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REMEDIATION STRATEGY HARESHILL ROAD, SOUTH HEYWOOD

1. BACKGROUND

E3P has been instructed by Northstone (the Client) to develop a remediation strategy for the proposed scheme to construct low-rise residential development with associated gardens, estate roads and infrastructure on a parcel of land located northeast of Harehill Road, South Heywood, herein referred to as the site.

The development of the risk management strategy for the subject sites includes the following tasks:

- ✦ Identification of the relevant pollutant linkages;
- ✦ Review of site characteristics;
- ✦ Development of remedial objectives;
- ✦ Selection of appropriate remedial technology; and,
- ✦ Development of a remedial strategy.

1.1. PREVIOUS WORK0020S

The following phases of desk study have previously been carried out at the site:

- ✦ **E3P** – Phase I Geoenvironmental Site Assessment South Heywood Development Area. Report Ref. 11-094-R1-1, dated November 2016 Prepared for Russel Homes

The following phases of Geoenvironmental investigations and assessments have previously been carried out at the site:

- ✦ **E3P** – Phase II Geoenvironmental Site Assessment Phase 3 – South Heywood Development Area. Ref: 13-222-R1-1, dated July 2019, Prepared for Russel Homes
- ✦ **E3P** – Ground Gas Addendum Report Phase 3 – South Heywood Development Area. Ref: 13-222-R2-1 dated July 2020, Prepared for Russel Homes
- ✦ **E3P** – Supplementary Ground Investigation Phase 3 – South Heywood Development Area. Ref: 13-222-L1-1 dated October 2021, Prepared for Russel Homes
- ✦ **E3P** – Phase I and II Geoenvironmental Site Assessment Harehill Road, South Heywood. Ref: 18-435-R1 -1 dated September 2025, Prepared for Northstone.



To inform the assessment of potential risk to contaminated land within the context of the proposed residential development and the preparation of the remediation strategy, the pertinent points from the above Geoenvironmental Investigation reports are summarised in Section 1.2 below.

For the avoidance of any doubt, the E3P Geoenvironmental Site Investigation Reports should be read both as a precursor to and in conjunction with this document.

1.2. REDEVELOPMENT PLAN

Northstone intends to construct a low-rise residential development with associated gardens, estate roads, and infrastructure. Drawing 18-435-002 (Appendix II) identified the proposed development layout.

A snapshot of the proposed development layout is indicated in Figure 1.1.

Figure 1.1 Proposed Development Layout



1.3. SUMMARY OF PARTIES INVOLVED

Function/Interest	Name of Party
Local Planning Authority	Rochdale Borough Council
Developer	Northstone
Geoenvironmental Consultant	E3P
Main Contractor	Northstone
Remediation/Enabling Works Contractor	TBC



Human Health Regulator	Rochdale Borough Council
Controlled Waters and Waste Regulator	Environment Agency
Highways Adoption Authority	Rochdale Borough Council

1.4. SITE SUMMARY

Table 1.1 Site Summary

Site Address	Land off Hareshill Road, South Heywood, OL10 2TP	
Proposed Development	Northstone proposes to a low-rise residential development with associated gardens, estate roads and infrastructure.	
Occupancy/Use	The subject site is an irregularly shaped parcel of land located off Hareshill Road in Heywood. The Phase 3 development area comprises undeveloped agricultural fields used for livestock pasture. Farming buildings, which previously occupied the southwest of the site, have subsequently been demolished to ground level. Floor slabs, wall remnants and below-ground structures are present. Foundations of the existing buildings likely remain. An overgrown spoil mound is present to the north of the former farm buildings, which may be associated with the demolition. Evidence of a water-filled slurry drain was observed. It is unknown whether this leads to a slurry tank or whether this was historically pumped out. No other structures are present within the site boundary.	
Environmental Setting	Drift Geology	Glacial Till – SAND, CLAY and GRAVEL.
	Bedrock Geology	Pennine Lower Coal Measures Formation – MUDSTONE, SILTSTONE, SANDSTONE
	Hydrogeology	Superficial deposits – Secondary (undifferentiated) Aquifer. Bedrock – Secondary A Aquifer. No groundwater abstraction points are located within 1km of the site.
	Hydrology	An unnamed water course/drainage ditch is present circa 50 m south of the site. Whittle Brook is located approximately 325 m to the southeast.
	Flood Risk	Flood Zone 1 – Unaffected by flooding from rivers.
Site History	Historical mapping suggests the site has largely remained undeveloped agricultural land. Hares Hill Farm is recorded in the southwest of the site from the earliest available mapping. The farm buildings were demolished in 2021.	
Landfill Sites and Waste Sites	There are no historical or authorised landfill sites within 500 m of the site. The Envirocheck Report identified Hareshill Farm Equestrian Centre off Hareshill Road (located circa 330 m west), as a licensed Waste Management Facility that has been operational since 2012. The facility operated a Deposit for Recovery Environmental Permit, which remains active.	



Radon	A site-specific radon report has been obtained for the site, which indicates that the majority of the site falls within an area where less than 1% of properties are above the action level and therefore no radon protection measures would be required. However, a strip of land inside the western boundary falls within an area where between 3 and 5% of properties are at or above the action level, and development plots within this area will require basic radon protection measures, as presented on Drawing 18-435-032.
Ground Conditions	Made Ground: Made Ground was encountered in two distinct types. During the supplementary investigation beneath the former far buildings, Made Ground deposits were encountered in all exploratory hole locations to depths of between 0.20 m and 1.10 m bgl. Made Ground deposits were noted to comprise brown gravelly fine to medium sand or brown/black sandy gravel with brick, concrete, sandstone, ash and clinker. Cobbles of brick and concrete were noted. Across the remaining site area, Made Ground comprised reworked topsoil deposits comprising soft brown slightly gravelly sandy clay with gravel of wood and sandstone. The reworked topsoil was encountered to depths of between 0.20 m – 0.30 m bgl. Drift Deposits: The majority of exploratory hole locations were underlain by cohesive superficial deposits between 0.30 m and 4.00 m bgl, comprising firm medium strength to stiff high strength orange brown slightly gravelly sandy CLAY with gravel of sandstone and mudstone and cobbles of mudstone. Sand deposits were identified in localised lenses across the site between 0.30 m and 2.20 m bgl and generally comprised medium dense orange clayey fine to medium SAND. Several exploratory holes were also underlain by orange sandy GRAVEL of sandstone and mudstone between 0.80 and 5.70 m bgl. Soft low strength CLAY was identified in TP209 between 0.70 m and 1.10 m bgl. Very soft silty CLAY was also encountered in WS101 at 1.00 m bgl in the location of the former pond. Bedrock: The bedrock geology was encountered between 1.40 m and 30.00 m bgl. The bedrock comprised interbedded SANDSTONE and MUDSTONE with coal traces. The depth to bedrock generally increased from west to east. During the supplementary investigation, bedrock geology was encountered in TP204 – TP210 and was encountered as a weathered SANDSTONE GRAVEL, which was recovered as a granular material within the base of the excavations, to depths of between 1.00 – 3.20 m bgl. Weathered MUDSTONE was encountered in TP204 between 2.00 – 3.20 m bgl. Groundwater: No groundwater strikes encountered.



