Contamination Discovery Strategy: Contractor Site Guide

Discovery Event

- Previously unidentified contamination is encountered.
- This includes encountering underground storage tanks (UST).

Halt Works in Area

- Make the area safe.
- Halt works in the affected area.
- Stockpile any contaminated arisings on an impermeable surface and cover with impermeable sheeting.
- Works to recommence only upon instruction from the Consultant (Soiltechnics Ltd).

Inform the Consultant

- Contact Soiltechnics (the Consultant) within 24 hours.
- Tel: 01604 781 877
- E-mail: enquiries@soiltechnics.net

Assessment

- An initial assessment must be carried out by Soiltechnics to determine the appropriate course of action.
- A detailed assessment and a sampling exercise may be required.
- Approval from the Local Authority may be required.

Remediation

- Remedial work may be required.
- In some instances, remediation will have to be completed before works in the area can recommence. In this case, the Local Authority will require submission and approval of a Verification Report prior to commencement.

Appendix C Hotspot Discovery and Removal

‘Hot-Spot’ Discovery And Removal: Procedure

1 General

- 1.1 For unexpected contamination to be treated as a hot-spot, it must satisfy the following circumstances.
- 1.2 A discovery event has been triggered and Soiltechnics have been notified within the stipulated timeframes.
- 1.3 The suspected contamination is thought to be localised.
- 1.4 The bulk excavation and removal of materials is assessed by Soiltechnics to be a practicable and sustainable method of remediation.
- 1.5 Both the Local Authority Planning Authority and Pollution Regulatory Team has been notified of the above, in accordance with the Discovery Strategy.
- 1.6 Where all of the above criteria are met and can be demonstrated, the presumption of regulator pre-approval can be given to the hot-spot removal strategy outlined below, and the remedial works can commence without the delay which would otherwise be caused through the drafting of a bespoke remedial strategy and undergoing regulatory the consultation process.
- 1.7 Where any of the activities listed overleaf cannot be carried out, the works should be halted, the remedial works reassessed, and the regulator consulted to obtain their approval.

2 Step 1: Removal and Delineation

- 2.1 All delineation and bulk removal works must be supervised by the consultant.
- 2.2 Sufficient field delineation must be achievable through visual and olfactory observations.
- 2.3 Delineation works confirm the area and volume of material to be localised within the identified area.
- 2.4 Delineation works show the hotspot terminates within the confines of the site boundary and does not adversely impact offsite receptors.

3 Step 2: Field Verification

- 3.1 The consultant must supervise the hotspot excavation and take a photographic and written record of works undertaken.

4 Step 3: Chemical Verification

- 4.1 The consultant must take soil samples of the remaining in-situ soils for verification purposes. The samples must be tested against contaminants of concern and screened against the chemical criteria outlined in this report.
- 4.2 Sampling and testing must include one sample from each pit wall, and two samples from the base, with additional side-wall and base samples obtained for every 10 linear meters

