REMEDIATION AND ENABLING WORKS STRATEGY

Site:	Hinchley Road, Charlestown
References:	17-994-R3-1
Date:	27 November 2025
Client:	Miller Homes



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QUALITY ASSURANCE

Report references	15-973-R3-1

REV REF	DESCRIPTION	DATE
01	First issue	November 2025

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17-994-002 - Proposed Development Plan
17-994-004 - Site Features Plan
17-994-006 - Exploratory Hole Location Plan
17-994-007 - Depth of Made Ground Plan
17-994-008 - Depth of Topsoil Plan
17-994-014 - Contamination Exceedances Plan
17-994-034 - Depth & Thickness of Peat Plan

1. INTRODUCTION

1.1. BACKGROUND

E3P has been instructed by Miller Homes to develop a remediation strategy for the proposed residential development at the site known as Hinchley Road, located north of Hinchley Road, Charlestown, Manchester, M9 7BX.

This report is intended for submission to the regulatory bodies to outline the necessary remediation works required to render the site suitable for future residential development.

This report has additionally been prepared to highlight the contractor's requirements.

1.2. SITE DETAILS

Site Address	Hinchley Road, Charlestown, Manchester, M9 7BX.
National Grid Reference	E 387836, N 403142.
Site Area	2.70 Ha.

All acronyms used within this report are defined in the glossary presented in Appendix II.

A site location plan is presented in Appendix III as Drawing 17-994-001.

1.3. REPORT OBJECTIVES

This report aims to present a remediation and enabling works strategy to discharge relevant aspects of a standard contamination planning condition.

To achieve this objective, the report presents details of the remedial objectives; presents the findings of a remedial options appraisal, describes how the remediation of the site will be undertaken and specifies how the works will be validated. In addition, the strategy explains how the works will be permitted under the current regulatory regime.

This document therefore describes the steps to be taken during the enabling works and construction phases to prepare the site for residential use.

This working document may need to be updated, in agreement with the relevant regulatory authorities, at any stage during development, depending on the conditions encountered.

This document does not cover the Geotechnical Design Report for the site; this element will be addressed in a separate report.

1.4. SCOPE OF WORKS

This report has been written in general accordance with Land Contamination: Risk Management (LCRM) (Environment Agency, June 2025). The scope of this Remediation Strategy and Remedial Options Appraisal comprises:

- A summary of background information and the conceptual model.
- An overview of the results of the risk assessment undertaken at the site.
- Identification of geotechnical constraints.

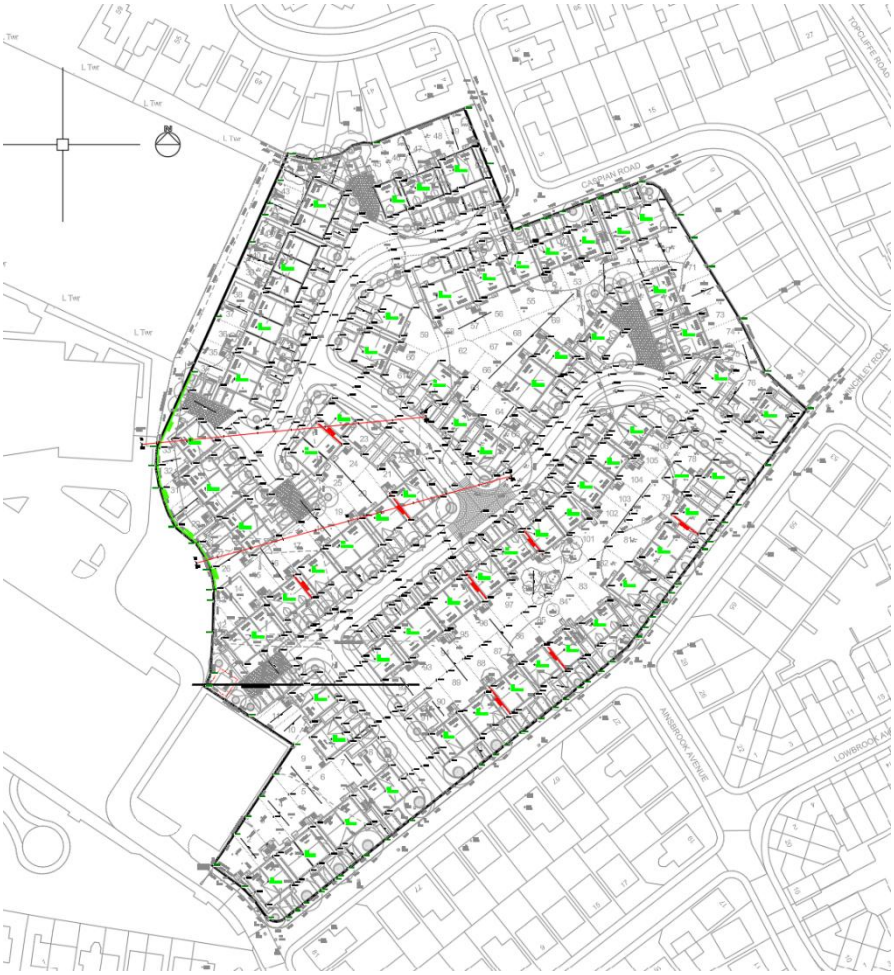
- A remediation options assessment, including a selection of final remediation options; and,
- A methodology and verification requirement for remediation works.

1.5. REDEVELOPMENT PLAN

Miller Homes is constructing circa. 106 low-rise residential dwellings with associated access roads, parking, landscaping and adopted drainage infrastructure.

Figure 1.1 indicates the proposed development layout, which is included in Appendix III.

Figure 1.1 Proposed Development Plan



1.6. STAKEHOLDER PARTIES

FUNCTION/INTEREST	NAME OF PARTY
Local Planning Authority	Manchester City Council
Developer	Miller Homes
Geoenvironmental Consultant	E3P
Main Contractor	TBC
Remediation/Enabling Works Contractor	TBC
Human Health Regulator	Manchester City Council
Controlled Waters and Waste Regulator	Environment Agency
Highways Adoption Authority	Manchester City Council

1.7. REGULATORY STATUS

1.7.1. PLANNING APPLICATION

Miller Homes are in the process of submitting a detailed planning application to the local planning authority for the proposed redevelopment of the site for low-rise residential housing with associated private gardens, access roads, parking, landscaping and adopted drainage infrastructure.

It is presumed that, as part of the planning approval process, the planning authority will undertake consultation with the pertinent statutory consultees, which may include:

- Environmental health/contaminated land officer at the local authority (or external adviser);
- Environment Agency planning liaison;
- Natural England; and,
- The Mining Remediation Authority.

This report is subject to the approval of the regulators.

No remediation works should commence before all pre-commencement conditions have been discharged following liaison with the relevant regulatory authorities.

It should be noted that aspects of environmental permitting and waste regulation cannot be registered until planning permission has been granted.

2. SITE SYNOPSIS

2.1. SUMMARY OF PREVIOUS WORK

Table 2.1 summarises the phases of Geoenvironmental Assessment that have previously been carried out at the site.

Table 2.1 Summary of Previous Works

ORGANISATION	TITLE	DATE	REFERENCE	PREPARED FOR
IGE Consulting	Phase 2 Geo-Environmental Investigation Report	March 2024	4070-02/A	Persimmon Homes
E3P	Phase II Geoenvironmental Site Assessment Report	January 2025	17-994-R1-1	Miller Homes
E3P	Ground Gas Addendum	May 2025	17-997-R2-1	Miller Homes

The assessment of the potential risk of contaminated land within the context of the proposed residential development is included in the documents listed above. To inform the preparation of the remediation strategy, the pertinent points from the above reports are summarised within this section.

To avoid any doubt, the above reports should be read as a precursor to, and in conjunction with, this document.

2.2. SITE SETTING

Table 2.2 Site Description and Setting

Current Occupancy/Use	The site is a disused parcel of land to the west of Hinchley Road, comprising soft standing of unmaintained grasses and shrubs. Dense semi-mature and mature trees are present along the northern boundary and much of the eastern area of the site. Three circa 2m high mounds are present in the west of the site, comprising historic Made Ground fill soils.	
Environmental Setting	**Superficial Geology**	Glacial Till (SAND, GRAVEL and CLAY) PEAT (Majority of the site, concentrated in the East)
	Bedrock Geology	Pennine Middle Coal Measures – MUDSTONE, SILTSTONE and SANDSTONE.
	Hydrogeology	Secondary undifferentiated superficial aquifer underlain by a secondary A aquifer in the bedrock geology.
	Surface Water	No surface water features are present within 250m of the site.

Site History	Historic mapping from 1900 to the present indicates that the site has not undergone any historic development. A Phase 1 report, IGE Consulting Phase 1 Geo-Environmental Investigation Report – Hinchley Road, Charlestown (4070-01, February 2024), has been completed but is not available to E3P at this time.
Invasive Species	No invasive species have been identified.

2.3. LANDFILL AND WASTE STATUS ON-SITE

2.3.1. HISTORICAL LANDFILLS

Table 2.3 summarises the type and location of on-site historical landfills which need consideration to enable the remediation of the site.

Table 2.3 Summary of Historical Landfill Sites

NAME	LOCATION	WASTE TYPE	OPERATIONAL DATES
Land off Charlestown Road	125m South	–	April 1964 until Dec 1974
Chadderton Landfill (Greengate)	380m North	–	Dec 1948 until June 1978

2.3.2. WASTE LICENSES AND MATERIAL MANAGEMENT PLANS

Table 2.4 summarises the presence of all historical and current on-site waste licences and/or environmental permits.

Table 2.4 Summary of Historical and Active Licences and Permits

NAME	LICENCE NUMBER	STATUS	WASTE PERMITS
Biffa Waste Services	53651	Active	A01: Co-Disposal Landfill

2.4. SUMMARY OF REPORTED GROUND CONDITIONS

E3P has prepared a detailed Site investigation report (Ref: 17-994-R1-1, dated January 2025). The summary of reported ground conditions is given in Table 2.5.

Table 2.5 Summary of Ground Conditions

STRATA	DESCRIPTION
Made Ground	Made Ground was encountered within 12 of the 40 exploratory hole locations. Made Ground was located in the northeast of the site to a maximum proven depth of 2.80 m bgl (WS108 – located on top of Made Ground mound extending to circa 0.80 m below wider site levels). Made Ground deposits were generally encountered as a reworked topsoil consisting of a dark brown, very sandy clay with frequent rootlets, with

STRATA	DESCRIPTION
	inclusions of sub-angular to angular brick overlying a dark brown gravelly sandy clay with gravel comprising wood, metal, glass, brick and concrete. The full extent of the Made Ground within TP102 was not confirmed due to the termination of excavation following the identification of a land drain the base of the pit, encountered at 2.20 m bgl.
Topsoil	No natural topsoil was identified within the site boundary. The topsoil on site is considered reworked; therefore, additional chemical analysis is required to confirm its suitability for reuse.
Superficial	Natural drift deposits were encountered within all exploratory hole locations with the exception of TP115, to a maximum proven depth of 40.00 m bgl (RB101-RB103). Drift deposits were generally encountered as firm medium strength to stiff high strength greyish brown CLAY to circa 16.00 m bgl with brown slightly clayey gravelly SAND underlying the granular drift from circa 16.00 m – 40.00 m bgl. Soft clays were encountered at nine locations (SA102, SA103, TP107, TP108, TP110, TP112, TP114, TP117 and TP118), generally in the north-east and central areas, between 1.00 and 2.00 m bgl, and at thicknesses <1.00 m.
Peat	Organic clays and peat deposits were encountered in 23 locations (of 37 total), encountered site-wide. Peat deposits are generally encountered from 0.10 m to 1.00m bgl, with deeper areas of peat encountered within WS106 (1.50 m bgl), CP102 (2.60 m bgl) and CP103 (2.70 m bgl). Peat was encountered as soft, very low to low-strength, dark blackish brown, silty PEAT.
Bedrock	Solid geology of the was not encountered during this phase of investigation with boreholes advanced to a maximum depth of 40.00 m bgl. Based upon BGS mapping, the site is underlain by Pennine Middle Coal Measures. Surrounding BGS boreholes indicate the top of bedrock to be present at circa 60 m bgl.
Groundwater	Groundwater strikes were recorded within four exploratory hole locations (SA102, TP111, TP116 and CP102) at varying depths between 0.60 m – 2.00 m bgl. Strikes were generally encountered as slow ingress.

3. CONTAMINATION RISK ASSESSMENT

3.1. 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.

3.2. HUMAN HEALTH RISK SUMMARY

The E3P Tier 2 Qualitative Human Health Risk Assessment identified concentrations of the following determinants at or above the screening criteria for the assessment of no unacceptable degree of risk to human health for a residential end use (1% SOM):

Inorganics:

- Lead (PL1).

Organics:

- Benzo(b)Fluoranthene (PL2);
- Benzo(a)Pyrene (PL2); and
- Dibenzo(a,h)Anthracene (PL2).

Asbestos was not identified in the samples submitted for analysis.

All of the identified elevated concentrations have primary exposure pathways related to dermal contact (PL1) and ingestion of soils (PL2).

Where the exceedances of lead and non-volatile PAH compounds were encountered within the Made Ground at 1.00 m bgl and 0.60 m bgl in TP101 and TP115 respectively, it is likely associated with the bunded anthropogenic material. Delineation of the impacted anthropogenic soils is recommended prior to the topsoil strip to enable sustainable recovery of materials.

Where the exceedances of non-volatile PAH compounds were encountered within the natural CLAY at 0.80 m bgl in WS112, the background soil chemistry for the area does not indicate elevated PAH levels locally. During enabling works further assessment should be undertaken to delineate/evaluate the soils in this area further to prove or discount any PAH source. Any subsoil proposed for use in landscaped areas will require validation testing before re-use.