2. CONTAMINATION RISK ASSESSMENT

2.1. BACKGROUND

E3P has completed a Tier 2 Qualitative Contaminated Land Risk Assessment to determine the potential risk to human health, controlled waters, and the wider environment.

This assessment is documented in full within the E3P Geoenvironmental Site Assessment report, and for clarity, is summarised in the following sections of this document.

2.2. HUMAN HEALTH RISK SUMMARY

Exceedances for non-volatile PAH compounds were identified within the shallow Made Ground deposits in the vicinity of the former farm buildings at depths of between 0.30 - 0.50 m bgl.

All of the identified elevated concentrations have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with the elevated concentrations of non-volatile PAH compounds can be mitigated through the installation of a suitable cover system where Made Ground remains in proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils. The location of the plots requiring cover systems is presented on Drawing 18-435-033.

A watching brief should be completed during remediation works to monitor the locations where visual or olfactory hydrocarbon impact has been identified in TP201.

No specific clean cover to mitigate risk from contaminants is required in the greenfield area of the site, however the NHBC will require the construction of gardens with a suitable growing medium that comprises as a minimum 150mm topsoil over 150mm sub-soil.

Topsoil deposits are reworked; however, initial chemical testing suggests that the topsoil may be suitable for re-use following screening and further chemical analysis to meet the required sampling frequency.

Visual/Olfactory Evidence of Contamination

A mild hydrocarbon odour was noted in TP201 to 0.80 m bgl where a fast water ingress was noted. A mild hydrocarbon odour was also noted in TP208 between 0.20 m and 0.70 m bgl.

Isolated pieces of cement bound roof/cladding sheeting were identified on the surface, in the area of the former farm buildings, during the recent site visit, which may potentially contain asbestos fibres.

2.3. CONTROLLED WATERS RISK SUMMARY

In the absence of any significant sources, viable receptors and complete pollutant linkage, the site is considered to pose a low risk to controlled waters.

2.4. HAZARDOUS GROUND GAS

There is no viable source of persistent ground gas, and the site can be classified as Characteristic Situation 1 (CS1) under BS 8485, meaning no specific ground gas protection measures are required.



Remediation Strategy Letter

Hareshill Road, South Heywood

November 2025

However, basic radon mitigation measures will be required for all proposed plots located along the western boundary of the site within an area where between 3% and 5% of homes are above the Action Level, as indicated in Drawing 18-435-033 in Appendix II.



3. SITE REMEDIATION AND ENABLING WORKS

3.1. SUMMARY OF REMEDIATION OPTIONS

It is considered that the following combination of remediation technologies provides the most sustainable, viable and economic solutions that will ultimately result in the successful remediation for the site(s):

- ✳ Installation of a suitable **cover system** in proposed landscaping, and public open space to remove any potential for direct exposure to impacted soils in selected plots, as shown on Drawing 18-435-033.
- ✳ Construction of **appropriate potable water supply** infrastructure
- ✳ Installation of **specialist membranes and mitigation measures** in selected plots to ensure no ingress of radon gas into a dwelling, as shown on Drawing 18-435-033..

3.2. OVERVIEW OF WORKS

Prior to the commencement of works on-site, the contractor must establish all necessary plant, equipment, and site welfare facilities as is necessary to complete the contract within the agreed timescales to the rationale as outlined in the following subsections.

For the avoidance of any doubt, the proposed operations as set out herein document the required performance objectives and validation sampling protocols; however, the specific methods of work deployed to ensure the remediation objectives are achieved in a compliant manner on-site will be the responsibility of the appointed contractor.

RE-1 – SITE CLEARANCE OPERATIONS

General site clearance and provision of welfare, offices and site security are to be determined as per the contract requirements.

An area of hardstanding is present in the southwest of the site where the former farm buildings were located. All associated hardstanding, wall remnants and likely below-ground structures will require demolition and removal.

Vegetation material should be removed in a controlled manner with full compliance with any ecological mitigation measures that are required for the works. Any such measures are outside the scope of this report.

All vegetation should either be stockpiled at a pre-agreed location or alternatively removed from site in accordance with waste permitting regulations.

All root networks are to be removed from beneath the building footprint.



RE-2 – EXCAVATION, BREAKING AND PROCESSING OF ALL ABOVE- AND BELOW-GROUND STRUCTURES

Obstructions, relic foundations, and infrastructure (apart from live services) are to be removed from the areas of proposed development, including where no foundations and infrastructure are proposed.

It will be the contractor's responsibility to remove all obstructions from the sites.

Obstructions encountered within the near-surface soils will be chased to their full depth and removed; if this is not possible, the obstruction must be surveyed, with the location communicated to E3P, the client, and the developer.

Where natural soils are present at a relatively shallow depth, extreme care should be taken to ensure that the natural cohesive deposits remain undisturbed, with a full reduced-level survey completed to map the depth of filled/processed material.

RE-3– PREPARATION OF PRIVATE GARDENS AND LANDSCAPED AREAS FOR COVER SYSTEM

As part of the land remediation works, private gardens and landscaped areas will be prepared in a manner that will facilitate the placement of the clean cover system during the development phase of the works. The preparation of the areas requiring clean cover is critical in ensuring delivery of the site in a manner that will ensure no risk to the proposed end users.

Where Made Ground is deemed unsuitable for retention in a landscaped area, the area will be subject to a reduced-level dig to remove unsuitable material to a minimum depth of 600 mm below finished landscaped area level or verified natural stratum (whichever is the shallower). The installation of a clean cover system should be placed within these areas, comprising 150 mm topsoil over 450 mm subsoil. Plots requiring a cover system are shown on Drawing 18-435-033 (Appendix II).

Excavated soil will be stockpiled pending the results of the appropriate validation testing (to be completed in accordance with this specification) prior to reuse in an area of no sensitivity or, where necessary, this material will be removed from site in accordance with UK waste management legislation.

Within the greenfield area of the site, no specific clean cover system will be required; however, the placement of a suitable growing medium comprising 150 mm topsoil over 150 mm subsoil.

The placement of certified subsoil and topsoil will be completed as part of the developer's works/build-phase mitigation plan.

All landscaped areas where a cover system is required will be subject to independent validation.



RE-4 – PROVISION OF SUBSOIL

The shallow natural drift deposits (cohesive and granular soils) present on the site have indicated they are suitable for use as subsoils within the clean cover system.

Subsoil (site-won and imported) will require testing in line with the schedule present within Section 3.3 and Table 3.1.

The landscaped areas will require depth validation to satisfy the requirement of the Council of Mortgage Lenders (CML) in order to demonstrate that the appropriate thickness has been provided as a growing medium.

RE-5 – RECOVERY OF TOPSOIL

Topsoil deposits across the site are reworked, however initial chemical testing suggests that the topsoil may be suitable for re-use following screening and further chemical analysis. The contractor should seek to maximise the recovery of this material to promote sustainable construction through careful segregation and subsequent stockpiling of natural soils.

