

GROUNDTECH
CONSULTING

MIDDLETON ROAD, CRUMPSALL

REMEDIAL SPECIFICATION

WAIN HOMES

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Plan Reference	*Revision*	*Title*
GRO-26222-P01	-	*Project Location Plan*
GRO-26222-P02	-	*Exploratory Hole Location Plan*
GRO-26222-P04	-	*Topsoil Characterisation Plan*
WH-001-NW-A-401	-	*Site Layout Plan*

1.0 INTRODUCTION

1.1 Background

This Remedial Specification has been produced on behalf of Wain Homes, the specification relates to the remediation of Phase 3 of a development site at Middleton Road in Crumpsall.

The site is currently occupied by a grass surfaced field. The east of the site has been used to store construction materials associated with the nearby residential development and there is Made Ground present at surface, no structures were noted on site. A summary of the findings of the investigations is outlined in *Section 2.0*.

1.2 Proposed Works

Remediation will be undertaken at the site to prepare it for development of the proposed residential development as shown on the Site Layout Plan referenced *WH-001-NW-A-401.* It is proposed to construct 50 No. detached and semi-detached dwellings with associated access roads, driveways and private gardens.

A planning application (131045/FO/2021) has been submitted to and approved by Manchester City Council. The full planning permission is for the erection of a three-storey building of 24 apartments (Use Class C3a) together with erection of 50, two storey dwellings (Use Class C3a) with associated external works, car parking, landscaping and other associated works.

This Remedial Specification has been commissioned to facilitate the discharge of any pre-commencement planning conditions that are likely to be enforced regarding land contamination.

1.3 Objectives

The objective of this Remedial Specification is to present details of the remedial objectives, how the remediation of the site will be implemented and to outline how the works will be validated. This Remedial Specification details how the works will be permitted under the current regulatory regime.

The remediation works will ensure that upon completion of the residential development, it can be demonstrated that the ground and groundwater conditions at the site are appropriate for its intended use and risks to identified receptors have been reduced to an acceptable level.

The following Remedial Specification includes the protection measures required during the enabling works phase and to be installed in the construction phase of the redevelopment for residential end use.

This is a dynamic document that may require updating at certain stages of the process, the revisions should be undertaken in agreement with the relevant regulatory bodies. In addition, this Remedial Specification is subject to the approval of the regulator's pre-commencement.

1.4 Remediation Specification Scope

The scope of the Remedial Specification is in accordance with LCRM is as follows:

- *Summary of the Conceptual Site Model*
- *Summary of the Pollution Linkage Risk Assessment*
- *Remediation Options Appraisal including detailed assessment of preferred options*
- *Implementation of preferred remedial solution*
- *Specification for the remediation works*

1.5 Sources of Information

In preparing the Remedial Specification the following documents were reviewed and should be read in conjunction with this report:

- *Phase 1 Contaminated Land Risk Assessment Report produced by Brian Clancy Higby Partnership referenced 1701-6450 and dated 3rd February 2017.*
- *Phase II Geo-Environmental Investigation Report produced by CC Geotechnical Limited referenced CCG-C-19-11308 Rev 1 and dated January 2020.*
- *Phase III Remediation Strategy Report produced by CC Geotechincal Limited referenced CCG-C-20 11980 and dated November 2020.*
- *Groundtech Consulting Geo-Environmental Appraisal referenced GRO-26222-6701, dated July 2026*

The previous reports produced by Brian Clancy Higby Partnership and CC Geotechnical have been produced for the wider site area, inclusive of Phase 1 and Phase 2 of the proposed development. The information included in this report is specific to Phase 3 of the development.

2.0 CONCEPTUAL SITE MODEL

2.1 Site Details

The site is generally rectangular in shape and circa 1.2 hectares in area. The topography of the site is generally level, with a light downward slope by circa 1.0m from south to north. There are areas of hummocky ground in the centre and south of the site. The east of the site has been used to store construction materials and Made Ground was present at surface, no structures were previously noted on site.

2.2 Site History

Earliest historical maps from 1848 indicate the site was undeveloped at this time and comprised an open field. OS Maps from 1909 show a pond encroaching onto the south of the site. The remainder of the site was undeveloped. The site forms part of the Tramways Athletic Ground from 1922, with the centre of site being occupied by a football pitch. The pitch is indicated to have been raised. OS Maps from 1952 show the extension of the football ground, with a downward slope indicated on the eastern boundary of the site. The football pitch is no longer present on site by 1952.