The topsoil on site is considered to be reworked, therefore additional chemical analysis is required to confirm the suitability for reuse.

To conclude, the approach should be to delineate the Made Ground and stockpile this to be used as bulk fill in the general earthworks. The impacted materials should be delineated and segregated for testing, where chemical analysis is likely to demonstrate that these can be reused in low risk areas of the site. The topsoil should then be recovered and sampled for future used in residential gardens as a growing medium. Gardens will be constructed as part of the earthworks to 600mm below FFL to allow a growing medium using clean naturally occurring materials.

3.3. CONTROLLED WATERS RISK SUMMARY

A Tier 2 Controlled Water Risk Assessment was completed by E3P as part of the E3P Geoenvironmental Site Assessment, the findings of which are summarised as follows:

- The direct comparison from water and leachate samples submitted to the laboratory indicated no exceedances against the DWS; which has been identified as the critical receptor for the site setting.
- The leachate analysis recorded minor exceedances against the EQS values for chromium III and copper within the soils of WS104 at 0.40 m bgl.
- The groundwater analysis recorded minor exceedances against the EQS values for copper, nickel, and zinc within water taken from WS101, WS104, and WS112.

Due to the absence of a complete pollutant linkage and lack of exceedance of DWS, the site is considered to pose a low risk to controlled waters.

3.4. HAZARDOUS GROUND GAS

Ground gas has been assessed by E3P as part of the E3P Geoenvironmental Site Assessment (Ref:17-994-R1, dated January 2025) and the assessment was finalised as part of the Ground Gas Addendum (Ref: 17-994-R2, dated May 2025).

The assessment was completed in accordance with the methodology outlined in BS8485+A1 utilising the results of the ground gas monitoring surveys to calculate a tentative gas screening value (GSV).

The GSV has been compared to the criteria outlined within BS8485+A1 to determine the level of risk to the proposed development and to ensure the appropriate remedial options are incorporated into any future building design in this area.

- Across all visits, no hazardous gas rates for CH_4 have been recorded above CS1 thresholds.
- Elevated CO_2 (>5% v/v) was recorded within WS104, WS105, WS108, WS111 and WS112. Review of a ternary gas plot of the data from these wells indicates that the exceedances are representative of microbial respiration of organic materials in soil and air/CO_2 mixing, characterised by zero methane and low flow, and are not representative of a geogenic or landfill gas source. PEAT was encountered within these locations between 0.20m and 3.00m bgl.
- Shallow PEAT deposits were encountered within 21 of the exploratory locations site-wide to a maximum depth of 2.80 m bgl. NF94 states that peat can lead to elevated concentrations of bulk gases, but is a low risk source that cannot generate gas at a significant rate.
- As the peat deposits are currently in a largely saturated state, there is limited potential for ground gas generation. The proposed development will result in a change in the hydrogeology, and this has the potential to change the anaerobic and aerobic environment, which may result in the generation of CH4 and CO2. As such, should PEAT remain on site, there is likely to be an initial release of ground gas, however, the length and volume of any potential gas release is unknown albeit lilely to be low.
- It is understood that organic peat soils will be partially removed from beneath plots across the site and remain in-situ in external areas of the site, thus reducing the gas source for plots. There would be no future risk remaining, and the site should be classified as CS1. In these areas no gas measures required.

- However, peat will remain in situ in the north of the site and so a source of peat will remain. Peat also remains off site and has a potential risk of migration into the site. Plots in these areas will require mitigation measures to a CS2 level.

3.5. RADON

The site is located in an area where 1-3% of homes exceed the radon action level; therefore, radon protection measures will not need to be incorporated into any proposed new dwellings.

3.6. POTABLE WATER SUPPLY INFRASTRUCTURE

Elevated concentrations of heavy end hydrocarbons were noted within TP101 at pipeline depth (0.75 – 1.35 m bgl), and within TP115 at a shallower depth.

Both of these exploratory hole locations were conducted upon the upfilled mounds in the west/south-west of the site and are therefore not representative of the sites general ground level.

Therefore, based on the assessment of current site conditions it is likely that Polyethylene (PE) pipe will be suitable at the proposed development.

However, a contaminant risk assessment completed in accordance with the UKWIR assessment framework should be completed and will be addressed and approved by the local authority under separate cover to confirm the requirement.

4. PHASE 3 REMEDIATION OPTIONS APPRAISAL

4.1. OVERVIEW

A remediation options appraisal has been completed in accordance with the principles as set out within the Environment Agency publication Land Contamination: Risk Management (LC:RM) (June 2025).

LCRM requires that the following tiered assessments are followed to ensure sufficiently detailed and robust appraisal of remediation options to inform the selection of the preferred approach and utilisation of the correct technologies to promote safe and sustainable land remediation:

- Identification of feasible remediation technologies;
- Detailed evaluation of viable options; and,
- Selection of an appropriate remediation option.

4.2. SUFFICIENCY OF INFORMATION

Prior to the commencement of the tiered assessment of remediation options, it is a requirement to assess the sufficiency of available information and validity of the risk-based assessment on which the remediation options appraisal is based.

Intrusive ground investigation works completed to date is considered sufficient in order to fully understand the risks to future end users, controlled waters and the wider environment.

4.3. CONTAMINANTS OF CONCERN

Following the completion of the intrusive investigation, assessment and the completion of a developed conceptual site model, Table 4.1 below summarises the contaminants of concern for which a Remediation Options Appraisal has been developed.

Table 4.1 Summary of Contaminants of Concern

CONTAMINANT OF CONCERN	LOCATION	DEPTH (m)	MATERIAL TYPE	EXPOSURE PATHWAY
Heavy Metals	TP101	1.00 m	MADE GROUND	Direct contact of the soil by future residents Direct ingestion of soil by future residents
Non-volatile PAHs	TP101 TP115 WS112	1.00 m 0.60 m 0.80 m	MADE GROUND MADE GROUND CLAY	Direct contact of the soil by future residents Direct ingestion of soil by future residents
Hazardous Ground Gases	WS104 WS105 WS108 WS111 WS112	–	CLAY PEAT & CLAY MADE GROUND CLAY CLAY	Inhalation/Accumulation of Hazardous Ground Gases

4.4. IDENTIFICATION OF REMEDIATION OPTIONS

4.4.1. OBJECTIVES

The remediation works must be completed in a safe and sustainable manner that ensures that the post-remediation condition of the site poses no unacceptable risk to controlled waters or the wider environment. The developed Conceptual Site Model must ensure no complete pollutant linkage to ensure successful implementation.

The remediation works must be completed in a manner that promotes sustainable re-use of material in a manner that minimises waste and maximises retention of material on-site.

4.4.2. AVAILABLE TECHNOLOGY

Available technologies are summarised in Table 4.2.

Table 4.2 Remediation Technologies

REMEDIAL TECHNOLOGY	CLASSIFICATION	APPLICATION	MEDIUM	LINKAGE ELEMENT AFFECTED
Cover system	Containment	In-situ	Soil	Pathway interruption
Excavation and off-site disposal	Civil Engineering	Ex-situ	Soil/groundwater	Removes source
Pathway Interruption – Specialist Mitigation by Ventilation and Impermeable Barriers	Pathway interruption	Design of buildings with passive ventilation and specialist membranes	Hazardous gasses and vapour.	Source / Pathway interruption

4.4.3. SELECTION OF REMEDIATION TECHNIQUES

Several remedial technologies have been considered in addressing the contaminant linkages of concern identified at the site, as summarised in Table 4.3.

In order to assess which of these technologies is most viable for this particular project, each technology has been reviewed on the basis of applicability, permissibility, cost, timescale and acceptability (including sustainability).

A combination of remediation solutions and technologies will be required to address and treat the numerous contamination issues identified on this site.

Aspects of sustainable remediation are also included within the review element of applicability.

Sustainable remediation is, 'the practice of demonstrating, in terms of environmental, economic and social indicators, that the benefit of undertaking remediation is greater than its impact and that the optimum remediation solution is selected through the use of a balanced decision-making process', (as defined within 'A Framework for Assessing the Sustainability of Soils and Groundwater Remediation', produced by Sustainable Remediation Forum UK, dated March 2010).

Table 4.3 Applicability of Remediation Technology

REMEDIAL TECHNOLOGY	APPLICABILITY	REGULATORY APPROVAL/ PERMIT	COST	TIME FRAME	SCORE	COMMENT
Cover System	5	5	5	5	20	Essential remediation solution to remove direct exposure pathways.
Hotspot Removal	5	5	5	5	20	Essential remediation solution to remove direct exposure pathways.
Excavation and Off-Site Disposal	5	5	1	5	16	Limited by the cost being prohibitive. Small quantities of material that cannot be treated will be removed. Likely to form one aspect of the remediation approach.
Potable Water Supply Pipes	5	5	4	1	15	Essential remediation solution to remove direct exposure pathways.
Pathway Interruption – Specialist Mitigation by Ventilation and Impermeable Barriers	4	3	5	1	13	Essential remediation solution to remove direct exposure pathways pertinent to gas generation beneath the site.

Note for Table 4.3 – Scoring Methodology

SCORE	APPLICABILITY	PERMISSIBILITY	COST	TIMEFRAME	ACCEPTABILITY/ SUSTAINABILITY
0	Not applicable, available or implementable	No chance of obtaining a permit			N/A
1	Not widely used and probably not applicable	Permitting will probably be difficult	Very High	Treatment time does not meet the client's requirements	N/A
2	Widely used but probably not applicable or not widely used and may not be applicable	Permitting may be difficult	High	Treatment time almost meets the client's requirements	N/A

3	Widely used but may not be applicable or not widely used but probably applicable	No permitting problems	Moderate	Treatment time meets the client's requirements	N/A
4	Widely used and probably applicable or not widely used but proven and applicable		Low		N/A
5	Widely used, proven and applicable		Very Low		N/A
Considerations	Contaminant type; Soil conditions; Groundwater considerations; Availability; Proven track record; Requirements for additional treatment; Whether technology is implementable at the site; Ability to attain remediation goals.	Emissions; Discharges; Noise; Planning; Mobile Treatment License; Environment Agency.	Indicative costs data from professional experience.	Site requirement for treatment within 12 months.	Client acceptance; Regulatory acceptance; Site acceptance; Other potential stakeholders' acceptance.

4.5. SUMMARY OF PREFERRED REMEDIATION OPTIONS

Based on the options appraisal, it is considered that the following combination of remediation technologies provides the most sustainable, viable and economical solutions that will ultimately result in the successful remediation of the site:

- Delineation of identified **contaminant hotspots** for potential reuse within a low risk area of the site, validation to demonstrate effective implementation or removal from the site should the concentrations be to high to suitably reuse.
- Delineation and segregation of Made Ground encountered and stockpiled for use within construction activities pending validation sampling.
- Localised CS2 ground gas **mitigation by ventilation and impermeabile barriers** within plot substructure – Gas protection design report will be required to finalise the structural engineers design and suitability for the plots potentially affected.
- Construction of water supply pipework using **specialist potable water supply pipes**.

4.6. REQUIREMENT FOR REGULATORY CONTROL OF WASTE

Once full planning permission has been obtained, the relevant regulatory control measures can be implemented.

4.6.1. CL:AIRE DOW-COP MATERIAL MANAGEMENT PLAN

Where necessary, operations as outlined within the remediation enabling works rationale summarised in this report may be subject to regulation using the appropriate environmental permit, standard rules exemption and materials management plan, to be created in accordance with version 2 of the CL:AIRE Definition of Waste: Code of Practice (DoW CoP).

It is noted that if the material is to be imported utilising the CL:AIRE DoW CoP from an alternative development site, then only chemically certified, clean, naturally occurring material can be transferred.

The MMP will be created with due consideration of all proposed remediation and enabling works operations prescribed within this document and will be undertaken by a qualified person with a signed declaration submitted to the EA prior to the reuse of materials on the site.

The importation of material for use within the proposed construction of a development platform will be subject to compliance with the E3P protocol for the importation of materials as set out within the specification for material import included within Appendix V of this report.

In order to ensure full compliance with the CL: AIRE Definition of Waste Code of Practice, a clear and robust Materials Tracking Plan must be implemented throughout the works.

The plan shall set out the process for the recording, monitoring, and validation of all material movements across the site.

Regular surveying of all stockpiles shall be undertaken to confirm volumes, locations, and material classifications.

This information shall be reconciled against the approved Materials Management Plan (MMP) to ensure that materials are placed, stored, or re-used in accordance with the agreed design.

A detailed schedule of material movements shall be maintained, including records of excavation, haulage, placement, and final destination of all materials. Each load must be traceable, with clear documentation demonstrating origin, classification, and placement location.

The tracking system shall ensure that all materials are accounted for at each stage of the works, providing a transparent audit trail for verification and regulatory review. This will minimise the risk of

non-compliance, ensure materials are managed sustainably, and provide robust evidence of adherence to the CL: AIRE requirements.

5. REMEDIATION AND SITE-ENABLING WORKS

RE-1 – PRE COMMENCEMENT REGULATORY REQUIREMENTS

Prior to the commencement of any works on-site, all reports relating to the assessment of risk to contaminated land should be submitted to the regulatory authorities to gain written approval.

All relevant Standard Rules Permits should be registered with the Environment Agency by the contractor.

The LAPC Part B Notification for the deployment of the mobile crushing plant should be implemented prior to the establishment of the equipment on-site.

If the proposed volume of soils to be re-used (excluding crushed materials) exceeds the parameters of the Standard Rules Permit, a CL:AIRE Materials Management Plan (MMP) qualified declaration should be made by the contractor, having obtained full written approval for the remediation strategy from the Local Planning Authority and Environment Agency.