All recovered topsoil should be covered with a suitable geotextile to limit cross-contamination from anthropogenic elements during remediation, enabling and construction. This will significantly contribute to maximising the recovery and reuse of material.

Careful management of organic topsoil is required; with topsoil carefully stripped on-site to ensure sustainable reuse. All materials will be subject to validation testing by the supervising consultant in accordance with the testing specification set out herein.

If further topsoil is required there will be a need to import. Topsoil will require testing in line with the schedule present within Table 3.1 and 7.2.

The landscaped areas will require depth validation to satisfy the requirements of the CML in order to demonstrate that the appropriate thickness has been provided as a growing medium.

RE-6 – MANAGEMENT OF INVASIVE PLANTS

Invasive plant species have been identified on-site. The remediation contractor must satisfy themselves concerning the extent of all species deemed invasive before the commencement of works on site. The contractor shall employ a suitably qualified expert to investigate the presence of invasive plant species on or adjacent to the site. Once all invasive plant species are identified, these will be treated in strict accordance with an approved method statement to be submitted to the supervising consultant for review before the commencement of any work.

Where invasive plant species are identified at the site boundary, a suitable barrier shall be installed to prevent any future reinfestation of the subject site.

Upon completion of the eradication of all invasive species, a validation report should be prepared documenting all identified invasive plant species, their location and the treatment methodology. Where materials are removed from site, all waste transfer notes/duty of care certificates should be included within the validation statement.



RE-7 – INDEPENDENT VALIDATION: WATCHING BRIEF

Visual and olfactory evidence of contamination was identified within TP201 and TP208. A watching brief should be completed during remediation works to monitor these locations.

A suitably qualified engineer is required to attend site on a part time basis in order to record ground conditions and to monitor the progress and quality of works completed by the contractor.

If any previously unidentified contamination is encountered it will be necessary that the on-site contractor notifies E3P.

RE-8 – WASTE SOILS SURPLUS TO REQUIREMENTS

In the event that a surplus of excavation material is present on-site, this, in most cases, will be deemed to be a waste in accordance with the Waste Framework Directive (Article 3(1) Waste Framework Directive 2008/98/EE). The waste producer – but ultimately, the landowner – is responsible for the compliant disposal of such materials.

A formal waste classification assessment must be undertaken, irrespective of any future options or considerations for those materials that will be removed from site. Waste classification should only be made following the Environment Agency *Technical Guidance WM3 – Guidance on the Classification and Assessment of Waste*.

To remove the surplus material from site it will either need to be sent to a disposal site (landfill), to a permitted treatment facility or, dependent on the waste classification assessment, it may be suitable for use on a permitted land improvement or restoration operation.

Subject to suitability, these soils can be transferred to the receiving site, subject to an approved permit or materials management plan following guidance in the CL:AIRE *Definition of Waste: Code of Practice*.

RE-9 – VALIDATION OF MATERIALS FOR POTABLE WATER SUPPLY INFRASTRUCTURE

No UKWIR Risk Assessments have been undertaken for the site. As such, it is recommended that UKWIR Risk Assessments should be undertaken for the site to confirm the most suitable potable water supply pipework, and to ensure that potable water infrastructure is constructed in accordance with a suitably robust risk assessment and design compliant with UKWIR.

RE-10 – REMEDIAL VERIFICATION REPORT

The collation of information relating to site clearance, chemical testing, remedial works, remedial verification, material movements and waste transfer documentation is required, where appropriate.

Complete remedial validation i.e. the retention and clean capping on PAH impacted materials is to be reported in line with regulatory guidance.

The report will be submitted to the local authority for approval following completion.



3.3. VALIDATION SAMPLING PROTOCOL

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be subject to movement under the protocols outlined within this remediation and enabling works strategy, or for materials to be imported onto site to facilitate the proposed residential development.

Soil samples destined for chemical analysis will be collected at regular intervals in appropriate sampling containers. All samples will subsequently be stored in cooled boxes prior to submission to a UKAS/MCERTS accredited laboratory.

All samples will be collected using appropriate personal protective equipment (PPE) and sampling equipment, which will be cleaned at each sampling location.

A detailed copy of E3P Ltd sampling methodology, QA procedures and laboratory chain of custody forms will be documented within the site records and presented with the final validation report for the site.

Where material is found to contain concentrations of potential contaminants at levels in excess of the site-specific screening criteria (as detailed within the enclosed appendices), E3P will undertake further assessment and recommendations on the appropriate use for the material in question, which may involve the disposal of such materials off-site to a suitable waste management facility.

The sampling frequency for materials to be managed under the remediation strategy is presented within Table 3.1.

Table 3.1 Specification Of Chemical Validation Laboratory Analysis

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Site-Generated		
Site-Generated 6F2	1 Sample per 1000 m ³	A/B/C/D
Site-Won MADE GROUND General Backfill	1 Sample per 250 m ³ where visual and/or olfactory impact is identified	G
Site-Won MADE GROUND General Backfill	1 Sample per 1000 m ³	A/B/C/D
Site-Won MADE GROUND General Backfill	1 Sample per 2000 m ³	I
Site-Won Natural Backfill	1 Sample per 2000 m ³	A/B/C/D
Site-Generated Subsoil (150 mm/450 mm Landscaped Cover)	1 Sample per 250 m ³	A/B/C/D
Site-Generated Topsoil Cover (150 mm Landscaped Cover)	1 Sample per 50 m ³	A/B/C/D
Hotspot Validation Samples	1 Sample per 10 m of linear excavation to base and sidewall	A/B/C/D/E/F
Imported		
6F2	1 Sample per 1000 m ³	A/B/C/D
Subsoil Greenfield Source (150 mm Landscaped Cover)	1 Sample per 200 m ³	A/B/C/D
Subsoil Brownfield Source (150 mm Landscaped Cover)	1 Sample per 50 m ³	A/B/C/D



Topsoil Greenfield Source (150 mm Landscaped Cover)	1 Sample per 200 m ³	A/B/C/D
Topsoil Brownfield Source (150 mm Landscaped Cover)	1 Sample per 50 m ³	A/B/C/D
General Engineering Fill (Class 1 and 2 Soil)	1 Sample per 1000 m ³	A/B/C/D

Notes

Suites of Analysis:

- A. Speciated PAH.
- B. Speciated TPH (C5-C35).
- C. Asbestos (ID).
- D. CLEA Inorganic Heavy Metals.
- E. Speciated PAH, Banded TPH and VOCs.
- F. SVOC/Speciated TPH.
- G. On-Site Screening for VOC Using Calibrated PID.
- H. Leachate 2:1 Speciated PAH and Banded TPH.
- I. Leachate Analysis of Inorganic Heavy Metals, TPH, Sulphate and PAH.

All analysis prescribed above to be completed by UKAS-accredited laboratory.

3.4. REMEDIATION CONTRACTORS SITE MANAGEMENT AND RESPONSIBILITY

The appointed remediation contractor will take full and overarching responsibility for all methods of work required to complete the site remediation and enabling operations to ensure the delivery of the site and the completion of the objectives in a safe, legislatively compliant manner that ensures no pollution to the subject site or the wider environs.