2.3 Geology and Hydrogeology

The superficial deposits indicated to underly the site are Glacial Till which characteristically comprises Clay, with Sand and Gravel and is classified as a Secondary Undifferentiated Aquifer.

The bedrock deposits indicated to underly the site is the Chester Formation which characteristically comprises Sandstone and is classified as a Principal Aquifer.

Hydrology
The nearest surface water feature is the River Irk c.500m east of the site.

The site is located in Flood Zone 1 (low risk).

2.4 Preliminary Conceptual Site Model

The following risks were identified by Brian Clancy Higby Partnership:

Source	Risk	Discussion
Contaminated Soils	*Moderate*	*Made Ground is anticipated to be present beneath the site which could be contaminated with a range of CoC including heavy metals, PAHs, speciated hydrocarbons and asbestos.*
Inhalation of Vapours	*Moderate*	*Maps indicate that the site has been built up and dependant on the nature of the material used for the upfill vapours may be present.*
Permanent Ground Gases	*Moderate to Low*	*Sites previous uses do not pose a significant risk from ground gases and the site lies in an area where radon protective measures are not required.*
Controlled Waters	*Low*	*Significant distance is present to nearest surface water feature and groundwater is not considered to be a sensitive resource.*

2.5 Scope of Works

The following scope of works was completed by CC Geotechnical in November 2019:

- *3 No cable percussive boreholes (BH2 to BH4) were drilled to a maximum depth of between 10.0m and 15.0m begl.*
- *9 No trial pits (TP2 to TP10) were excavated to a maximum depth of between 3.0m and 4.0m begl.*
- *8 No DCP (CBR7 to CBR14) were undertaken to provide a CBR value.*

The following scope of works was completed by Groundtech Consulting between the dates of Monday 8th and Friday 12th June 2026:

- *8 No. Trial Pits (TP01 to TP08) were excavated to a maximum depth of between 2.5m and 4.5m begl using a JCB 3CX.*
- *3 No. Cable Percussive boreholes (BH01 to BH03) were drilled to between 16.00m and 16.45m begl.*
- *12 No. Windowless sample boreholes (WS01 to WS12) were drilled to a depth of approximately 4.00m begl.*
- *2 No. Soil Percolation Tests (SuDS01 and SuDS02) were excavated to 2.1m and 3.0m begl.*

2.6 Ground Model

Surfacing

The site was entirely surfaced by soft landscaping. Made Ground clayey sandy Topsoil was encountered in WS01 to WS04, WS06, WS08, WS10, BH02, BH03, TP01 to TP04, TP06 to TP08 and SuDS02, to a maximum depth of between 0.20m and 0.35m begl.

Natural dark brown sandy clayey Topsoil was encountered in WS09, WS11 and WS12 from ground level to a maximum depth of between 0.2m and 0.3m begl.

The surfacing population in WS05, WS07, BH01, TP05 and SuDS01 was Made Ground, comprising dark brown gravelly fine to coarse Sand associated with material from the other phases of the development.

The CC investigation recorded grass overlying Topsoil to a maximum depth of between 0.2m and 0.5m begl.

Made Ground

Made Ground was encountered in all exploratory hole locations apart from WS09, WS11, WS12, TP04 and TP08, to a maximum depth of between 0.8m and 2.9m begl. The Made Ground was both granular and cohesive in nature. The Made Ground typically comprised reworked firm sandy gravelly Clay and reworked slightly clayey occasionally gravelly Sand with minor constituents of sandstone, brick and shale.

The previous Ground Investigation encountered reworked Made Ground to depths between 2.1m and 5.0m bgl. However, Groundtech's subsequent exploratory works did not record Made Ground to comparable depths. Furthermore, a review of historical mapping, benchmark elevations and site observations suggests that the thickness of Made Ground is likely to be less than the previously reported maximum depth of 5.0m bgl.

Natural Strata

The natural strata encountered generally confirmed the published geological records of Glacial Till. The natural ground comprised firm light brown, reddish brown and brown occasionally gravelly occasionally sandy occasionally silty Clay with minor constituents of siltstone from depths of between 0.80m and 8.49m begl to depths of between 1.7m and 16.45m begl and loose to medium dense light brown silty occasionally gravelly Sand

with minor constituents of Sandstone and Siltstone from depths of between 0.2m and 2.9m begl to depths of between 4.0m and 16.0m begl.

The average thickness of the clay strata was circa 2.0m to 3.0m and the average thickness of the granular strata was between 2.0m and 4.0m.

The natural deposits encountered in the CC investigation were consistent with the deposits encountered during the Groundtech investigation, highlighted above.