It is not anticipated that there will be any requirement to treat any materials on-site (such as hydrocarbon-impacted soil or groundwater); however, should any previously unidentified contamination be encountered, the contractor must either notify E3P and, if appropriate, relevant regulators of their intention to complete a minor works operation or arrange for the deployment of the appropriate environmental permit for the specified operation.

A specialist Waste Management and Recovery Strategy will also be prepared for the site under a separate cover.

RE-2 – INDEPENDENT VALIDATION AND SITE SUPERVISION

It will be necessary to instigate the site-wide remediation and enabling works with advice from a suitably qualified and independent specialist that is familiar with this report. The specialist is required to attend the site on a part-time basis in order to record ground conditions and to monitor progress and quality of works completed by the contractor.

Frequencies of site attendance may need to change depending on specific operations that are being completed.

RE-3 – ENVIRONMENTAL AND NUISANCE CONTROL

The LC:RM requires that due consideration be given to the following key issues which will impact the appropriate selection of suitable remediation options:

- Management of all works is required to ensure that no environmental nuisance is created through dust emissions, noise or vibration levels.
- All works are to be completed in a manner so as not to create any structural risk to the adjacent highways.
- Temporary works are to be implemented as necessary to support excavations throughout the works.

In the event that a complaint is made with respect to dust emissions, noise or vibration levels, remedial measures and a programme of ongoing monitoring should be agreed upon with the local authority and implemented on-site.

RE-4 – RISK TO INFRASTRUCTURE

Site works should be completed in a manner that ensures no risk of disturbance to any adjacent highways or infrastructure.

RE-5 – SITE CLEARANCE OPERATIONS

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

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 in accordance with the requirements of the NHBC/LABC.

Any above-ground waste/fly tipping – contractor should visit site, determine type of waste materials and arrange for responsible method of disposal off-site.

RE-6 – MANAGEMENT OF INVASIVE PLANTS

Invasive plant species have not been identified on-site.

The remediation contractor must satisfy themselves concerning the extent of any previously unidentified 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 – RECOVERY OF NATURAL TOPSOIL

The site investigation report and subsequent surveys identify areas of the subject site where natural organic soils (topsoil) are present at the near-surface.

Reworked topsoil comprising dark brown, slightly sandy clay with frequent rootlets to depths of between 0.20 m and 0.50 m bgl. The topsoil was generally free from anthropogenic material with the exception of SA101, which contained gravel of brick and TP104 where a land drain was identified.

The contractor should seek to maximise the recovery of this material to promote sustainable construction through careful segregation and subsequent stockpiling of the 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 material will be subject to validation testing by the supervising consultant in accordance with the testing specification set out herein.

RE-8 – RETENTION OF PEAT SOILS

Peat deposits were encountered in the northern sector of the site at depths between 0.20m and 0.80m bgl, with a typical thickness of less than 0.50m.

The total peat volume was estimated to be ~11,660 m^3.

The deposits were classified as a degraded raised lowland bog, with restoration potential judged to be negligible due to drainage, surrounding urban development and ecological degradation.

To satisfy Natural England's comments and requirements, a Peat Management Plan (PMP) will be implemented and supervised by a suitably qualified environmental specialist to maximise the retention and beneficial use of peat resources on site.

Where excavation is unavoidable due to essential construction requirements, peat will be carefully managed, stored, and reused across the site, ensuring that some of the identified deposits are either retained or incorporated into gardens, landscaping and habitat creation areas. Any excess peat deposits should be removed from the site.

This approach balances the protection of peat soils with the delivery of the development and ensures compliance with local planning policy and Natural England guidance.

- ~618 m^3 will be incorporated into residential garden areas, producing organic-rich soils at approximately 0.45 m depth (as permitted by the development scheme).
- 1236 m^3 will remain in situ, preserving peat in its current position within the confines of the required development infrastructure works.
- 109 m^3 will be placed within landscaped areas, with specific use in the creation of wet grassland and marsh planting zones, and for forming organic cover soils in public open space.

Volumes of peat excavated, stockpiled and reused will be logged by the site engineer and E3P as the independent specialist. Compliance checks will be carried out at key construction stages. Due to the nature of the engineering works, the plan will need to be dynamic and adaptive.

RE-9 – MANAGEMENT OF INORGANIC IMPACTED MADE GROUND

Localised exceedances of non-volatile PAHs and heavy metals have been identified in the below locations.

- TP101 at 1.00 m bgl – Lead, Benzo(b)Fluoranthene, Benzo(a)Pyrene and Dibenzo(a,h)Anthracene.
- TP115 at 0.60 m bgl – Benzo(b)Fluoranthene, Benzo(a)Pyrene and Dibenzo(a,h)Anthracene.
- WS112 at 0.80 m bgl – Benzo(b)Fluoranthene, Benzo(a)Pyrene and Dibenzo(a,h)Anthracene.

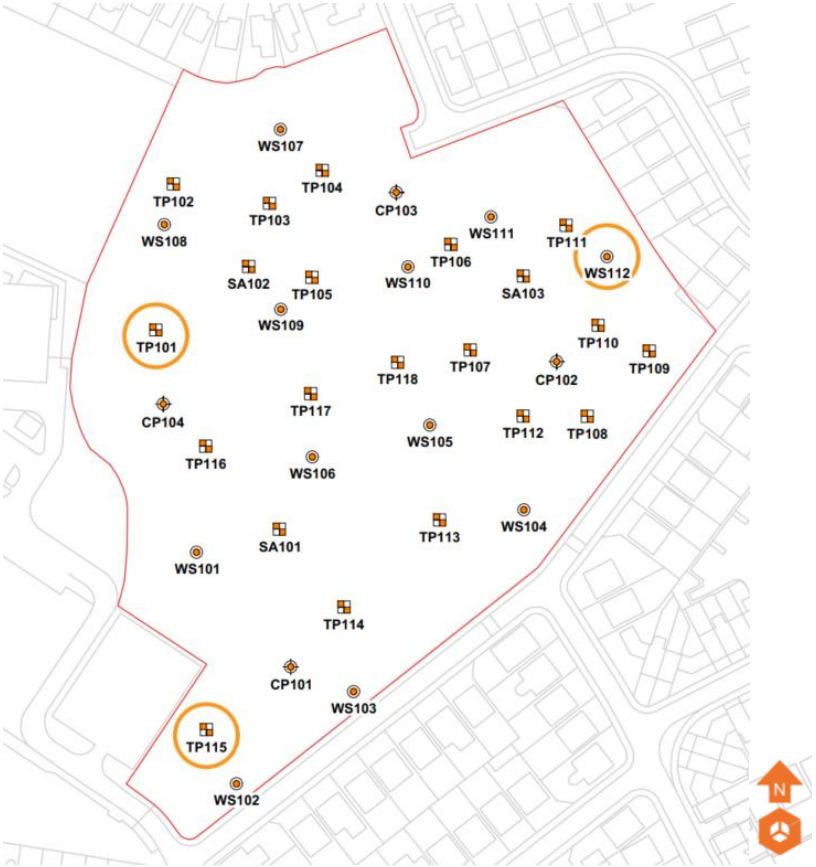
It is considered that this material represents an unacceptable risk associated with soil ingestion. Due to the isolated nature of these soils, it is recommended that a delineation and hotspot validation be undertaken rather than mitigation through the construction of a clean cover system.

Upon completion of the delineation and excavation, the sides and base of the resulting void(s) where impacted material is present will be chemically validated to confirm that no impacted materials remain in situ.

The excavated arisings should be stockpiled on an impermeable membrane. This material will then be subject to detailed laboratory analysis to determine the suitability for reuse or the requirements for off-site disposal.

Validation samples will be collected from the base of the excavation (2 samples), and one sample from each side wall at the level where impact was previously identified.

The results of this validation testing will be directly compared to the site-specific remediation targets (as defined within Appendix IV of this report) to demonstrate that no unacceptable level of risk to human health, controlled waters or the wider environment remains.



RE-10 – MANAGEMENT OF ABOVE AND BELOW GROUND STRUCTURES

No historical features and therefore obstructions have been identified within the site boundary; however, if any are identified it will be the contractor's responsibility to remove all obstructions from the areas of proposed residential development, including plot footprints, rear gardens, private driveways, adopted highway and utility infrastructure (road box) in their entirety.

Obstructions encountered within the near-surface soils will be chased to their full depth and removed; if 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 to be completed to map the depth of filled/processed material.

RE-11 – IMPORTATION OF MATERIALS FOR USE IN CONSTRUCTION

Where there is a net shortfall of material required to achieve the proposed ground levels, it will be necessary to import natural inert soils and aggregate as per the engineering requirements set out in the Geotechnical Design Report (Ref: 17-994-R4).

Imported material must be certified as suitable for use in strict accordance with the E3P chemical criteria (see Section 5) and the Geotechnical Design Report for the geotechnical performance criteria (Ref: 17-994-R4) and in conjunction with the required duty of care notes and waste transfer exemption.

If recycled aggregates are imported, then laboratory testing should be completed to demonstrate compliance with the waste and resources action programme (WRAP) protocol.

Where inert soils are imported, laboratory testing should be completed in accordance with the requirements of the pertinent environmental permit (i.e. U1 standard rules) or CL:AIRE MMP for the reuse of clean, naturally occurring soils.

RE-12 – PREPARATION OF COVER SYSTEM / GROWING MEDIUM

For the avoidance of doubt this element is only required if Made Ground is present in any residential gardens post earthworks (and considered unlikely due to delineation and segregation activities discussed in previous sections). Any requirement for cover systems will be detailed in the remediation validation report.

Where the remediation identified Made Ground in residential garden areas that will be retained a soft-standing clean cover systems will be required. It will be the contractor's responsibility to prepare the area to 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 garden, the area will be subject to a hotspot removal, with a reduced-level dig to remove unsuitable material to a level that would allow the placement of the 600mm cover system or verified natural stratum (whichever is the shallower).

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

The placement of certified subsoil and topsoil will be completed as part of the developer works/build-phase mitigation plan. All garden areas where a cover system is required will be subject to plot-specific independent validation by E3P.

The DEFRA / Environment Agency guidance states *'that conflicts of interest in verification should be avoided. A contractor certifying their own work is considered to be a conflict of interest and is not good practice. If verification is carried out by the same company (or related company) that carried out the work, then the process, results and report will need to be audited by an independent consultant'* (Environment Agency, 2010).

RE-13 – STOCKPILE ARRANGEMENTS

Whenever it is envisaged that the use of the materials will occur in excess of one year from being stockpiled/stored, a time limit has to be agreed with the Environment Agency. The decision relating to the length of storage will be made within the context of the extant planning permission or agreed programme of works. Supporting information may be requested by the environment agency in the form of the soil resource plan.

The proposed location of any stockpiles must be pre-agreed with the developer and remediation engineer prior to stockpiling commencing.

Soils will be stripped or excavated during the construction process. In order to enable its re-use on-site at a later stage, soil needs to be stored in temporary stockpiles to minimise the surface area occupied, and to prevent damage from the weather and other enabling works/construction activities.

Stockpiled soil must not be vulnerable to compaction or erosion; must not cause pollution to surrounding watercourses; and must not increase flood risk to the surrounding area.

Stockpiles must be appropriately marked out and clearly signed to ensure that they are easily identifiable for reinstatement.

Soil should be stored in an area of the site where it can be left undisturbed and will not interfere with site operations. Ground to be used for storing the topsoil should be cleared of vegetation and any waste arising from the development.

The locations and footprints of each stockpile will be accurately recorded on a plan of appropriate scale. Marker posts will be provided in locations which have been surveyed and recorded to provide volumes for each stockpile type. Photographic records of stockpiles will be provided at the point of handover to the developer.

Stockpiling should follow the guidance set out in DEFRA's construction code of practice for the sustainable use of soils on construction sites with the appropriate method adopted based on the soil type for the creation of stockpiles (method 1 or 2).

Stockpiled material that may pose a risk to the environment will be required to be stored within an impermeable bunded area that is adequately sealed with a membrane sufficient to prevent rainfall from entering the bund or stockpile. Typically, sheeting is laid to lap over the extent of the bund sidewalls and sealed with soil around the periphery.

Stockpiled soils will require chemical analysis at the frequency defined within Table 5.1 based on the soil type and use.

RE-14 – STOCKPILE MANAGEMENT & TRACKING PROTOCOL

As part of the CL:AIRE MMP verification and materials tracking for Natural England, the following procedure shall be implemented:

Stockpile Surveys

- A full survey of all stockpiles shall be undertaken at a minimum frequency of once per month.
- Each survey shall clearly indicate the stockpile extents, and the material type contained.

Stockpile Numbering

- When a new stockpile is created, it shall be allocated a unique stockpile number.
- Each stockpile number is assigned for the lifetime of that stockpile only.
- Once the stockpile is fully used or moved, its original number is retired and shall not be reassigned.
- Any relocated or reformed stockpile shall be assigned a new unique number.

Database Management

- A database shall be maintained recording all stockpiles, their numbers, material type, volumes, and status.
- This will provide a clear and unequivocal audit trail and verification of all materials movement.

Supervision and Verification

- The supervising engineer shall be issued with 3D CAD drawings of stockpiles following each survey.
- Where 3D CAD outputs are not available, the supervising engineer shall instruct surveys to ensure full compliance with this protocol.

On-going Monitoring

- The supervising engineer shall review all stockpile records to ensure clear and transparent tracking of material use, movement, and verification in line with the MMP requirements.