For individual remediation operations as set out within this performance specification, the contractor will provide site-specific methods of work for individual operations pertaining to the removal and treatment of contaminated liquids and soils. For each and every operation as set out herein, the contractor will provide a written methodology of works to be supplied to the supervising geo-environmental engineer prior to the instigation of operations on-site.

The site manager will be responsible for documentation of each day's activities with a full recorded schedule of works completed and corresponding site-specific method statements that have been utilised to ensure the completion of the task to the required standard.



4. ENVIRONMENTAL MONITORING AND VALIDATION

4.1. SITE MANAGEMENT

The tracking of materials will be based on the following hierarchy:

- ✳ The principal contractor will have the responsibility for setting out areas of the site on the basis of the contract specification.
- ✳ Operatives will have instructions only to excavate and to emplace materials in specified areas as assigned by the site manager/foreman.
- ✳ The site manager (employed by the principal contractor) will issue daily instructions to drivers regarding the placement of materials sourced from specific stockpiles or areas, ensuring that appropriate documentary evidence is collected that details which materials are going where and why.
- ✳ An E3P consultant, who will be in attendance as required, will:
 - Inspect the excavation areas and certify that the correct materials are being excavated;
 - Conduct spot checks on loaded vehicles to ensure compliance with this remediation strategy; and,
 - Ensure that any loads that fail visual, olfactory or spot checks either remain on the vehicle or, if unloaded, are excavated and set aside. This material will be treated according to the recommendations of the E3P site engineer.
- ✳ E3P will conduct an audit of waste consignment notes. All material imported and removed from site will have duty of care/consignment notes, copies of which will be retained on-site by the site manager.
- ✳ Materials directly reusable will be incorporated into the earthworks, subject to operational conditions and phasing of excavations, in which case they will be stockpiled prior to final placement.

4.2. COMPLETION

Following the completion of the remediation works, a report will be compiled by the environmental consultant detailing all site enabling works undertaken, waste consignment notes, and all site investigations, laboratory test certificates and validation testing undertaken.

A certificate of completion of earthworks should be included within the report which should then be issued to the local authority for their approval.

E3P considers that with the adoption of the above best practices the site can be safely redeveloped. The site enabling works process and presence of any residual contamination (if this is the case) should be recorded for future reference by landowners/occupiers. Future development at the site where this may result in penetration of new areas of hardstanding should be subject to no-less-stringent measures with respect to assessment and, where appropriate, monitoring, than those set out herein.



5. RECORD-KEEPING AND VERIFICATION

5.1. RECORD-KEEPING

During the course of the remediation and site enabling works, the on-site E3P consultant will undertake the following record-keeping protocols:

- ✳ Detailed daily site diary including material movements;
- ✳ Sampling register, testing results, photographs, details of locations of hydrocarbon-impacted soils (drawings), details of hotspot removals, details of consignment notes of any hydrocarbon-impacted material that is required to be disposed of off-site; and
- ✳ Detailed surveys (volumes).

Record-keeping on-site, in particular movements and analysis of specific material types, will be in the form of site diaries and a remediation excavation record.

This record will remain on-site and will be completed by the E3P on-site engineer during the course of the remediation and site enabling works.

5.2. VERIFICATION

The records listed above will then be compiled into a validation report produced by E3P on completion of the remediation and site enabling works, clearly referencing the origin of the materials used and testing carried out to confirm its suitability for use, where required.

The validation report will include the following:

- ✳ Remediation strategy (including copies of confirmation from regulatory authorities agreeing criteria);
- ✳ Detailed surveys of all excavations and production of as-built drawings for the earthworks;
- ✳ Copy of consignment notes relating to the movement of wastes to a licensed waste management facility;
- ✳ Detailed drawings showing all sampling locations for both chemical and geotechnical testing;
- ✳ Chemical test results (of in-situ soils or imported soils);
- ✳ Geotechnical test results (if any required);
- ✳ Details of qualified persons signed declaration; and
- ✳ Monitoring results if undertaken (e.g., asbestos in air, gas, water)



6. CONTINGENCY PLAN

6.1. PREVIOUSLY UNIDENTIFIED CONTAMINANTS

Should significantly impacted material be encountered during the development, then it will be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinants.

Once the laboratory analysis of the material is available, an assessment will be undertaken to determine whether it can be retained on-site as part of the material management plan or whether it should be disposed of off-site.

Depending on the nature of any such impact, it may be necessary to undertake validation testing of the excavation faces in order to demonstrate that no such materials are left in situ.



7. SECOND PHASE MITIGATION AND MANAGEMENT – BUILD PHASE

This document details the construction works that are required to ensure full compliance with the remediation Strategy, Regulatory Authorities, Building Control & Warranty Providers;

The following should be implemented during the build phase of the development:

- ✳ Laboratory testing of any additional imported topsoil and subsoil;
- ✳ Placement and validation of subsoil (clean material) within gardens, landscaping areas and POS, within areas defined on Drawing 18-435-033;
- ✳ Installation and validation of potable water supply infrastructure that will be compliant with United Kingdom Water Infrastructure Risk (UKWIR) assessment criteria;
- ✳ Installation and validation of radon gas protection measures within specified plots.

The validation protocols are presented within the E3P Remediation and Enabling Works Strategy and are presented below.

7.1. PLACEMENT OF COVER SYSTEM

The Remediation and Enabling Works Strategy for the site, with respect to human health of the future site users includes the provision of a chemically suitable clean material to be installed in all landscaped areas; the construction of the clean cover / placement of clean material shall consist of:

- ✳ Placement of chemically validated 150 mm topsoil and 150 mm subsoil over natural drift deposits;
- ✳ Placement of chemically validated 600 mm clean cover system where Made ground remains in-situ to the southwest of the site (Plots 221 – 251);
- ✳ Placement of chemically validated 300 mm clean cover system where Made Ground remains in-situ in landscaped and POS;
- ✳ Placement of chemically validated 600 mm clean cover system within any tree pits.

It will be necessary to provide a 300 mm growing medium using certified material with appropriate validation within proposed garden areas.

Natural drift deposits encountered within the upper 300 mm of the finished ground levels can be directly overlain with a suitable cover (minimum 150 mm topsoil).

Where Made Ground is identified and retained within garden areas, the construction of the clean cover/placement of clean material shall be in accordance with Table 7.1.

Table 7.1 Construction and Validation of Cover System

SOFTSCAPE TYPE	DEPTH		BREAK LAYER Y/N/TYPE	VALIDATION FREQUENCY	TESTING SUITE	VALIDATION DOCUMENTATION
	TOPSOIL	SUBSOIL				
Back garden	150	450	N	1 per plot	A/B/C/D	Validation Letter



Front garden	150	450	N	1 per 10 plots	A/B/C/D	Validation Letter
LEAP (parkland)	Minimum 300mm clean cover		N	1 per 625 m ²	A/B/C/D	Validation Letter
Functional POS	Minimum 300mm clean cover		N	1 per 2000 m ²	A/B/C/D	Validation Letter
Non-Functional POS	N/A		N	N/A	A/B/C/D	N/A

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be imported or re-used on-site to confirm the proposed development will pose no unacceptable risk to human health or the wider environ.