Bedrock
Bedrock was not encountered during the Ground Investigation by either Groundtech Consulting or CC Geotechnical.

Groundwater
No groundwater was encountered during the Groundtech Investigation.

In the previous Ground Investigation by CC Geotechnical, perched groundwater seepages were recorded in BH4 at 3.45m begl, TP5 at 1.85m begl and TP10 at 2.5m begl in the granular Made Ground deposits. Groundwater seepages were also encountered in TP8 at 4.0m begl, BH4 at 4.76m begl and BH4 at 12.4m begl.

Watching Brief
A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination.

No visual or olfactory evidence of contamination was identified during the Ground Investigation. No evidence of contamination was recorded in the previous Ground Investigation by CC Geotechnical.

Excavation Stability
Collapse of the natural Sand strata was recorded in TP01, TP03 and TP07. No other evidence of spalling or collapse was noted during excavation of the trial pits.

2.7 Geo-Environmental Testing Results

CC Geotechnical
Nine samples of Made Ground/reworked ground (TP1 to TP10) were tested for a suite of heavy metals, PAHs and total petroleum hydrocarbons (TPHs). The soil samples were compared to residential with plant uptake screening values.

No elevated concentrations of any CoC were recorded in any of the nine samples tested. The majority of PAHs and TPHs were recorded below the laboratory limit of detection, and all heavy metals were recorded at concentrations below the relevant screening values.

TP4 at 0.8m and TP7 at 0.6m were also scheduled for WAC analysis which concluded that the material would be accepted at an Inert waste landfill.

No asbestos was detected in any of the nine samples tested.

Groundtech Consulting
The following Geo-Environmental testing was schedule based on the observations during the Ground Investigation and the results were compared against residential (without plant uptake) screening values:

- *20 No. metals suites*
- *20 No. speciated Polycyclic Aromatic Hydrocarbons (PAHs)*
- *2 No. Total Petroleum Hydrocarbons (TPH CWG)*
- *20 No. asbestos screens*
- *1 No. asbestos identification*

Metals
A slightly elevated concentration of lead was recorded in the natural Topsoil in WS09 at 0.2m begl which was above the relevant screening value for residential end use.

Elevated concentrations of mercury were also recorded in the natural Topsoil in WS09 and WS10 at 0.2m begl. The concentration in WS10 was 1.3mg/kg, marginally exceeding the adopted GAC of 1.2 mg/kg. The concentration in WS09 was significantly higher at 20.7 mg/kg, representing more than 17 times the assessment criterion.

The elevated concentrations are restricted to the near-surface topsoil and were not identified within the Made Ground/reworked ground encountered during the previous ground investigation. The elevated concentrations may be associated with historical management practices relating to the former football pitch.

Speciated Polycyclic Aromatic Hydrocarbons (PAHs)
When compared with residential with plant uptake screening values, elevated concentrations of benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(ah)anthracene were recorded in a single sample of granular Made Ground obtained from TP06 at 0.5m begl.

The slightly elevated concentrations of PAHs are likely associated with the minor constituents in the Made Ground/reworked ground.

Total Petroleum Hydrocarbons (TPH CWG)
No elevated concentrations of TPHs were recorded in the three samples tested and the majority of TPHs, BTEX and MTBE, inclusive of those within volatile range, were recorded below laboratory limits of detection.

Asbestos
One of the twenty samples screened contained asbestos fibres and ACM debris at a concentration of 0.019 mass% in the Made Ground Topsoil in SuDS02 at 0.2m begl. None of the other nineteen samples were found to contain asbestos.

2.8 Ground Gas

The results recorded during the four monitoring visits undertaken to date show carbon dioxide (CO_2) concentrations at a maximum concentration of 4.5%v/v, the steady state and peak states were recorded at similar levels. No concentrations of methane were recorded during the monitoring.

The gas monitoring results place the site in CS1 based on the GSV and no exceedances of typical maximum concentrations were recorded.

At this stage, gas protection measures are not considered to be required for the proposed development, this will be confirmed upon completion of the monitoring.

The previous Ground Investigation recorded carbon dioxide concentrations above 5% v/v which increased the classification of the site to CS2. During the previous investigation by CC Geotechnical only two wells were installed within the Phase 3 development area. The additional monitoring by Groundtech has been undertaken to confirm the gas classification for the site.

The site is not within an area requiring radon precautions within foundations.

2.9 Remedial Strategy

The following remedial strategy was outlined by Groundtech Consulting for the proposed development.