RE-15 – PROVISION OF TOPSOIL

Initial testing of reworked topsoil deposits and peat has deemed these materials chemically suitable for use within the clean cover system in private gardens, POS, and areas of soft landscaping, however further chemical validation testing is required.

In line with the E3P Peat Management Plan (PM), ~3,000 m³ of peat will be incorporated into residential garden areas, producing organic-rich soils at approximately 0.45 m depth (as permitted by the development scheme).

Site-won and imported topsoil (if required) will require regulation under an MMP and tested in accordance with sampling frequencies outlined within Table 5.1.

The garden and 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.

Topsoil stockpiles should be placed in areas that will ensure no ‘cross contamination’ from materials with significant anthropogenic influence on-site.

RE-16 – PROVISION OF SUBSOIL

The natural superficial deposits (predominantly cohesive and peat soils) are deemed chemically suitable for use within the clean cover system in private gardens, Public Open Space (POS), and areas of soft landscaping. It is therefore deemed viable to re-use materials that are cut as part of the wider earthworks or through a soil inversion (regulated by an MMP) to generate the required volumes of material.

Materials generated from the 'site strip' operation can be subdivided into topsoil and subsoil, with PEAT and clay loam soils within the lower 50% of the site strip likely to be classified as a subsoil material. These soils can be sustainably segregated, tested, and stockpiled for re-use as subsoil.

Site-won and imported subsoil (if required) will require regulation under an MMP and tested in accordance with sampling frequencies outlined within Table 5.1.

The garden and 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.

Subsoil stockpiles should be placed in areas that will ensure no 'cross contamination' from materials with significant anthropogenic influence on-site.

RE-17 – WASTE SOIL SURPLUS

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 the 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 the 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 CI:AIRE Definition Of Waste: Code Of Practice.

RE-18 – WORKS TO PUBLIC OPEN SPACE AND LANDSCAPING

No formal development works are proposed within the public open space. Therefore, remediation to the same extent will not be required; however, PEAT soils will be incorporated into these areas to improve soil organic matter and support habitat establishment.

There is a requirement for ~109m^3 of peat to be placed within the landscaped areas, with specific use in the creation of wet grassland and marsh planting zones, and for forming organic cover soils in public open space as per the E3P Peat Management Plan (PMP).

RE-19 – VALIDATION OF MATERIAL FOR POTABLE WATER SUPPLY INFRASTRUCTURE

Post remediation and enabling works ground conditions may be different from those identified during the ground investigation. There will be a requirement to import capping materials for highways, which if from a recycled source may preclude the use of standard pipes.

Where imported material is required to construct the potable water infrastructure pipework, this material will need to comply the requirements of UKWIR pipework thresholds for the specified pipework.

Failure to meet the required specification may necessitate further remedial works.

Any materials where organic hydrocarbon impact is identified at concentrations above the UKWIR assessment criteria for a polyurethane pipe within the proposed locality of potable water supply infrastructure should be delineated and removed by the remediation contractor under the supervision of the geoenvironmental consultant.

Validation sampling should be completed at 10 m chainage at depths of 0.75 m and 1.50 m within the locality of the potable supply pipes where impacted material is removed, with samples analysed for all pertinent volatile and semi-volatile hydrocarbons and, where necessary, chlorinated/halogenated compounds.

Upon successful remediation of all impacted materials, the post-remediation validation testing will be reviewed by a qualified person to inform an updated UKWIR assessment to be reviewed and approved by the statutory adoption authority.

If unacceptable concentrations remain following remediation, then potable water infrastructure should be constructed in accordance with a suitably robust risk assessment and design compliant with UKWIR.

Where imported material is required to construct the potable water infrastructure pipework, this material will need to comply with the requirements of UKWIR pipework thresholds for the specified pipework. Failure to meet the required specification may necessitate further remedial works.

RE-20 – REMEDIATION VERIFICATION REPORT

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 is to be reported in line with regulatory guidance. This will include a detailed risk assessment. The report will be submitted to the local authority for approval following completion.

The verification report will conclude the site remediation and enabling works with the build phase validation to be produced separately.

RE-21 – REMEDIATION PROJECT UNPLANNED UPDATES

LC:RM states the following with respect to the completion of remediation works:

- Ensure remediation is done in line with the remediation strategy and regulatory controls.
- React to testing results or monitoring data promptly;
- Manage unexpected contamination;
- Allow time to get and interpret the data without delaying progress.
- Use a different solution or contingency measure if the data shows that the remediation is not working; and
- Ensure any method statements are correct and kept up to date.

Remediation work is an iterative process, and as such, it will be managed by the specialist contractor on site, the supervising engineer, the professional project team and the client.

Where possible, regulatory authorities will be informed of ongoing changes to the project and specific remediation requirements; however, works must be allowed to proceed under professional judgment without the requirement to revise the formal remediation strategy.

All project adjustments will be fully documented and detailed within the validation report. For absolute clarity, professional judgement will be made by chartered professionals supervising the remediation works. It is considered that there is no requirement for any revision to a remediation strategy on the basis that adjustments are made due to unforeseen circumstances, which are reviewed and approved by a chartered professional within the project team. The approved remediation strategy is an iterative document that allows flexibility and changes based on specific circumstances.

5.1. VERIFICATION PLAN

5.1.1. 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 the 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 or 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 to remove the risk of cross-contamination.

The sampling frequency for materials to be managed under the remediation strategy is presented in Table 5.1 The validation sampling protocol has been developed utilising guidance from Manchester City Council.

Table 5.1 Specification of Chemical Validation Laboratory Analysis

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Site Generated		
Site-Generated 6F2	1 Sample per 500 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	B/D/E/F
Stockpiled Made Ground General Backfill	1 Sample per 1000 m^3	A/B/C/D
Stockpiled Made Ground General Backfill	1 Sample per 2000 m^3	G
Stockpiled Natural Backfill	1 Sample per 2000 m^3	A/B/C/D
Site-Generated Subsoil (Cover system)	1 Sample per 100 m3	A/B/C/D
Site-Generated Topsoil Cover (Cover system)	1 Sample per 100 m^3	A/B/C/D
Hotspot Validation Sample	1 Sample per 10 m of linear excavation to base and sidewall	A/B/C/D
Imported		
Recycled Aggregate	1 Sample per 500 m^3	A/B/C/D
Virgin Quarried Aggregate	2 samples per source	A/B/C/D
Subsoil Greenfield Source (Cover system)	1 Sample per 200 m^3 (minimum 3 from source)	A/B/C/D
Subsoil Brownfield Source (Cover system)	1 Sample per 50 m^3 (minimum 6 from source)	A/B/C/D
Topsoil Greenfield Source (Cover system)	1 Sample per 200 m^3 (minimum 3 from source)	A/B/C/D

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Topsoil Brownfield Source (Cover system)	1 Sample per 50 m^3 (minimum 6 from source)	A/B/C/D
General Engineering Fill (Class 1 and 2 Soil)	1 Sample per 1000 m^3	A/B/C/D

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

5.1.2. IMPLEMENTATION OF VERIFICATION

Implementing the verification plan is an iterative process, with the process only complete when you have ended monitoring or sampling and produced the verification report.

In accordance with LCRM, all relevant data as set out in the verification plan will be collected to ensure verification reporting accurately reflects all works carried out.

Performance against all remediation criteria will be assessed to ensure that the remediation objectives are being achieved. This may be a complex operation where criteria relate to several remediation activities, phases or timescales, and a phased approach may be taken if prior agreement has been sought from the relevant regulatory authorities.

5.1.3. RISK-BASED ASSESSMENT FOR NON COMPLIANCE

Where the material is found to contain concentrations of potential contaminants at levels in excess of the site-specific screening criteria (as detailed within Appendix IV), 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.

5.1.4. REMEDIAL OBJECTIVE OVERVIEW

A contingency plan is provided in Section 8 of this report to identify what action to take if results fall outside of the acceptable limits. It is possible that remediation objectives and criteria may need to be reviewed to modify the remedial process or consider other options.

- Data that may lead to a further review include:
- A change in conditions such as temperature or pH.
- A decline in contaminant concentrations not as predicted.
- A contaminant plume that does not shrink or stabilise as predicted during monitored natural attenuation (MNA) or in situ treatment.
- A diminishing return in efficiency for example, in soil vapour extraction, air sparging or pump and treat.
- A change in groundwater flow or head-up gradient of a slurry wall or permeable reactive barrier.

- A failure to prevent the migration of ground gases for example, by passive venting, containment or active abstraction.

Any changes to the original remediation objectives will be justified, recorded and agreed with the details provided in the verification report upon completion of the remediation works.

5.2. REMEDIATION CONTRACTOR SITE MANAGEMENT RESPONSIBILITIES

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 operation as set out herein, the contractor will provide a written methodology of works to be supplied to the supervising Geoenvironmental 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.

6. MATERIAL MANAGEMENT AND LEGISLATIVE COMPLIANCE

The processing of recycled aggregates will be completed using LAPC Part B licenced plan with the appropriate deployment notification to the local authority prior to the commencement of works. All materials that are recovered as recycled aggregate will be compliant with the E3P validation testing requirements and as such would not be deemed to be a waste material where there is a certainty for their reuse on-site.

A U1 Exemption will be registered for the site, which allows the reuse of up to 5000 T of prescribed material within construction, with up to 25,000 T of material permissible to be reused in the construction of roads. It should be noted that only 1000 T of material described as sand, stones or clay soil classified as waste can be reused with a U1.

A T5 Exemption, allowing for the screening and recovery of up to 5000 T of permissible material for subsequent reuse in construction, will also be registered.

All materials that are recovered under the WRAP protocol, U1 or T5 exemptions must be analysed to demonstrate that they are both chemically and structurally suitable for use within the context of the development.

The relevant LAPC, U1, T5 and WRAP licenses, exemptions and protocols provide the legislative framework for material compliance during the site remediation and enabling works to be completed by the specialist contractor and validated by E3P.

Where necessary, operations as outlined within the remediation enabling works rationale summarised in this report may be subject to regulation using the appropriate environmental permit, standard rules exemption and materials management plan, to be created in accordance with version 2 of the CL:AIRE Definition of Waste: Code of Practice (DoW CoP).

Under the Waste Framework Director, certain waste materials, even once processed under exemptions, continue to be classified as waste until they have fully recovered or are no longer a waste for other reasons. To facilitate the reuse or recovery of these waste materials, it is essential the correct framework is in place, including appropriate exemptions, permits or quality protocols.

It is noted that if the material is to be imported utilising the CL:AIRE DoW CoP from an alternative development site, then only chemically certified, clean, naturally occurring material can be transferred.

If required, the MMP will be created with due consideration of all proposed remediation and enabling works operations prescribed within this document and will be undertaken by a qualified person with a signed declaration submitted to the EA prior to the reuse of materials on the site.

The importation of material for use within the proposed construction of a development platform will be subject to compliance with the E3P protocol for the importation of materials as set out within the specification for material import included in Appendix V of this report.

7. RECORD KEEPING AND VERIFICATION

7.1. RECORD KEEPING

During the remediation and site enabling works, the contractor will undertake the following record-keeping protocols:

- Detailed site diary including material movements;
- Sampling register, testing results, photographs, details of locations of contaminated 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 remediation and site enabling works.

7.2. VERIFICATION REPORT

Following the completion of the remediation works and the provision of site records from the contractor, to demonstrate that all of the remediation works have been undertaken in accordance with the Remediation and Enabling Works Strategy, E3P will provide a Verification Report.

The report will provide a summary of the key elements of work and will be referenced to the agreed redevelopment strategy and planning requirements with supporting information presented within appendices.

The Verification Report will be based upon LCRM (June 2025) and will incorporate a summary and commentary of, where applicable:

- Background information on the site;
- Statutory and regulatory requirements;
- Details of the remediation required;
- Decision records covering agreements with regulators;
- Records of works undertaken and associated validation and monitoring records obtained from the contractor (chemical and geotechnical testing data, import sources, consignment notes etc);
- E3P's supervision records;
- Detailed drawings showing all sampling locations for chemical and geotechnical validation sampling;
- Specialist contractor's validation reports for particular elements of work;
- Detailed surveys of all excavations and production of as-built drawings;
- Final status of remediation and achievement of remedial objectives to satisfy planning conditions; and,
- Additional risk assessments/non-scheduled reactive works undertaken or details of any unexpected contamination.

On completion of the verification works, the appropriate documentation will be forwarded to the client and the regulatory authorities.

In most cases, a Verification Report will be produced once the remediation works have been completed, however, there may be instances where the remediation is phased and separate Verification Reports may be required.

E3P considers that with the adoption of the above best practices, the site can be safely redeveloped. The site enabling works process and the 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.

8. CONTINGENCY PLAN

8.1. PREVIOUSLY UNIDENTIFIED CONTAMINATION

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.

Any amendments to the original remediation objectives will be justified, recorded and included in the Verification Report.

9. SECOND PHASE MITIGATION AND MANAGEMENT

9.1. OVERVIEW OF PROJECT REQUIREMENTS

Key Requirements include:

- Further chemical validation samples of the site-won / imported topsoil and subsoil will be required during the enabling works phase to meet regulatory sampling frequencies.
- Plots in localisted areas will require mitigation measures to a CS2 level where peat remains

9.2. COVER SYSTEM (WHERE NECESSARY)

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

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

- Chemical validation of site won / imported topsoil for use within private gardens, POS and areas of soft landscaping;
- Chemical validation of site won / imported subsoil for use within private gardens, POS and areas of soft landscaping;
- Placement and depth validation of a 600 mm clean cover system (including break layer) within private rear gardens where Made Ground remains; and,
- Placement and depth validation of a 450 mm clean cover system (including break layer) within front gardens, POS and areas of soft landscaping, where Made Ground remains.