Subsoil and topsoil shall be free of any deleterious materials, such as buildings materials, timber, plastics etc and conform to the requirements of BS 3882:2007.

Testing requirements for topsoil and subsoil are presented in Table 7.2. No validation of is proposed for plots outside of the area of the required cover system (plots 221 – 251).

Table 7.2 Specification For Soil Testing

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Subsoil Greenfield Source	1 Sample per 200 m ³ (Minimum 3 per source)	A/B/C/D
Subsoil Brownfield Source	1 Sample per 150 m ³ (Minimum 3 per source)	A/B/C/D
Topsoil Greenfield Source	1 Sample per 500 m ³ (Minimum 3 per source)	A/B/C/D
Topsoil Brownfield Source	1 Sample per 50 m ³ (Minimum 3 per source)	A/B/C/D
General Engineering Fill (Class 1 and 2 Soil)	1 Sample per 1000 m ³	A/B/C/D

Notes

Suites of Analysis:

- A. Speciated PAH.
- B. Speciated TPH (C5-C35).
- C. Asbestos (ID).
- D. CLEA Inorganic Heavy Metals.

7.1.1. PROCEDURE FOR PLACEMENT OF CHEMICALLY SUITABLE COVER SYSTEM

Garden and landscaped areas need to be backfilled with validated subsoil and topsoil overlaying this in line with Table 7.1. Topsoil is required to be confirmed as chemically suitable prior to placement. Where subsoil is not placed during Remediation & Enabling works, E3P will be required to return to site and undertake independent validation of the correct placement of subsoil.

The placement of clean material in soft landscaping will be undertaken during the build phase works of the project.

The placement of subsoil and topsoil and corresponding validation will be documented within the Landscaping Validation Letters (to be issued on completion of the contractor's works).



If proposed utilities are to be placed within the cover system, the clean cover should be placed prior to installation of these utilities.

If natural drift deposits are encountered, then excavations can cease here.

There should be a minimum of three samples from any one source.

E3P will collect photographic evidence of the placement of the certified topsoil and subsoil on completion of construction works. This element will also be checked by the Building Control Officer as part of the site completion prior to issuing of a CML certificate.

The landscaping validation procedure is detailed in Table 7.3.

Table 7.3 Landscaping Validation Procedure

PROCEDURE	METHOD
Chemical Validation	Imported subsoil and topsoil will need to be chemically analysed to confirm suitability for use with the proposed cover system prior to installation and completion of the landscaping systems. E3P will issue an email to the appropriate party with an assessment of the chemical suitability of both subsoil and topsoil. If acceptable the materials can be installed to the required depth at which time the landscaping areas will be deemed complete following a validation procedure by a suitability qualified E3P engineer.
Trial Holes	Trial holes are deemed necessary for all plots.
Validation	Photographic evidence will be taken by E3P of the topsoil placement demonstrating the depth of topsoil and practical completion of works are required for For plots where subsoil depths require validation by E3P during the build phase, photographs will be taken and collated by E3P. It should be noted that cover systems should be installed as late as possible in the build programme to reduce the risk of cross-contamination.
Validation Certificate	Once the photographs of the placement of topsoil (over the clean material) have been provided, E3P will issue a plot-specific validation certificate to demonstrate that the required subsoil and topsoil has been placed in the required landscaped areas along with the chemical analysis.
Completion Report	Upon completion of all landscaping areas within the development, a Completion Report will be issued providing the confirmation that all remediation requirements have been achieved.

Plate 1 provides an example of validation photographs that will be required for each area of landscaping.



PLATE 1 EXAMPLE COVER SYSTEM VALIDATION

Plot No: 4 (Car Park Landscaping)

Depth of Strata (m bgl)	0.00-0.30	Validated TOPSOIL
Depth of Cover System Materials		Depth of Cover System Materials
		

Depth of Cover System at Ground Level and in Relation to Unit / Structure



7.2. RADON GAS PROTECTION MEASURES

The western boundary of the site falls within an area where between 3 and 5% of properties are above the Action Level and development plots within this area will require basic radon protection measures.

Plots requiring protection measures are marked on Drawing 18-435-033 (Appendix II).

The rest of the site is classified as low risk (less than 1% of properties are above the Action Level) and radon protection measures are not required.

7.3. POTABLE WATER SUPPLY – CONTAMINANT ASSESSMENT CRITERIA

Based on current ground conditions PE pipework is likely to be suitable.

This will need to be confirmed by a UK Water Industry Research (UKWIR) Risk Assessment.

We trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,

For and on behalf of E3P Ltd

Written by:
Kay Kierans
Senior Geoenvironmental Consultant
(BSc Hons, MSc, FGS, MEnvSc)

Approved by
Martin Dyer
Director
(BSc (Hons), FGS, AIEEMA, FEnvSc, CGeol, CEnv)

Enclosed

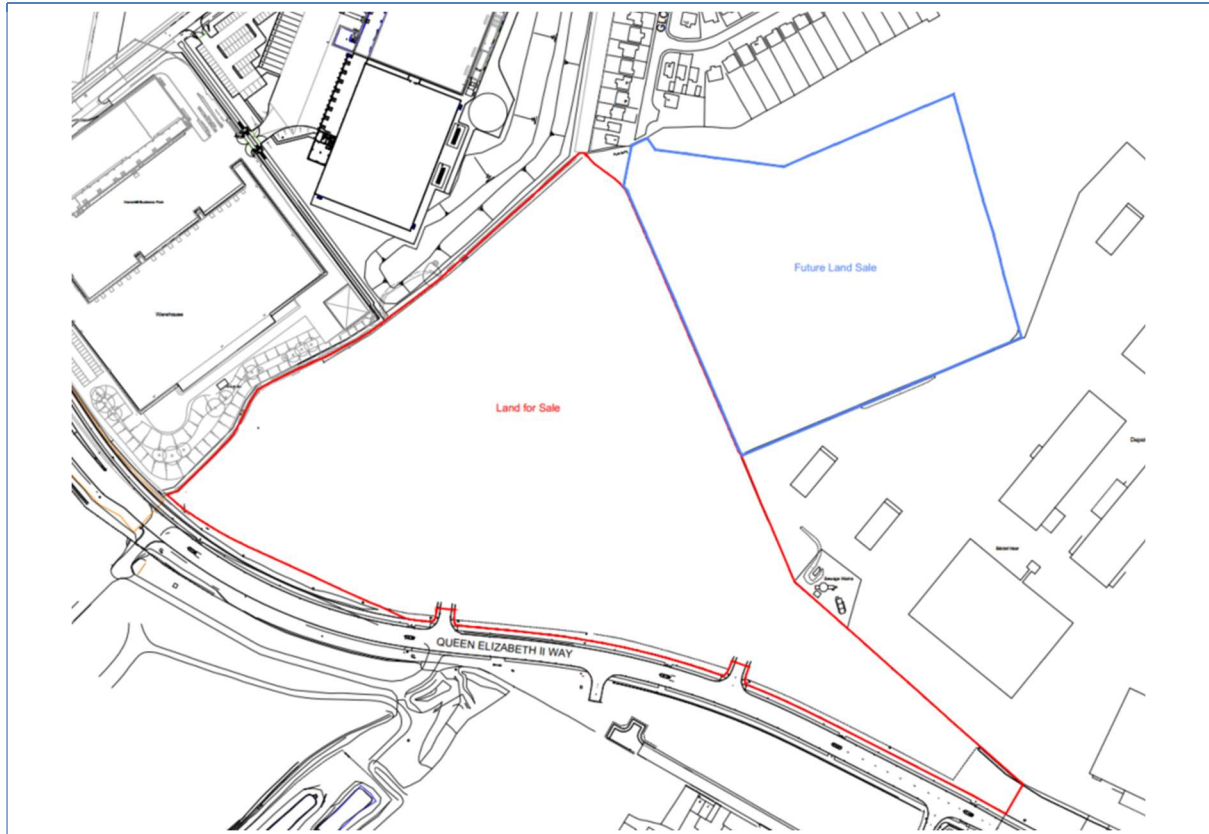
- Appendix I** Drawings
- 18-435-002 – Proposed Development Plan
 - 18-435-006 – Exploratory Hole Location Plan
 - 18-435-032 – Radon Affected Area Plan
 - 18-435-033 – Build Phase Issues Plan
- Appendix II** E3P Remediation / Validation Criteria