Soils
Based on the elevated concentrations of heavy metals in the natural Topsoil recorded in WS09, WS11 and WS12 this material is unlikely to be suitable for reuse. The natural Topsoil should be stripped and stockpiled separatelyon site prior to removal. The Made Ground Topsoil where asbestos has been recorded at location SuDS02 will also not be suitable for reuse and should be delineated, stripped and stockpiled separately for removal from site. The location where Made Ground or natural Topsoil has been encountered is presented on Groundtech Plan *GRO-26222-P04*.

Based on the testing undertaken to date, the remainder of the Made Ground Topsoil is considered to be chemically suitable for reuse. However, due to the minor constituents observed in the Topsoil during the Ground Investigation including brick and concrete the material is not considered to be physically suitable for reuse in its current state. The Topsoil will require screening prior to reuse to remove any anthropogenic material.

In areas where Made Ground is present at formation level in areas of private residential gardens, a 600mm cover system comprising a minimum thickness of 150mm Topsoil should be placed. In Public Open Space (POS) areas where Made Ground is present, the cover system should be 300mm. The depth of the cover system placed, and chemical suitability of the material should be validated by Groundtech Consulting.

Vapours
Elevated mercury has been recorded in the natural Topsoil encountered in WS09, WS11 and WS12. The screening value for mercury is based on elemental mercury which is considered to be volatile above the concentration of 1.2mg/kg. However, due to these elevations being in the Topsoil this is not considered to pose a volatile risk, as the contaminated material will be stripped and removed from site.

Controlled Waters
No mobile contamination has been encountered beneath the site, and no remediation measures are required with respect to controlled waters.

Ground Gas
The gas monitoring results place the site in Characteristic Situation 1 (CS1) and gas protection measures are not required in the proposed development. The level of protection will be confirmed in the final gas assessment.

The site is not in an area where radon protective measures are required.

2.10 Geotechnical

Due to the deep Made Ground, loose Sand and soft Clay deposits encountered across the site, traditional shallow strip/trench foundations are not considered to be suitable for the proposed development. Alternatively, Vibro Stone Columns or piled foundations could be adopted as the foundation solution for the proposed development.

A suspended floor slab is required as greater than 600mm of Made Ground is present. A suspended floor slab is compatible with piles. If VSCs are the selected foundation type, a ground bearing floor slab will be suitable.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-1 and sulphate class DS-1 are applicable.

The site is shown to be in an area at low risk of flooding.

The soil percolation test results indicate that SuDS drainage will not be feasible for the proposed development due to the poor infiltration rates observed during the Ground Investigation.

3.0 POLLUTION LINKAGE ASSESSMENT REVIEW

The following section summarises the revised pollution linkage assessment undertaken in the Groundtech Consulting Geo-Environmental Appraisal:

3.1 Human Health

Receptor	Level of Risk	Comments
Site End Users (Soils)	*Moderate to Low*	*Elevated levels of heavy metals and asbestos have been recorded in the Topsoil on site which is not considered to be suitable for reuse and should be removed from site. A cover system is required in soft landscaping areas due to Made Ground on site.*
Site End Users (Vapours)	*Low*	*No sources of volatile contamination were identified during the Ground Investigation, and a realistic pollution linkage does not exist.*
Site End Users (Ground Gas)	*Moderate to Low*	*Recent ground gas monitoring results place the site in CS1 and gas protection measures are not required. The previous investigation placed the wider site in CS2. However, only two wells were installed in Phase 3. The additional monitoring has been undertaken by Groundtech to confirm the gas regime. No radon precautions are required.*

3.2 Controlled Waters

Receptor	Level of Risk	Comments
Groundwater	*Low*	*No significant sources of mobile contamination have been identified during the Ground Investigation, and no groundwater was encountered in the investigation of during the monitoring undertaken to date. Therefore, a possible pollution linkage is not considered to exist.*
Surface water features	*Low*	*No sources of mobile contamination have been identified during the Ground Investigation, and a plausible pollution linkage is not considered to exist.*

3.3 Groundworkers

Receptor	Level of Risk	Comments
Contractors	*Low*	*Appropriate risk assessment and PPE to be used during remediation and construction.*

4.0 REMEDIATION PROPOSALS AND APPRAISAL

Remediation will be undertaken to ensure the site is suitable for its proposed residential end use which comprises the construction of a three-storey building for 24 apartments (Use Class C3a) together with erection of 50, two storey dwellings (Use Class C3a) with associated external works, car parking, landscaping and other associated works.

The required level of remediation, to the satisfaction of the relevant regulators and discharge planning conditions, will be accomplished through a combination of techniques as outlined in the subsequent sections.