5 Step 4: Disposal Records/Placement At Depth

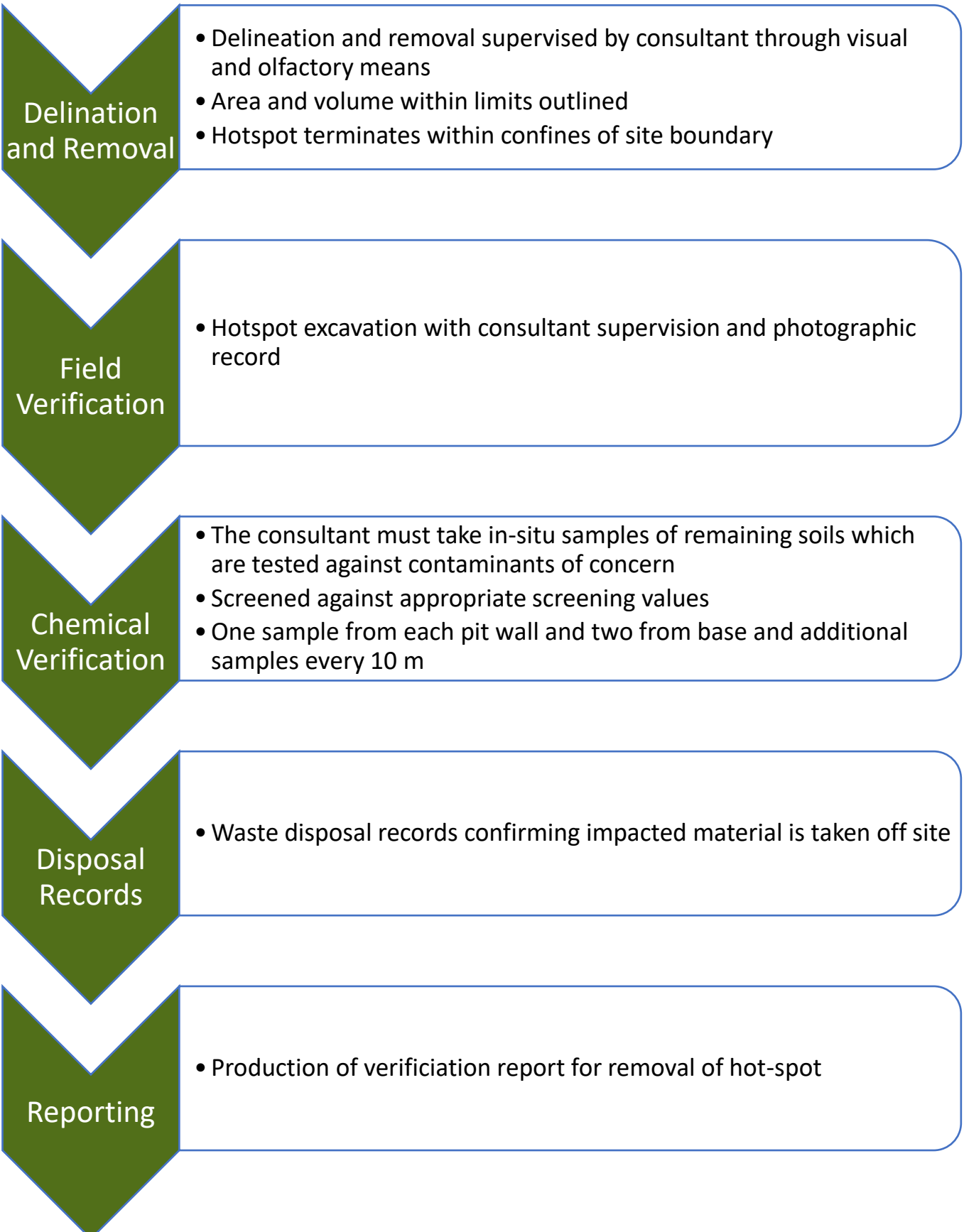
- 5.1 Where material requires stockpiling prior to disposal, the stockpile should be clearly segregated and labelled.
- 5.2 The contractor must supply signed waste transfer tickets to confirm location of disposal for impacted material excavated from hotspot area.

- 5.3 Where the material is to be placed at depth (>1m bgl) within the cut/fill scheme on site, chemical testing should be undertaken to confirm its suitability for reuse. Testing must include a metal suite, PAHs, banded TPH and asbestos and be undertaken at a frequency of 1 sample per 250m³ of material.
- 5.4 The contractor should provide a photographic record and location of all impacted materials placed at depth on site.

6 Step 5: Verification Reporting

- 6.1 A contamination event verification report must be produced, collating all necessary lines of evidence to demonstrate the safe and suitable remediation of the hotspot. This should be appended to the project Verification Report on completion.

Hot-Spot Delineation, Removal and Validation: Contractor Site Guide



Appendix D Unite 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.

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.