APPENDIX I

DRAWINGS

DRAWING 18-435-001 – SITE LOCATION PLAN





Notes:						Client: Northstone						Job No: 18-435 Drawing No: 002				Date: 20.11.2025 Scale: NTS				e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk					
						Job Title: Hareshill Road						Drawing Title: Proposed Development Plan				The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.									
P1	REVA	20.11.2025	TG	KK	KK																				
Phase	Issue	Date	Drawn	Checked	PM																				



- Location Symbols**
- Approximate Window Sample Probehole Location
 - Approximate Window Sample Probehole Location with Install
 - Approximate Trial Pit Location
 - Approximate Soakaway Test Location
 - Approximate Rotary Borehole Location

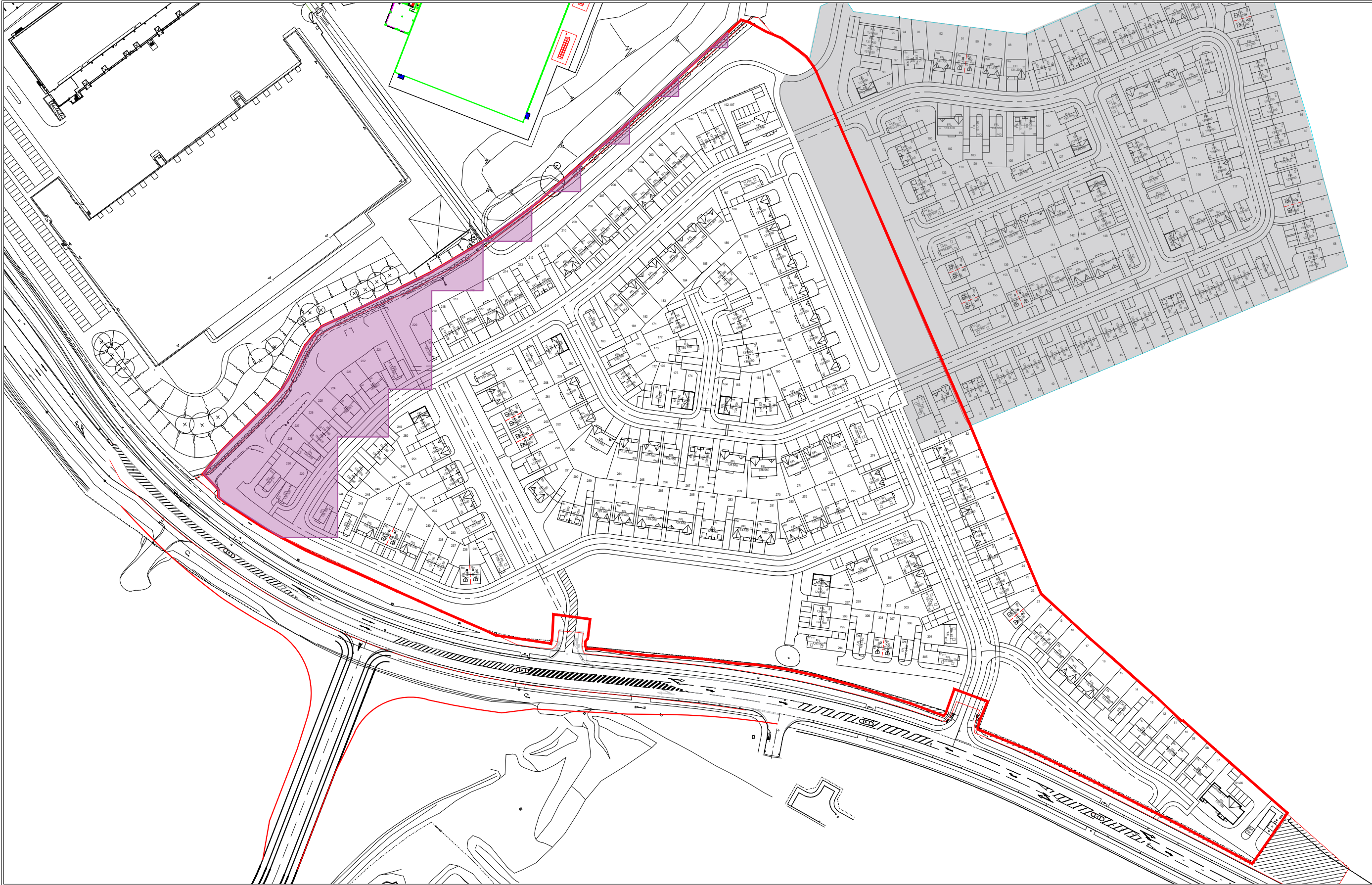
<i>Notes:</i>					
P1	REVA	09.07.2025	TG	KK	KK
Phase	Issue	Date	Drawn	Checked	PM