9.3. PLACEMENT OF COVER SYSTEM

For the avoidance of doubt, this element is only required if Made Ground is present in any residential gardens post earthworks (and considered unlikely due to delineation and segregation activities discussed in previous sections). Any requirement for cover systems will be detailed in the remediation validation report.

9.3.1. PROCEDURE FOR PLACEMENT OF CHEMICALLY SUITABLE COVER SYSTEM

The remediation and enabling works strategy for the site, concerning the health of the future site users, includes the provision of a chemically suitable clean material to be installed in all private gardens and soft landscaped areas. The construction of the clean cover/placement of clean material shall be in accordance with Table 9.1.

Table 9.1 Construction and Validation of the Cover System

LANDSCAPE TYPE	DEPTH		BREAK LAYER Y/N/TYPE	VALIDATION FREQUENCY	TESTING SUITE	VALIDATION DOCUMENT
	TOPSOIL	SUBSOIL				
Back garden	150	450	Y	1 per 5 plots	A/B/C/D	Garden Validation Letters
Front garden	150	300	N	1 per 10 plots	A/B/C/D	
LEAP (parkland)	Minimum 300mm clean cover		N	1 per 625 m^2	A/B/C/D	POS Validation Letters
Functional POS	Minimum 300mm clean cover		N	1 per 2000 m^2	A/B/C/D	
Non-Functional POS	N/A		N	N/A	A/B/C/D	

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.

Subsoil and topsoil shall be free from deleterious materials, including building materials (e.g. bricks, concrete, plaster), timber, plastics, glass, metal fragments, and other unsuitable elements listed in BS 3882:2015. Compliance will be assessed visually during sampling and inspection of the cover system to confirm the absence of these contaminants. BS 3882 testing will not be undertaken to verify compliance.

Initial testing of site-won sub-soil to classify its re-use on site has been completed as part of the remediation works undertaken. Therefore, further analysis of sub-soil will be required to achieve the testing frequencies outlined within the remediation strategy and in the event of the importation of additional material during construction.

Garden and landscaped areas need to be backfilled with validated subsoil, and topsoil in line with Table 5.1.

Topsoil is required to be confirmed as chemically suitable before placement. Where subsoil is not placed during remediation and enabling works, E3P will be required to return to the 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 corresponding validation will be documented within the Garden 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 before installation of these utilities.

If natural superficial deposits are encountered, excavation can cease here.

E3P will collect photographic evidence of the placement of 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 before issuing a CML certificate.

The garden Validation procedure is detailed in Table 9.2.

Table 9.2 Garden Validation Procedure

PROCEDURE	METHOD
Chemical Validation	Imported subsoils and topsoil will need to be chemically analysed to confirm suitability for use with the proposed cover system before installation and completion of the garden systems. E3P will issue an email to the appropriate party with an assessment of the chemical suitability of both subsoils and top soils. If acceptable the materials can be installed to the required depth at which time the plot will be deemed complete following a validation procedure by a suitability qualified E3P engineer.
Trial Holes	Trial holes are deemed necessary for every 1 in 5 plots and must be advanced at random.
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 each and every plot. 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 have been placed in the required garden plots along with the chemical analysis.
Completion Report	Upon completion of all garden and landscaped areas within the development, a Completion Report will be issued providing the confirmation that all remediation requirements have been achieved.

Figure 9.1 provides an example of a garden validation certificate that will be required for every 1 in 5 plot.

Figure 9.1 Example of Plot Cover System Validation

Plot Validation 20 / 20 (100%)

Plot Validation 1	5 / 5 (100%)
Plot Number	117
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	1000


Photo 1


Photo 2

Depth of Topsoil (mm)	150
Depth of Subsoil (mm)	850
Depth of Cover System at Ground Level (Photo)	☒


Photo 3

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒


Photo 4

Soil suitable	Yes
Geotextile membrane present	N/A

END OF REPORT

Appendix I: Limitations



GENERAL

This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.

The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects’ responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.

E3P does not warrant work/data undertaken/provided by others.

INTRUSIVE INVESTIGATION REPORTS

Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental And Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and, Geotechnical Risk Register.

The investigation has been undertaken to provide information concerning either:

- The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

Unless otherwise specified in the scope of works, any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report

The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.

The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.

Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work

The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of

any future changes or amendments to these values. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.

Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.

The results of the asbestos testing are factually reported and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.

If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales

associated with the Regulatoy Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.

The data is presented and will be compared with assessment criteria.

Appendix II: Glossary



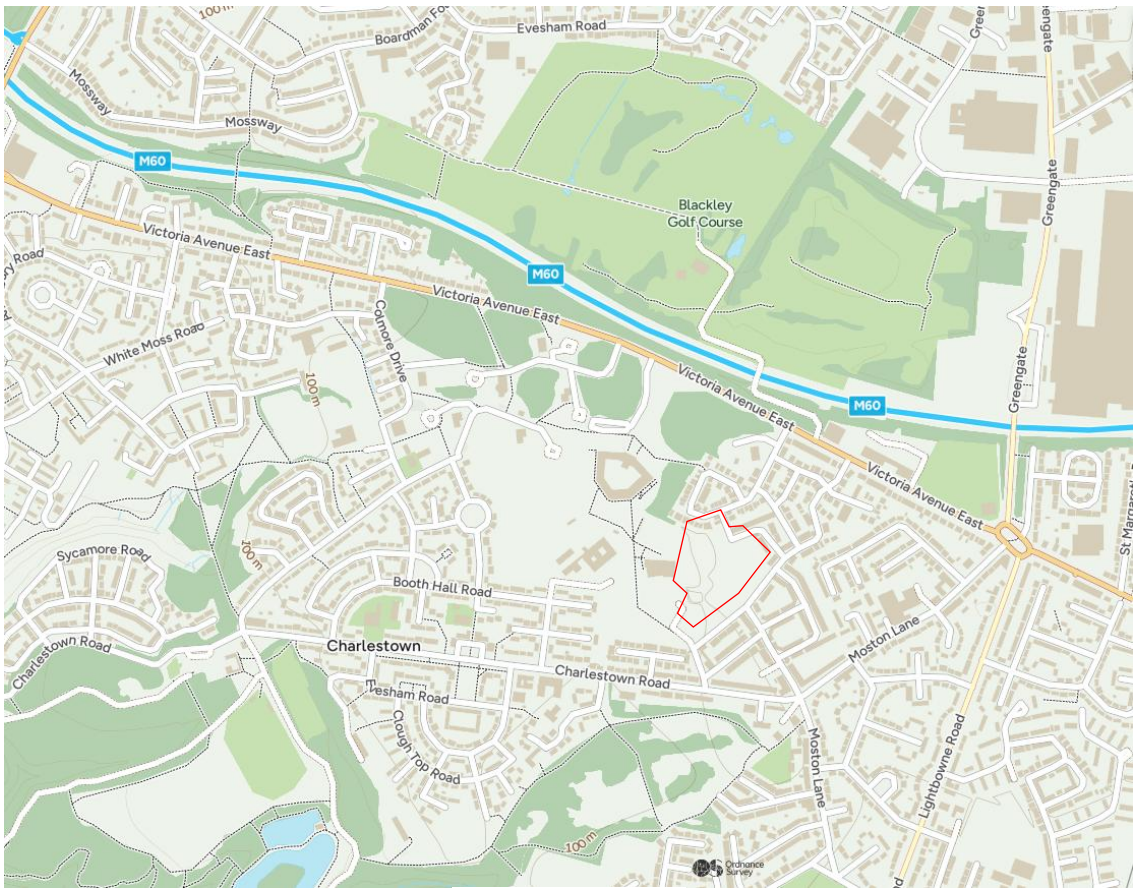
ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise Management Plan
BSI	British Standards Institute	NPSE	Noise Policy Statement For England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
MRA	Mining Remediation Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation

MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	**PFOA**	Perfluorooctanoic Acid

Appendix III: Drawings



DRAWING 17-994-001 – Site Location Plan



N

e3p



N

P1	REVA	14.01.2025	TG	MD	MD	
Phase	Issue	Date	Drawn	Checked	PM	

Notes:

Client: Miler Homes LTD

Job No: 17-994

Date: 14.01.2025

Drawing No: 002

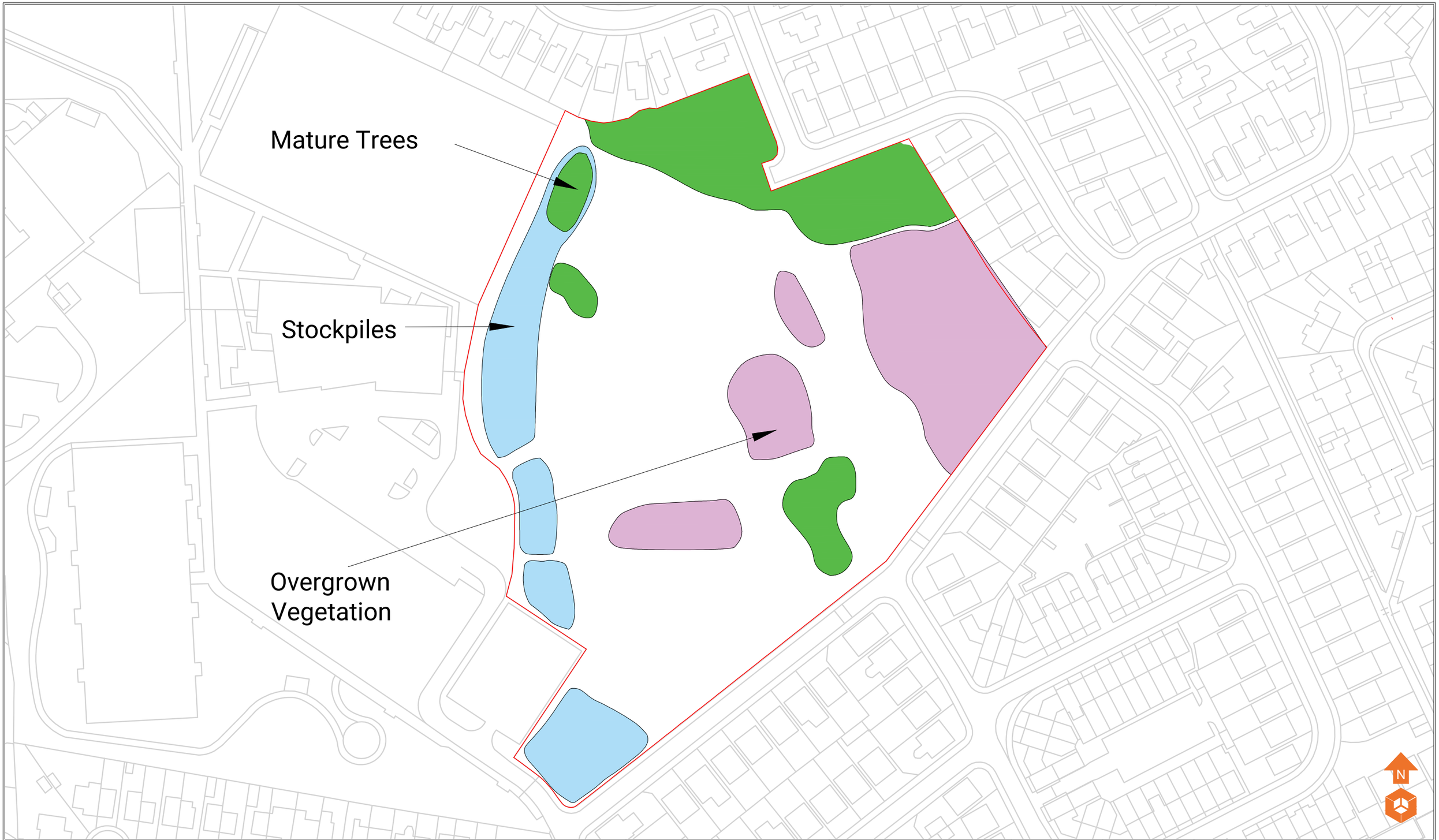
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Proposed Development Plan

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Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
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Website: www.e3p.co.uk