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

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 (if it has one)	Cowm Top
Development address	Trows Lane, Rochdale OL11 2UF
OS Grid reference (mid point)	389016 410134
Developer's name	Barratt Homes Manchester
UUW reference number (for UU use only)	
Please provide details below of the current and historical use of the site and adjacent sites. If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report. The site comprises a disused parcel of land known as 'Cowm Top', in Castleton, on the south-western outskirts of Rochdale. The site comprises agricultural land, formerly used as land for grazing, covered in grassland, heath and scrub. The site generally slopes from the highest point within the northeast corner (~183m AOD) towards the southwest adjacent to Trows Lane (~148m AOD). Within the site, surface levels have extensive undulations, with 2 No. prominent valleys, varying by up to 10-15m in height in areas. Earliest historical mapping circa late 1800s to early 1900s indicates the site is divided into parcels of agricultural land, with Trows Farm to the south. The Mill Pond Reservoir can be seen to the south of the site at this time. The site has remained undedveloped and releatively unchanged since then. Surrounding land uses throughout the recorded site history include sand pits, works, residential units, allotment gardens, gravel pits and industrial warehouses	
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. If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report. N/A	

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>0</td><td>1</td> <td>0</td><td>6</td> <td>2</td><td>0</td><td>1</td><td>6</td> </tr> <tr> <td>0</td><td>1</td> <td>0</td><td>2</td> <td>2</td><td>0</td><td>2</td><td>1</td> </tr> <tr> <td>1</td><td>5</td> <td>0</td><td>7</td> <td>2</td><td>0</td><td>2</td><td>4</td> </tr> </table>	0	1	0	6	2	0	1	6	0	1	0	2	2	0	2	1	1	5	0	7	2	0	2	4
0	1	0	6	2	0	1	6																		
0	1	0	2	2	0	2	1																		
1	5	0	7	2	0	2	4																		
At what level has groundwater been encountered?	☒ at surface ☐ 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>																									
Testing has not been completed for the following contaminants as the desk study and ground investigation did not identify any sources of contamination: VOCs and SVOCs Esters Nitrobenzenes Ketones Aldehydes Amines																									
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>																									
The site is greenfield with limited development throughout its history. The majority of the site consists of natural soils at pipeline depth. However, localised areas of Made Ground are present associated with improving conditions on alluvial valleys and smaller areas of illegal waste tipping. Exceedances of PE criteria are shown in the localised Made Ground soils. No odours, sheens or free product were encountered in soils or groundwater at these locations or elsewhere on site. Made Ground in the SL01 and SL02 areas are to be removed. Clean service corridors are to be installed in any other areas of Made Ground remaining.																									
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>																									
No remediation has yet been completed on site.																									
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>																									
A remediation strategy is in place for the site and proposed remediation is as follows: Prepare a discovery strategy in the event of encountering unexpected or previously unencountered contamination. Removal of impacted asbestos containing topsoil within the vicinity of SL01 and SL02 and verification of its removal. Clean service corridors where Made Ground is to remain in-situ within 1.50m of surface.																									

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.

Development proposals are for the construction of 445no. residential units and therefore it is not anticipated that any storage of chemicals or fuels will take place on site.

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): x

Section 6: Additional information

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

During the development of the site the contractor will have a contamination discovery strategy in place and Soiltechnics will be contact if any unexpected contamination is encountered. If contamination is encountered at pipeline depth Soiltechnics will review the the pipe selection.

Section 7: Risk assessor

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

Mark Hamill BSc, MSc, CEnv, MEnvSc

Name and address of risk assessor's company

Soiltechnics Ltd
Cedar Barn White Lodge, Walgrave NN6 9PY

Date risk assessment performed

2 5 0 3 2 0 2 5

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

Mark Hamill

Company

Soiltechnics Ltd (17/03/2025)

Telephone

075339 855 226

Date

25 03 M M Y Y Y Y

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	0.1	Y	2.41	2.41	SL01, SL02, and TP08 (2017)
Total BTEX & MTBE		0.1	Pass	N/A	N/A	N/A	N/A	N/A
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	N/A	N/A	N/A	N/A	N/A
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	1.0	Y	12	12	TP19 up to 1.05m and SL01
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	1.0	Y	95	95	TP07,TP08,TP19 to 1m, TP08
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	1.0	Y	1600	1600	SL01 and SL02 only
Phenols* (from SVOC analysis)		2	Pass	0.1	Y	7.7	7.7	SL02 only
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	N/A	N/A	N/A	N/A	N/A
Ethers*	Only where identified	0.5	Pass	N/A	N/A	N/A	N/A	N/A
Nitrobenzene*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Ketones*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Aldehydes*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Amines		Fail	Pass	N/A	N/A	N/A	N/A	N/A
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	N/A	N/A	N/A	N/A	N/A

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.