<i>Client:</i>	Northstone
<i>Job Title:</i>	Hareshill Road

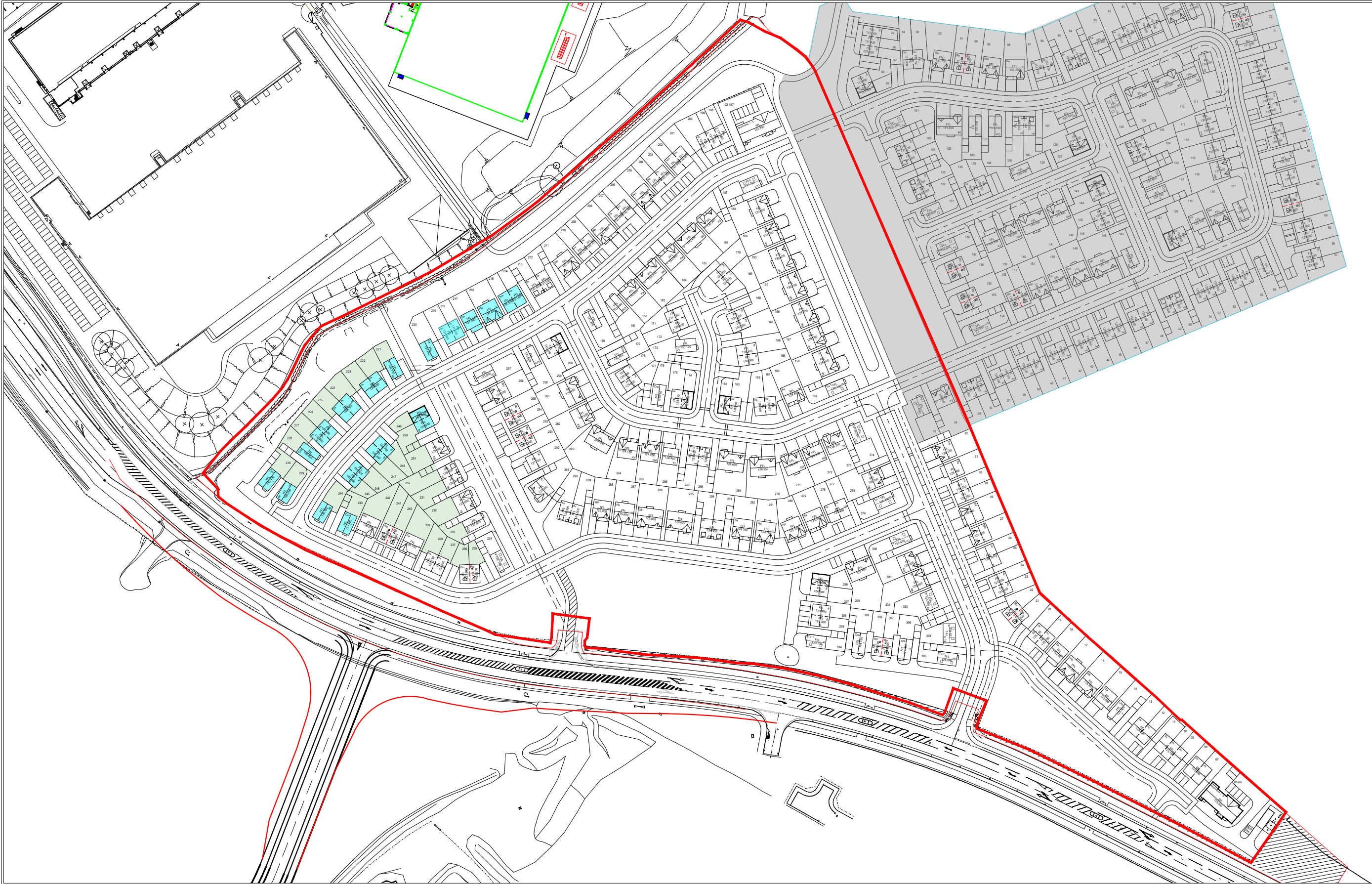
<i>Job No.:</i>	18-435
<i>Drawing No.:</i>	006
<i>Date:</i>	09.07.2025
<i>Scale:</i>	NTS
<i>Drawing Title:</i>	Exploratory Hole Location Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
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Key Radon Affected Area	Notes:						Client: Northstone		Job No: 18-435	Date: 04.09.2025	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk
									Drawing No: 032	Scale: NTS	
	P1 Phase	REVA Issue	04.09.2025 Date	TG Drawn	KK Checked	KK PM	Job Title: Hareshill Road	Drawing Title: Radon Affected Area Plan	The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.		



- Key
- Plots Requiring 600mm Clean Cover System
 - Plots Requiring Basic Radon Protection Measures

Notes:

Client:

Northstone

Job No:
18-435
Date:
08.09.2025
Drawing No:
033
Scale:
NTS



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P1	REVA	08.09.2025	TG	KK	KK
Phase	Issue	Date	Drawn	Checked	PM

Job Title:

Hareshill Road

Drawing Title:

Build Phase Issues Plan

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APPENDIX II

E3P REMEDIATION/ VALIDATION CRITERIA

HUMAN HEALTH REMEDIATION TARGETS – LOW-RISE RESIDENTIAL END USE

DETERMINAND	UNITS	WITHIN 600 mm COVER SYSTEM (GARDEN)	HARD STANDING AND >600 mm OF COVER	PUBLIC OPEN SPACE 300 mm COVER	PUBLIC OPEN SPACE > 300 mm	PATHW AY
Arsenic	mg/kg	37 ⁽ⁱ⁾	40 ⁽ⁱⁱ⁾	79 ⁽ⁱⁱⁱ⁾	170 ^(iv)	1
Cadmium	mg/kg	11 ⁽ⁱ⁾	85 ⁽ⁱⁱ⁾	120 ⁽ⁱⁱⁱ⁾	532 ^(iv)	1
Chromium (Hexavalent)	mg/kg	6 ⁽ⁱ⁾	6 ⁽ⁱⁱ⁾	7.7 ⁽ⁱⁱⁱ⁾	220 ^(iv)	1
Lead	mg/kg	200 ^(vi)	310 ^(vii)	630 ^(viii)	1300 ^(viii)	1
Elemental Mercury	mg/kg	1.2 ⁽ⁱ⁾	1.2 ⁽ⁱⁱ⁾	16 ⁽ⁱⁱⁱ⁾	30 ^(iv)	2
Nickel	mg/kg	130 ⁽ⁱ⁾	180 ⁽ⁱⁱ⁾	230 ⁽ⁱⁱⁱ⁾	800 ^(iv)	1
Selenium	mg/kg	250 ⁽ⁱ⁾	430 ⁽ⁱⁱ⁾	1100 ⁽ⁱⁱⁱ⁾	1800 ^(iv)	1
Copper	mg/kg	2400 ⁽ⁱ⁾	7100 ⁽ⁱⁱ⁾	12,000 ⁽ⁱⁱⁱ⁾	44,000 ^(iv)	1
Zinc	mg/kg	3700 ⁽ⁱ⁾	40,000 ⁽ⁱⁱ⁾	81,000 ⁽ⁱⁱⁱ⁾	170,000 ^(iv)	1
Phenol	mg/kg	120 ^{(i)(xi)}	440 ^{(xiv)(xi)}	440 ^{(iii)(xi)}	440 ^{(iv)(xi)}	2
Naphthalene	mg/kg	2.3 ^{(i)(xi)}	2.3 ^{(xiv)(xi)}	1200 ^{(iv)(xi)}	1200 ^{(iv)(xi)}	2
Acenaphthylene	mg/kg	170 ^{(i)(xi)}	500 ^(v)	15,000 ^{(iii)(xi)}	29,000 ^{(iv)(xi)}	3
Acenaphthene	mg/kg	210 ^{(i)(xi)}	500 ^(v)	15,000 ^{(iii)(xi)}	29,000 ^{(iv)(xi)}	1
Fluorene	mg/kg	170 ^{(i)(xi)}	500 ^(v)	9900 ^{(iii)(xi)}	20,000 ^{(iv)(xi)}	1
Phenanthrene	mg/kg	95 ^{(i)(xi)}	500 ^(v)	3100 ^{(iii)(xi)}	6200 ^{(iv)(xi)}	3
Anthracene	mg/kg	500 ^{(i)(xi)}	500 ^(v)	74,000 ^{(iii)(xi)}	150,000 ^{(iv)(xi)}	3
Fluoranthene	mg/kg	280 ^{(i)(xi)}	500 ^(v)	3100 ^{(iii)(xi)}	6300 ^{(iv)(xi)}	3
Pyrene	mg/kg	500 ^{(i)(xi)}	500 ^(v)	7400 ^{(iii)(xi)}	15,000 ^{(iv)(xi)}	3
Benzo(a)Anthracene	mg/kg	7.2 ^{(i)(xi)}	11 ^{(ii)(xi)}	29 ^{(iii)(xi)}	49 ^{(iv)(xi)}	3
Chrysene	mg/kg	15 ^{(i)(xi)}	30 ^{(ii)(xi)}	57 ^{(iii)(xi)}	93 ^{(iv)(xi)}	3
Benzo(b)Fluoranthene	mg/kg	2.6 ^{(i)(xi)}	3.9 ^{(ii)(xi)}	7.1 ^{(iii)(xi)}	13 ^{(iv)(xi)}	3
Benzo(k)Fluoranthene	mg/kg	77 ^{(i)(xi)}	110 ^{(iii)(xi)}	190 ^{(iii)(xi)}	370 ^{(iv)(xi)}	3
Benzo(a)Pyrene	mg/kg	2.2 ^{(i)(xi)}	3.2 ^{(ii)(xi)}	5.7 ^{(iii)(xi)}	11 ^{(iv)(xi)}	3
Indeno(123-cd)Pyrene	mg/kg	27 ^{(i)(xi)}	45 ^{(ii)(xi)}	82 ^{(iii)(xi)}	150 ^{(iv)(xi)}	3
Dibenzo(a,h)Anthracene	mg/kg	0.24 ^{(i)(xi)}	0.31 ^{(ii)(xi)}	0.57 ^{(iii)(xi)}	1.1 ^{(iv)(xi)}	3
Benzo(ghi)Perylene	mg/kg	320 ^{(i)(xi)}	360 ^{(iii)(xi)}	640 ^{(iii)(xi)}	1400 ^{(iv)(xi)}	3
TPH C ₅ -C ₆ (aliphatic)	mg/kg	42 ^{(i)(xi)}	42 ^{(ii)(xi)}	42 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₆ -C ₈ (aliphatic)	mg/kg	100 ^{(i)(xi)}	100 ^{(ii)(xi)}	100 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₈ -C ₁₀ (aliphatic)	mg/kg	27 ^{(i)(xi)}	27 ^{(iii)(xi)}	27 ^{(iii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₀ -C ₁₂ (aliphatic)	mg/kg	130 ^{(i)(xi)}	130 ^{(ii)(xi)}	130 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₂ -C ₁₆ (aliphatic)	mg/kg	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₆ -C ₂₁ (aliphatic)	mg/kg	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	10,000 ^{(xiv)(xi)}	1
TPH C ₂₁ -C ₃₅ (aliphatic)	mg/kg					1
TPH C ₅ -C ₇ (aromatic)	mg/kg	70 ^{(i)(xi)}	370 ^{(iii)(xi)}	370 ^{(iii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₇ -C ₈ (aromatic)	mg/kg	130 ^{(i)(xi)}	860 ^{(iii)(xi)}	860 ^{(iii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₈ -C ₁₀ (aromatic)	mg/kg	34 ^{(i)(xi)}	47 ^{(ii)(xi)}	47 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₀ -C ₁₂ (aromatic)	mg/kg	74 ^{(i)(xi)}	250 ^{(ii)(xi)}	250 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₂ -C ₁₆ (aromatic)	mg/kg	140 ^{(i)(xi)}	1800 ^{(iii)(xi)}	1800 ^{(iii)(xi)}	10,000 ^{(xiv)(xi)}	1



DETERMINAND	UNITS	WITHIN 600 mm COVER SYSTEM (GARDEN)	HARD STANDING AND >600 mm OF COVER	PUBLIC OPEN SPACE 300 mm COVER	PUBLIC OPEN SPACE > 300 mm	PATHWAY
TPH C ₁₆ -C ₂₁ (aromatic)	mg/kg	260 ^{(i)(xi)}	1900 ^{(ii)(xi)}	1900 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	1
TPH C ₂₁ -C ₃₅ (aromatic)	mg/kg	1000 ^{(xiv)(xi)}	1900 ^{(ii)(xi)}	1900 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	1
Asbestos	Fibres Volume Weight (%)	NFD	0.001%	NFD	0.001	4

Notes 1

NFD = No Fibres Detected

Asbestos will be screened visually on-site by a qualified environmental consultant and where potential ACM is identified, representative samples will be subject to quantitative analysis of % volume by weight.

Should any ACM be identified within the soil matrices, further detailed % assessment would be required when the reported laboratory result exceeds the limit of detection for the analytical method at 0.01% by volume (weight).

Notes 2

Excludes matrices where free product is observed.

No viable exposure pathway beneath hardstanding and cover system.

Notes 3

Main exposure pathways: 1 = soil ingestion, 2 = vapour inhalation (indoor), 3 = dermal contact and ingestion, 4 = dust inhalation.

Abbreviations: GAC = general assessment criteria, n = number of samples, MC = maximum concentration, N/A = Not Applicable (no exceedance of assessment criteria), Loc of MC = location of exceedances.

- i. Value derived from LQM Sutable 4 Use Levels (S4ULs) for residential end use with plant uptake.
- ii. Value derived from LQM Sutable 4 Use Levels (S4ULs) for residential end use without plant uptake – these levels used below 600 mm cover system within residential gardens as soils will be present within a residential setting yet soils will not be disturbed and garden plants will not reach these soils.
- iii. Value derived from LQM Sutable 4 Use Levels (S4ULs) for public open space (POS) residential.
- iv. Value derived from LQM Sutable 4 Use Levels (S4ULs) for public open space (POS) park – these levels used below 300 mm POS cover system as soils will not be disturbed by any future site users and exposure to these soils will be similar to a park end use.
- v. Value derived from LQM Sutable 4 Use Levels (S4ULs) alongside assessment with WM3 to ensure that materials remaining on-site do not exceed the WM3 toxicity criteria for hazardous waste.
- vi. Value derived from Category 4 Screening Levels (C4SL) for residential land use with homegrown produce.
- vii. Value derived from Category 4 Screening Levels (C4SL) for residential land use without homegrown produce.
- viii. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) residential.
- ix. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) park.
- x. Mercury – based on elemental mercury.
- xi. PAH and TPH levels used are for 1% SOM.
- xii. Xylenes based on p-xylene (o-xylene 2600 mg/kg, m-xylene 3500 mg/kg) and is capped by its solubility.
- xiii. Value derived from LQM Sutable 4 Use Levels (S4ULs) for residential end use with plant uptake due to the volatilisation risk.
- xiv. BTEX is not SOM-related due to inhalation pathway.