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Site Features

- Stockpiles
- Mature Trees
- Overgrown Vegetation

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	05.11.2024	TG	LC	LC

Client: Miller Homes LTD

Job No: 17-994

Date: 05.11.2024

Drawing No: 004

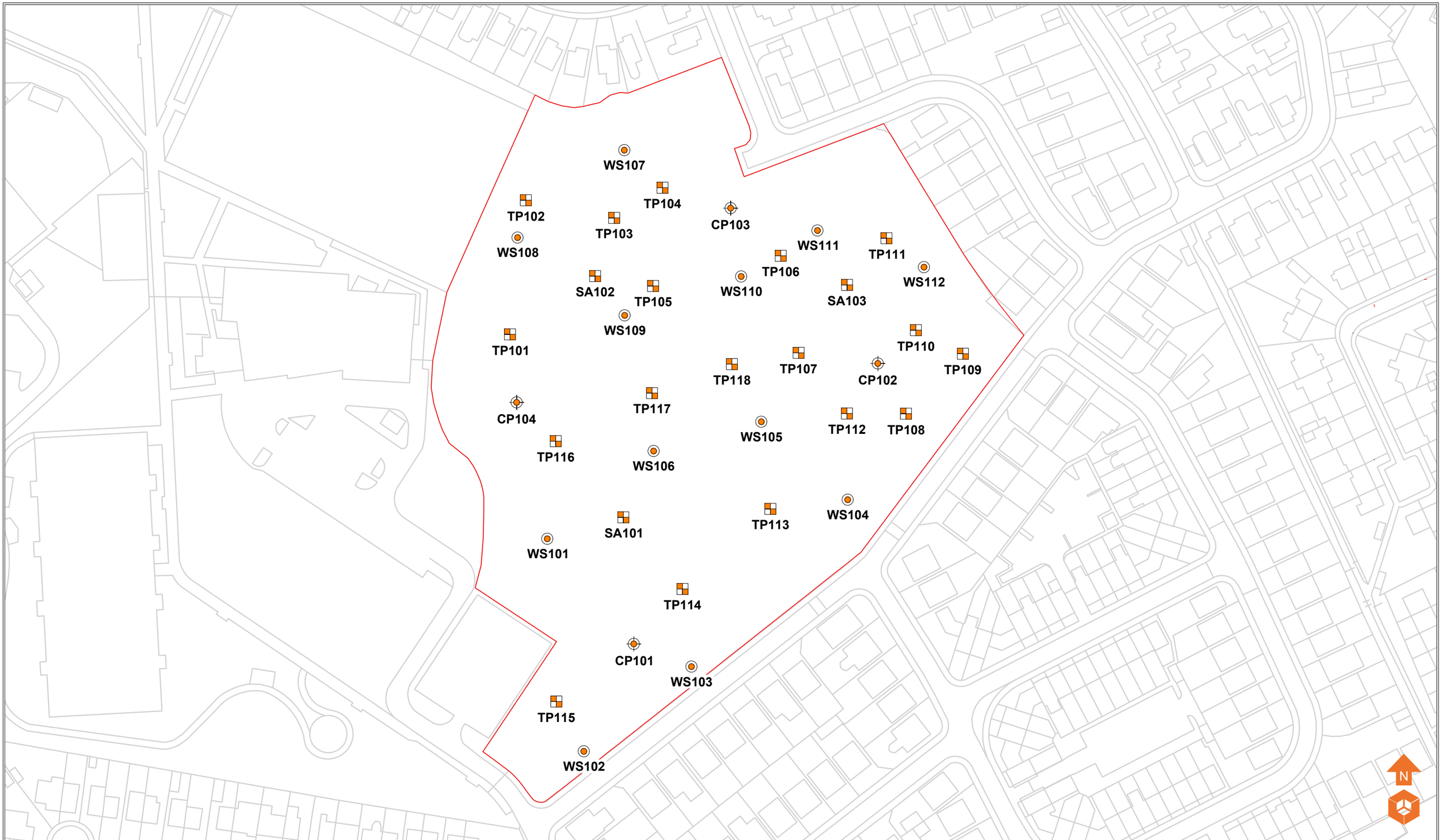
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Site Features Plan

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Website: www.e3p.co.uk

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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Notes:

P1	REVA	05.11.2024	TG	LC	LC
Phase	Issue	Date	Drawn	Checked	PM

Client: Miller Homes LTD

Job No: 17-994

Date: 05.11.2024

Drawing No: 006

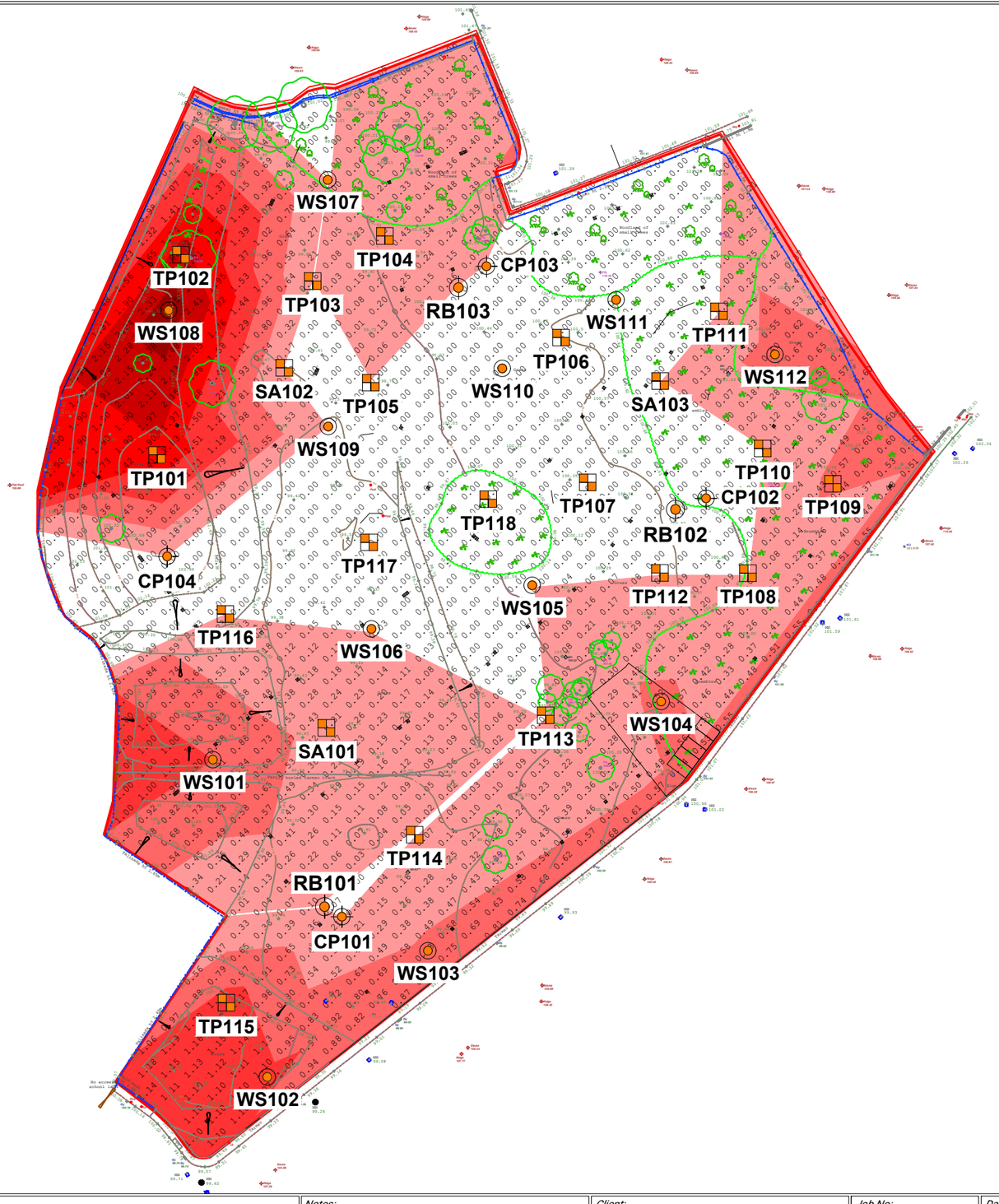
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Exploratory Hole Location Plan

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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024

Made Ground Depth (m)

- Depth of Made Ground 0.00 - 0.49m
- Depth of Made Ground 0.50 - 0.99m
- Depth of Made Ground 1.00 - 1.49m
- Depth of Made Ground 1.50 - 1.99m
- Depth of Made Ground 2.00 - 2.49m
- Depth of Made Ground >2.50m

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVB	09.09.2025	TG	MD	MD
P1	REVA	14.11.2024	OW	MD	MD

Client: Miller Homes LTD

Job No: 17-994

Date: 09.09.2025

Drawing No: 007

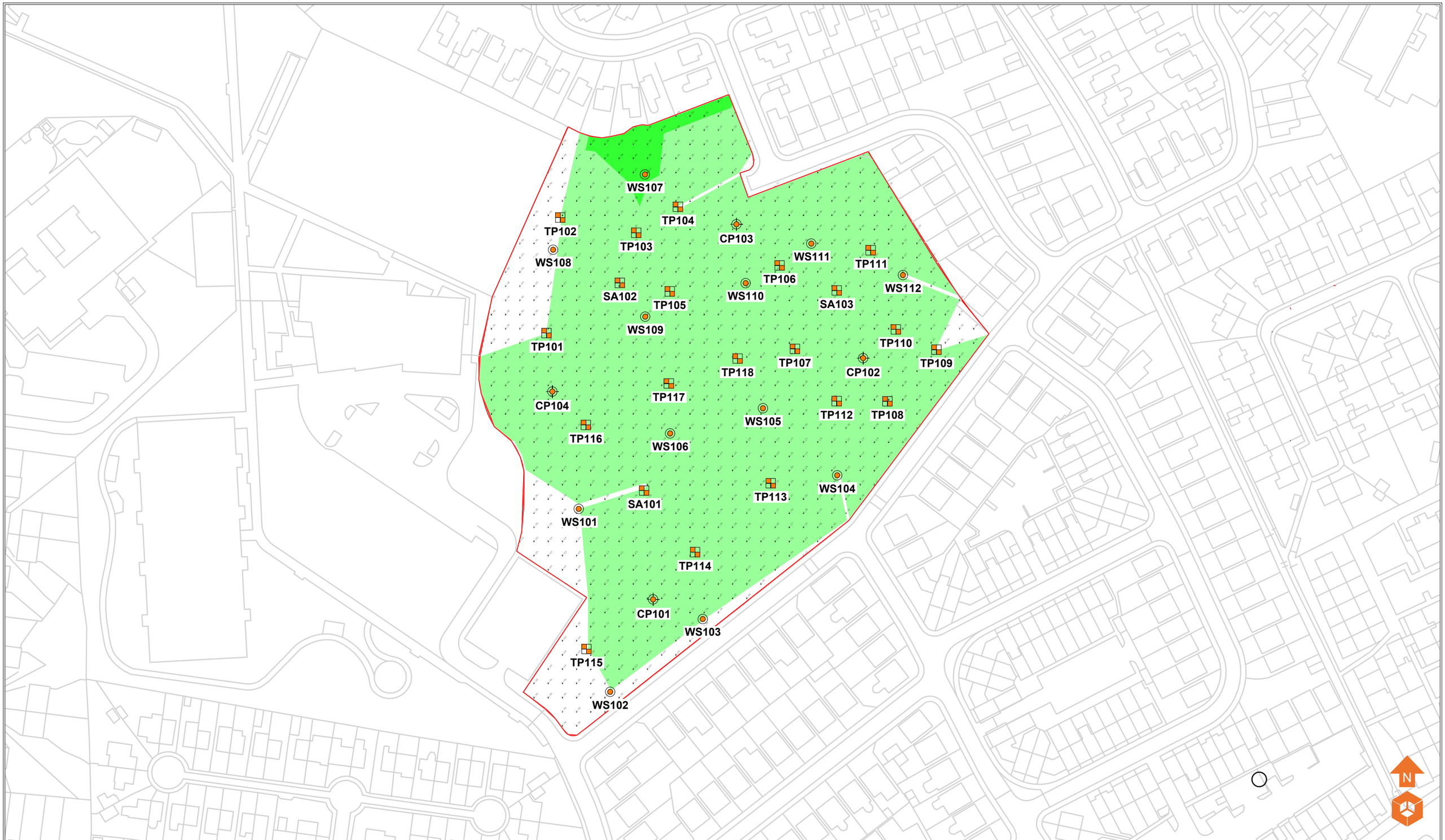
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Depth of Made Ground Plan

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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Topsoil Depth (m)

- Depth of Topsoil 0.00 - 0.24m
- Depth of Topsoil 0.25 - 0.49m
- Depth of Topsoil < 0.50m

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVB	18.11.2024	OW	LC	MD
P1	REVA	14.11.2024	OW	MD	MD

Client: Miller Homes LTD

Job No: 17-994

Date: 18.11.2024

Drawing No: 008

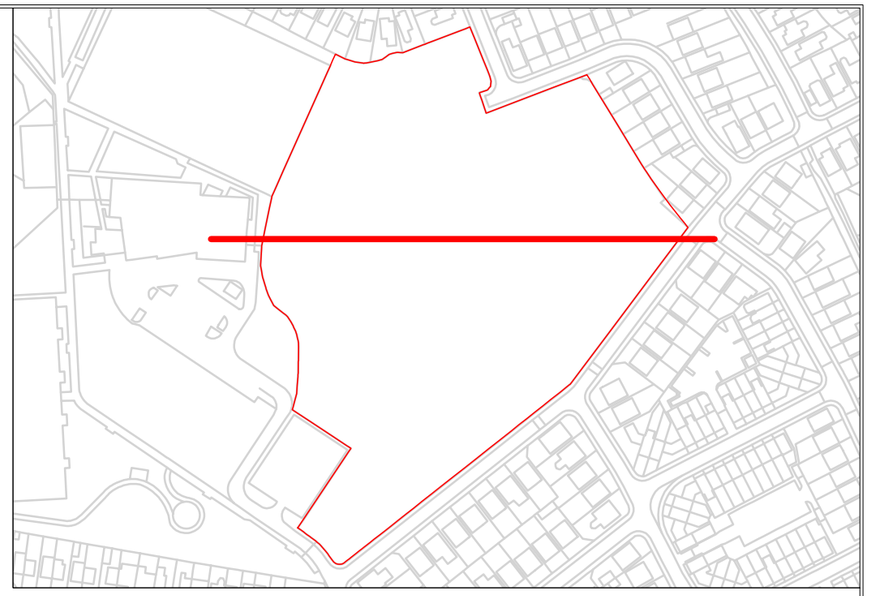
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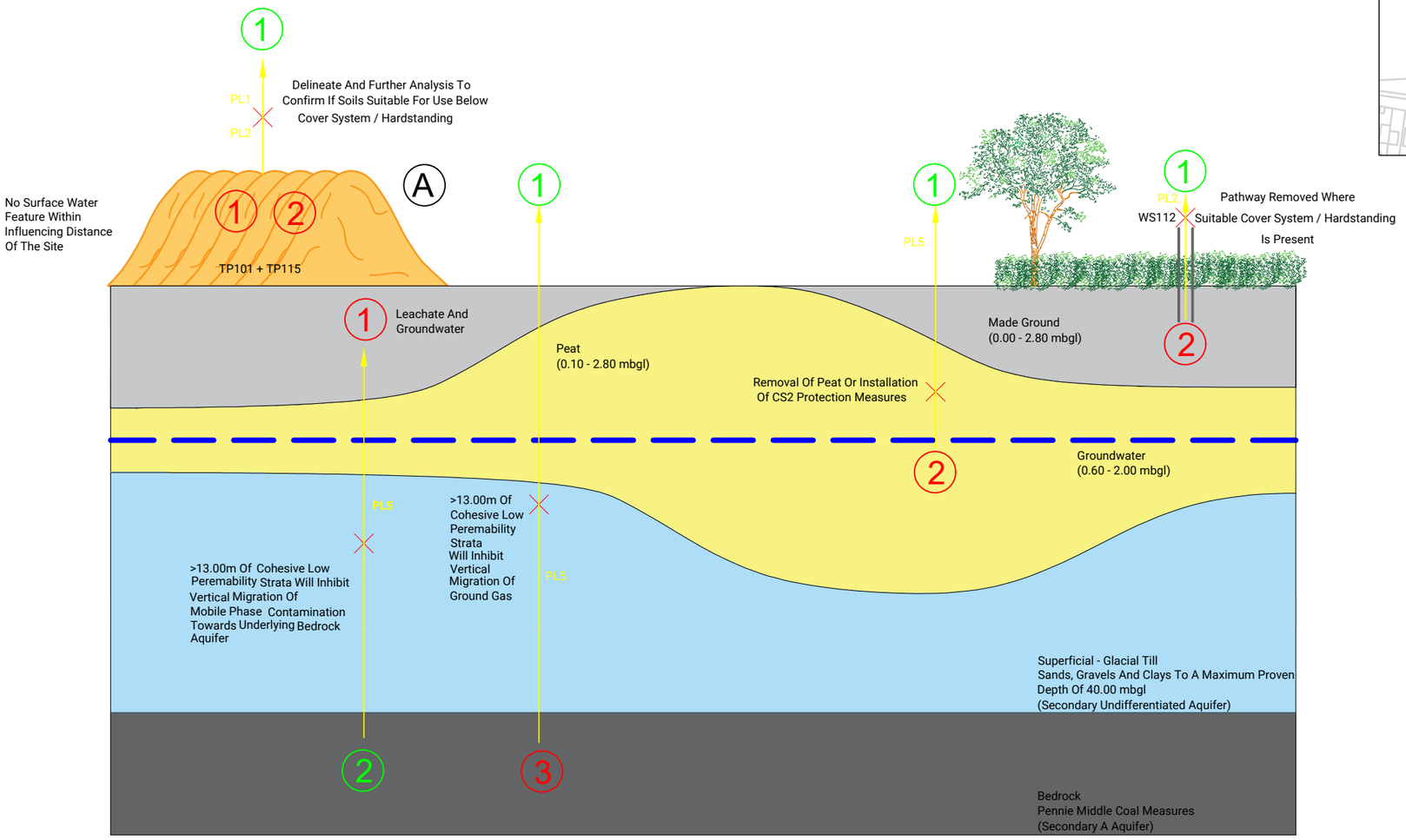
Job Title: Hinchley Road, Charlestown

Drawing Title: Depth of Topsoil Plan

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Geology Key

- Made Ground
- Peat
- Sand, Gravels & Clays (Secondary Undifferentiated Aquifer)
- Bedrock (Secondary A Aquifer)
- Groundwater

Sources

1. Heavy Metals
2. PAH's (Benzo(b)Fluorathene, Benzo(a)pyrene, Dibenzo(a,h)Antharene)
3. Ground Gas ($CO^{'}$, $CH^{'}$)

Pathways

- PL1 Soil Ingestion
- PL2 Dermal Contact / Ingestion
- PL5 Vapour / Gas Inhalation
- PL5 Vertical / Lateral Migration
- Pathway Cut

Receptors

1. End Users
2. Underlying Secondary A Aquifer

Site Features

- Made Ground Mounds
- B Dense Vegetation And Mature Trees

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	14.01.2025	TG	MD	MD

Client: Miler Homes LTD

Job No: 17-994

Date: 14.01.2025

Drawing No: 011

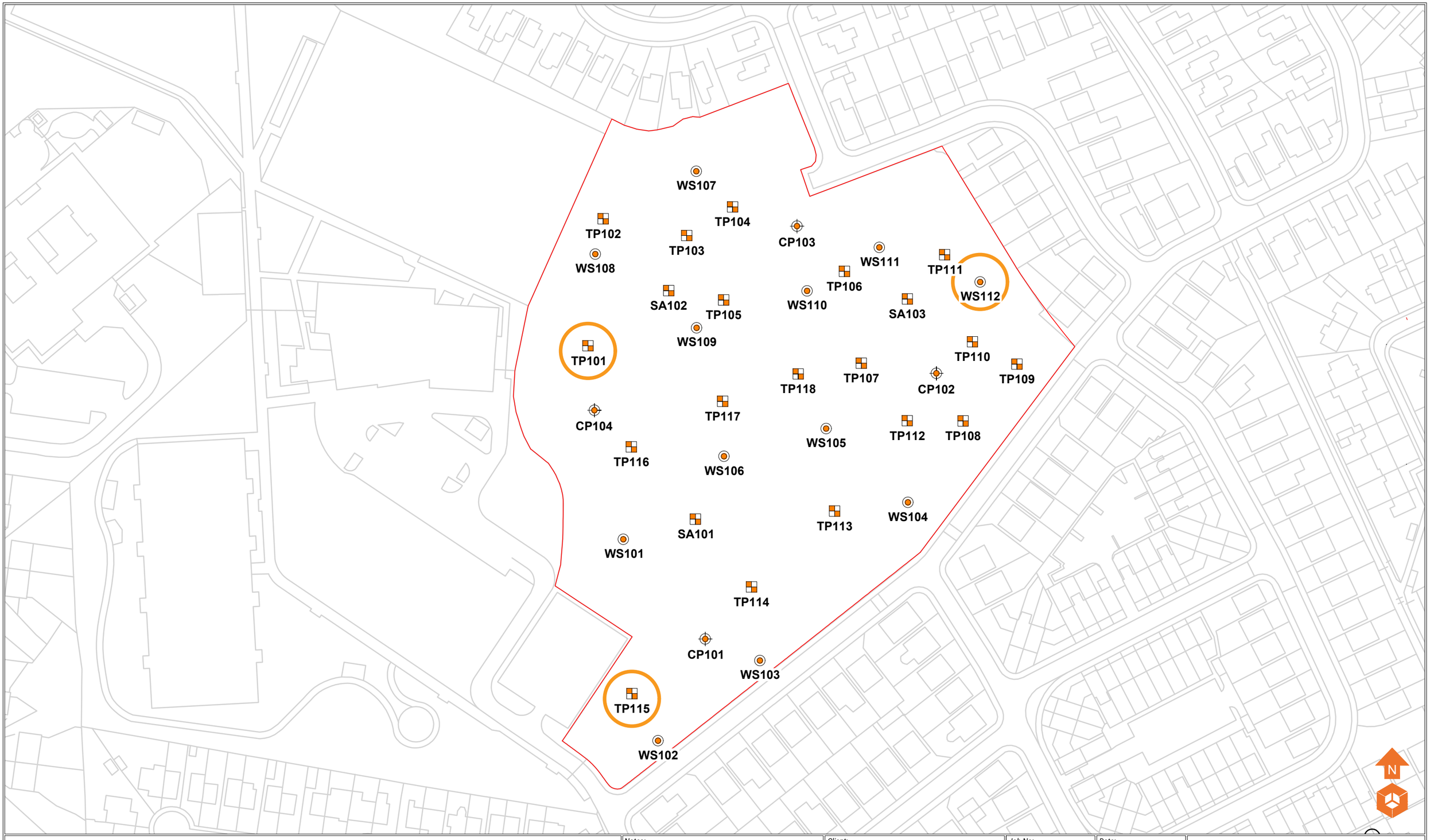
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Conceptual Site Model

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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Contamination Exceedances

- Heavy Metal And PAH Exceedance

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	14.01.2025	TG	MD	MD

Client: Miler Homes LTD

Job No: 17-994

Date: 14.01.2025

Drawing No: 014

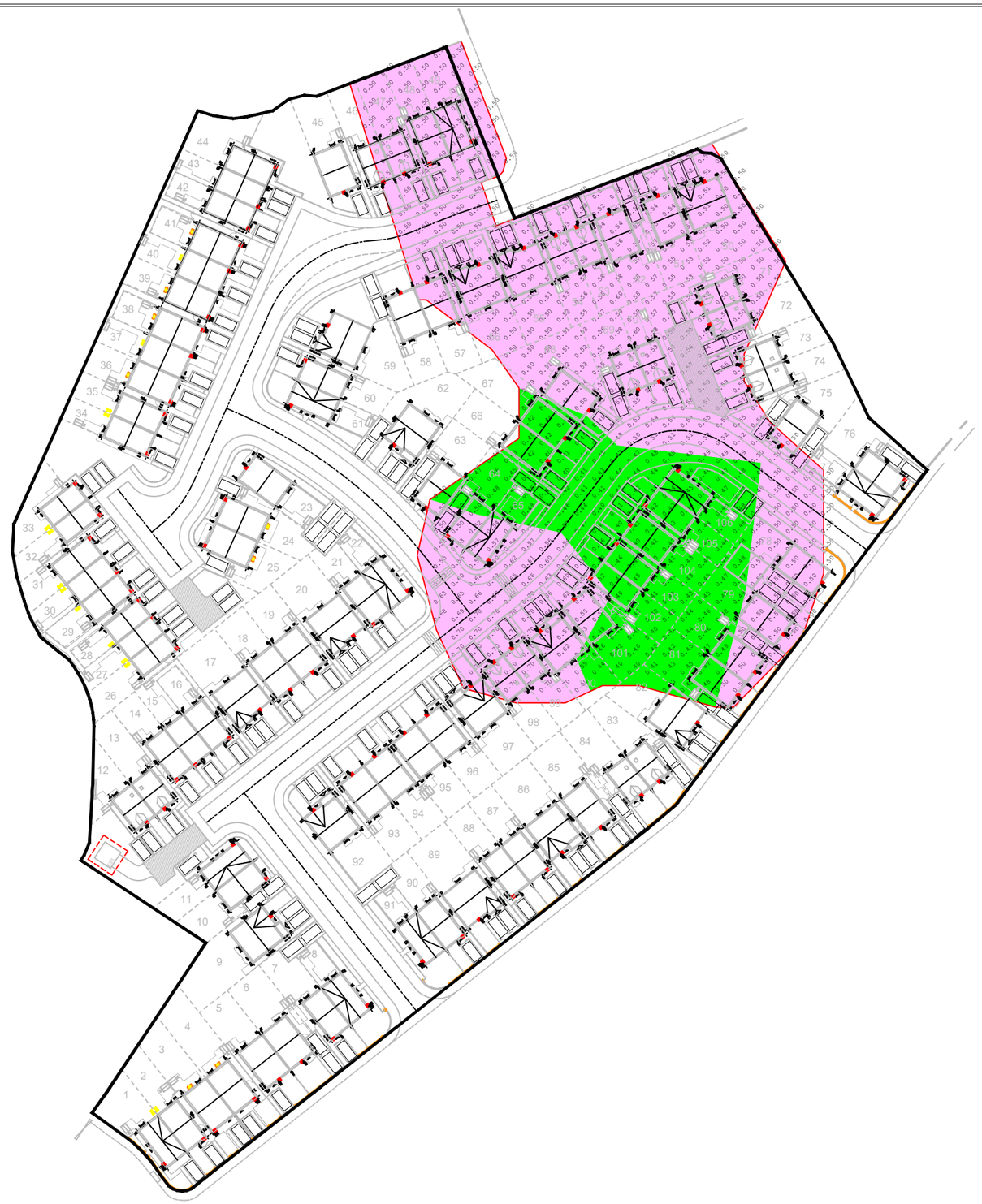
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Contamination Exceedances Plan

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

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Peat Thickness (m)

- Thickness of Peat 0.00 - 0.24m
- Thickness of Peat 0.25 - 0.49m
- Thickness of Peat 0.50 - 0.74m
- Thickness of Peat >0.75m

Notes:

Approximate Volume of Peat - 4275m³
Approximate Area of Peat - 8314m²

Phase	Issue	Date	Drawn	Checked	PM
P1	REVB	14.10.2025	CB	MD	MD
P1	REVA	13.10.2025	CB	MD	MD

Client: Miller Homes

Job No: 17-994

Date: 14.10.2025

Drawing No: 034

Scale: NTS @ A3

Job Title: Hinchley Road

Drawing Title: Thickess of Peat Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
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Appendix IV: Remediation/Validation Criteria



Human Health Remediation Targets – Residential End Use

DETERMINAND	UNIT	WITHIN 600 mm COVER SYSTEM	HARDSTANDING AND > 600 mm COVER SYSTEM	POS AND 300 mm COVERSYSTEM	POS AND > 300 mm COVER SYSTEM	PATHWAY
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)	4
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)	12000(iii)	44000(iv)	1
Zinc	mg/kg	3700(i)	40000(ii)	81000(iii)	170000(iv)	1
Phenol	mg/kg	120(i)(xi)	440(xiv)(xi)	440(iii)(xi)	440(iv)(xi)	1
Naphthalene	mg/kg	2.3(i)(xi)	2.3(xiv)(xi)	1200(iv)(xi)	1200(iv)(xi)	4
Acenaphthylene	mg/kg	170(i)(xi)	500(v)	15000(iii)(xi)	29000(iv)(xi)	2
Acenaphthene	mg/kg	210(i)(xi)	500(v)	15000(iii)(xi)	29000(iv)(xi)	1
Fluorene	mg/kg	170(i)(xi)	500(v)	9900(iii)(xi)	20000(iv)(xi)	1
Phenanthrene	mg/kg	95(i)(xi)	500(v)	3100(iii)(xi)	6200(iv)(xi)	2
Anthracene	mg/kg	500(i)(xi)	500(v)	74000(iii)(xi)	150000(iv)(xi)	2
Fluoranthene	mg/kg	280(i)(xi)	500(v)	3100(iii)(xi)	6300(iv)(xi)	2
Pyrene	mg/kg	500(i)(xi)	500(v)	7400(iii)(xi)	15000(iv)(xi)	2
Benzo(a)Anthracene(	mg/kg	7.2(i)(xi)	11(ii)(xi)	29(iii)(xi)	49(iv)(xi)	2
Chrysene	mg/kg	15(i)(xi)	30(ii)(xi)	57(iii)(xi)	93(iv)(xi)	2
Benzo(b)Fluoranthene (iii)	mg/kg	2.6(i)(xi)	3.9(ii)(xi)	7.1(iii)(xi)	13(iv)(xi)	2
Benzo(k)Fluoranthene (iii)	mg/kg	77(i)(xi)	110(ii)(xi)	190(iii)(xi)	370(iv)(xi)	2
Benzo(a)Pyrene (vii)	mg/kg	2.2(i)(xi)	3.2(ii)(xi)	5.7(iii)(xi)	11(iv)(xi)	2
Indeno(123-cd)Pyrene	mg/kg	27(i)(xi)	45(ii)(xi)	82(iii)(xi)	150(iv)(xi)	2
Dibenzo(a,h)Anthracene	mg/kg	0.24(i)(xi)	0.31(ii)(xi)	0.57(iii)(xi)	1.1(iv)(xi)	2
Benzo(ghi)Perylene	mg/kg	320(i)(xi)	360(ii)(xi)	640(iii)(xi)	1400(iv)(xi)	2
TPH C5-C6 (aliphatic)	mg/kg	42(i)(xi)	42(ii)(xi)	42(ii)(xi)	10000(xiv)(xi)	4
TPH C6-C8 (aliphatic)	mg/kg	100(i)(xi)	100(ii)(xi)	100(ii)(xi)	10000(xiv)(xi)	4
TPH C8-C10 (aliphatic)	mg/kg	27(i)(xi)	27(ii)(xi)	27(ii)(xi)	10000(xiv)(xi)	4
TPH C10-C12 (aliphatic)	mg/kg	130(i)(xi)	130(ii)(xi)	130(ii)(xi)	10000(xiv)(xi)	4
TPH C12-C16 (aliphatic)	mg/kg	1000(xiv)(xi)	1000(xiv)(xi)	1000(xiv)(xi)	10000(xiv)(xi)	4
TPH C16-C35 (aliphatic)	mg/kg	1000(xiv)(xi)	1000(xiv)(xi)	1000(xiv)(xi)	10000(xiv)(xi)	1
TPH C5-C7 (aromatic)	mg/kg	70(i)(xi)	370(ii)(xi)	370(ii)(xi)	10000(xiv)(xi)	4

DETERMINAND	UNIT	WITHIN 600 mm COVER SYSTEM	HARDSTANDING AND > 600 mm COVER SYSTEM	POS AND 300 mm COVERSYSTEM	POS AND > 300 mm COVER SYSTEM	PATHWAY
TPH C7-C8 (aromatic)	mg/kg	130(i)(xi)	860(ii)(xi)	860(ii)(xi)	10000(xiv)(xi)	4
TPH C8-C10 (aromatic)	mg/kg	34(i)(xi)	47(ii)(xi)	47(ii)(xi)	10000(xiv)(xi)	4
TPH C10-C12 (aromatic)	mg/kg	74(i)(xi)	250(ii)(xi)	250(ii)(xi)	10000(xiv)(xi)	4
TPH C12-C16 (aromatic)	mg/kg	140(i)(xi)	1800(ii)(xi)	1800(ii)(xi)	10000(xiv)(xi)	4
TPH C16-C21 (aromatic)	mg/kg	260(i)(xi)	1900(ii)(xi)	1900(ii)(xi)	10000(xiv)(xi)	1
TPH C21-C35 (aromatic)	mg/kg	1000(xiv)(xi)	1900(ii)(xi)	1900(ii)(xi)	10000(xiv)(xi)	1
Asbestos	Fibres Volume Weight	NFD	0.001%	NFD	0.001	3

Notes 1

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 5&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 0.001% by volume (weight).

Notes 2

Excludes matrices where free product is observed;

Commercial Tier 2 GAC modelled to assume no exposure pathway; and,

No viable exposure pathway beneath hard standing and cover system.

Notes 3

Main Exposure Pathways: 1 = Soil Ingestion, 2 = Dermal Contact & Ingestion 3 = Dust Inhalation 4 = Vapour Inhalation (indoor)

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; NA – Not Applicable (no exceedance of assessment criteria); Loc of MC = Location of Exceedances

(i)Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use with plant uptake.

(ii)Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use without plant uptake – these levels used below 600mm 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 Suitable 4 Use Levels (S4ULs) for Public open Space (POS) residential.

(iv)Value derived from LQM Suitable 4 Use Levels (S4ULs) for Public Open Space (POS) park – these levels used below 300mm 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 Suitable 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 2600mg/kg, m-xylene 3500mg/kg) and is capped by its solubility.

(xiii)Value derived from LQM Suitable 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.

Generic Controlled Waters Remediation Targets

DETERMINAND	UNIT	EQS [1,2] AA	DWS [2,3,4]
Arsenic	µg/l	50	10
Cadmium	µg/l	0.08-0.25	5
Chromium (VI)	µg/l	3.4	–
Chromium (III)	µg/l	4.7	50
Copper	µg/l	1	2000
Total Cyanide	µg/l	1	50
Lead	µg/l	1.2	10
Mercury	µg/l	–	1.0
Nickel	µg/l	4	20
Selenium	µg/l	–	10
Zinc	µg/l	10.9	3000[6]
pH		6–9	
Naphthalene	µg/l	2	–
Anthracene	µg/l	0.1	–
Benzo(a) Pyrene	µg/l	0.00017*	0.01
Benzo (b) Fluoranthene	µg/l	0.00017*	0.1
Benzo (k) Fluoranthene	µg/l	0.00017*	
Indeno(123-cd)pyrene	µg/l	0.00017*	
Benzo(ghi) Perylene	µg/l	0.00017*	
Fluoranthene	µg/l	0.0063	–
TPH Aromatic C5-C7 (Benzene)	µg/l	10	1
TPH Aromatic C7-C8 (Toluene)	µg/l	74	700
TPH Aromatic C8-C10 (Xylene)	µg/l	30	300
TPH Aromatic C10-C12 (Naphthalene)	µg/l	2	90
TPH Aromatic C12-C16	µg/l	-	90
TPH Aromatic C16-C35	µg/l	-	90
TPH Aliphatic C5-C6	µg/l	–	1000[5]
TPH Aliphatic C6-C8	µg/l	–	1000[5]
TPH Aliphatic C8-C10	µg/l	–	300
TPH Aliphatic C10-C12	µg/l	–	300
TPH Aliphatic C12-C16	µg/l	–	300
TPH Aliphatic C16-C21	µg/l	–	300**
TPH Aliphatic C21-C35	µg/l	–	300**
Tetrachlorethylene	µg/l	10	10
Trichloroethylene	µg/l	10	10
Trichlorobenzene	µg/l	0.4	–
Trichloromethane	µg/l	2.5	–
Dichloromethane	µg/l	20	200
Carbon Tetrachloride	µg/l	12	3
Vinyl Chloride	µg/l	–	0.5

#Solubility <0.01µg/l
AA – Annual Average
*Polyaromatic hydrocarbons (PAH) – Benzo(a)pyrene (BaP), Benzon(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water.
**There are no WHO Guideline Values for aliphatic fractions C16-C21 and C21-C35, therefore the guideline value for aliphatic fractions inclusive of C8-C16 (300µg/l) has been applied.
1.The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (legislation.gov.uk)
2.The Water Supply (Water Quality) Regulation 2018 (legislation.gov.uk)
3.Guidelines for drinking-water quality, 4th edition, incorporating the 1st addendum (who.int)
4.CL:AIRE publishes Petroleum Hydrocarbons in Groundwater guidance (claire.co.uk)
5.A total TPH criteria of 1000 mg/kg will act as a surrogate criterion for remaining aliphatic and aromatic TPH fractions.
6.Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996

Appendix V: Import Criteria



SITE OF IMPORTATION ADDRESS	
Client	
Main Contractor	
Earthworks Contractor	
Haulier	
Date of Planned Import	

E3P
+44 (0) 161 707 9612
info@e3p.co.uk

Overview of Planned Material Import	
Material Source (Site of Origin) and Postcode	
Site Investigation Report	**Report Title and Reference:** **Date:** **Information Supplied By:**
Reason for Generation of Excess Material at Site of Origin	
Chemical Test Results for Stockpile at Site of Origin	**Date:** **Laboratory Certificate Ref:** **Organisation Responsible for Stockpile Sampling:**
Geotechnical Material Classification and Testing	**Delete as Appropriate:** Class 1 / Class 2 / Class 6 / Topsoil
Pictures of Material Stockpile Pending Transportation	**Delete as Appropriate:** Yes / No
Person or Organisation Responsible for Ensuring Quality Control at Site of Origin	
Quantity of Material to Be Imported (m^3)	
Proposed Area of Deposition (Site of Reuse)	
Waste Exemption/Permit or CL:AIRE MMP	**Delete as Appropriate:** U1 Standard Rules / CL:AIRE MMP (Direct Transfer) / Bespoke

Appendix VII: Contractor Pre-Commencement Check Sheet



ACTIVITY	TESTING RESPONSIBILITY	CONTRACTORS METHOD STATEMENT REQUIRED (Y/N)	COMMENT/ACTION
Deployment of Environmental Permit			Ref No:
Deployment of LAPC Part B – Mobile Plant Permit			Ref No:
CL:AIRE MMP and Qualified Person Declaration			Ref No:
Identification of All Invasive Plant Species and Production of Eradication Plan with Appropriate Supervision by Specialist			Appointed specialist:
Removal of All Vegetation			Note disposal location:
Removal of All Root Bulbs and Root Networks			Note disposal location:
Identification of Contamination Hotpots, Removal of Material and Stockpile			Rationale:
Legislatively Compliant Procedure to Deal with Contamination Excavated from Hotspot			Rationale:
Processing and Recycling of Aggregate with Geotechnical and Chemical Validation Testing			Note stockpile location and anticipated volume:
Stockpiling of Subsoil and Certification of Suitability for Reuse			Stockpile location:
Decommission of All Redundant Drainage Infrastructure			
Decommission of All Former Interceptors			
Decommission of All Former Above- and Below-Ground Tanks			
Removal of All Asbestos to a Licensed Facility			
Engineering of Plots for Shallow Spread Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers
Engineering of Plots for VSC in Accordance with E3P Geotechnical Specification			Plot Numbers.
Engineering of Plots for Pile Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers
Engineering of Plots for Raft Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers

ACTIVITY	TESTING RESPONSIBILITY	CONTRACTORS METHOD STATEMENT REQUIRED (Y/N)	COMMENT/ACTION
Stockpiling of Topsoil and Certification of Suitability for Reuse			Stockpile location
Engineering of Highways Bulk Upfill in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Engineering of Highways Subgrade in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Engineering of Highways Capping in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Cut-and-Fill the Development Site to Clients' Required Elevation with As-Built Survey			Required formation elevations

Appendix VIII: Contractor Completion Check Sheet



GEOTECHNICAL ENABLING WORKS COMPLETION FORM

Upon completion of all site remediation and enabling works, this form will be completed by E3P, in the presence of the appointed contractor, to ensure that all pertinent geotechnical enabling works activities are complete or, where a deviation from the specification has occurred, all future limitations and issues are documented for the client's records.

Activity	Complete			Signature
	Yes	No	N/A	(initial)
Eradication of all invasive plant species				
Removal of all vegetation				
Removal of all root bulbs and root networks				
Stockpiling of topsoil and certification of suitability for reuse				
Stockpiling of subsoil and certification of suitability for reuse				
Stockpile all recycled aggregate with geotechnical and chemical validation testing				
Removal of all relict foundations and infrastructure in their entirety				
Decommission of all redundant drainage infrastructure				
Decommission of all former interceptors				
Decommission of all former above- and below-ground tanks				
Removal of all waste materials to a licensed facility				
Removal of all asbestos to a licensed facility				
Engineering of all plots for shallow spread foundation in accordance with E3P Geotechnical Specification				
Engineering of all plots for VSC in accordance with E3P Geotechnical Specification				
Engineering of all plots for pile foundation in accordance with E3P Geotechnical Specification				
Engineering of all plots for raft foundation in accordance with E3P Geotechnical Specification				
Engineering of highways bulk upfill in accordance with E3P Specification with compliant validation testing				
Engineering of highways subgrade in accordance with E3P Specification with compliant validation testing				
Engineering of highways capping in accordance with E3P Specification with compliant validation testing				
Cut-and-fill the development site to client's required elevation with as-built survey				

POST-REMEDIATION AND ENABLING LIMITATIONS

All and every deviation from the approved specification for works should be documented by the remediation and enabling works contractor below.