The implementation of the remediation proposals will be in accordance with the following documented quality assurance procedures:

1. ***Detailed Remediation Specification*** *which outlines the requirements to demonstrate the effectiveness of the remediation in order to meet the remediation objectives. These are detailed in the following sections of this report.*

2. ***Verification Report*** *which will provide a complete record of the remediation activities undertaken during the enabling phase and construction phase as part of the verification plan to support compliance with remediation objectives and criteria. The report will also contain descriptions of the works including photographic evidence and details of any unexpected conditions encountered during the remedial works and how they were dealt with.*

3. ***Cover System Validation Report*** *which will validate the suitability and depth of cover system in soft landscaping areas, if included in development.*

In addition to the above, the preferred contractor will be required to secure all necessary permits and licences to allow remediation to be undertaken and prepare appropriate health and safety risk assessments and method statements in accordance with CDM Regulations 2015 and other relevant legislation.

4.1 Outline Remediation Proposals

Based upon the findings of the Ground Investigations, risk assessment and the remediation options appraisal in accordance with LCRM, the following remediation processes will be carried out to produce a site which is suitable for its proposed residential end use and adhere with the General Requirements set out in *Appendix 2*.

Remediation works will need to be completed in accordance with the 'CL:AIRE Definition of Waste Development Industry Code of Practice, 2nd Edition', where relevant.

The following phased remediation works will be undertaken to deliver the site suitable for the defined residential end use, the phases are divided into:

- *Enabling Works Phase.*
- *Construction Phase.*

4.2 Enabling Works Phase

The following works are considered necessary during the enabling works phase:

- *Site clearance including vegetation clearance*
- *Delineation and removal of impacted Topsoil*
- *Reuse of appropriate soils and materials management of soils*
- *Offsite disposal of unsuitable or excess material*
- *Installation of piling mat*
- *Validation during the enabling works*
- *Watching brief for unexpected contamination*

All works need to be undertaken in accordance with the Remedial Specification. All remediation works are to be overseen by the supervising consultant under a site watching brief.

Following completion of the Enabling Phase Validation Works, an enabling works validation report completed by the supervising consultant will be required to be submitted to the regulators for approval.

4.3 Construction Phase

It is anticipated that the construction phase of works will consist of the following:

- *Excavations for foundations*
- *Excavations for service runs and drainage*
- *Installation of correct level potable water supply pipe*
- *Placement of clean validated subsoil/topsoil in soft landscaping*

All works need to be undertaken in accordance with the Remedial Specification.

4.4 Project Setup and Management

Prior to commencement of site activities, the Remedial Specification should be submitted to the relevant regulators for approval prior to commencement.

The project is to be operated under the Construction, Design and Management (CDM) Regulations, (2015). Under the CDM regulations, the Client should appoint a Principal Designer, who will provide the Pre-construction Information Report and a Principal Contractor who would provide a comprehensive Construction Phase Health and Safety Plan (CPHASP) prior to works commencing. If the client does not appoint a Principal Designer, they will assume the role.

The Principal Designer will review the CPHASP and notify the local office of the Health and Safety Executive (HSE) of the works prior to commencing (via form F10), if necessary. The client is to nominate the Principal Contractor for each phase of works.

It is the responsibility of the contractors to have read and understood the requirements of the Remedial Specification. Any queries should be clarified prior to the activity being undertaken.

5.0 IMPLEMENTATION OF SITE REMEDIATION PROCESSES

5.1 General

The following remedial works are required to break pollution linkages, to reduce risks to an acceptable level and make the site suitable for the proposed residential end use.

5.2 Enabling Phase Implementation

Activity E1 - Pre-Start and Site Clearance

The contractor shall be responsible for the true and proper setting-out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works.

The contractor shall carefully protect and preserve all benchmarks, sight rails, pegs and other things used in setting out the works.

Should the contractor find any discrepancies on the drawings, they are to refer the matter to the client for verification before proceeding with the part of the works affected.

Before starting the site clearance works, the contractor shall verify with the client and/or architect which existing fences, gates, walls, roads, paved areas, trees, shrubs, etc., are to be removed and undertake dilapidation survey of all adjacent features/construction including but not limited to boundary walls/fences, adjacent footpaths and road constructions etc. The contractor shall be responsible for all costs associated with rectification of damage to adjacent features/construction including but not limited to boundary walls/fences, adjacent footpaths and road constructions etc. resulting from the enabling works.

The contractor shall investigate the features of the structures, ascertain if shock or vibration could damage surrounding property or equipment therein or buried utilities and check the existence of toxic or flammable substances.

Statutory service records are for information only. The contractor is to ensure that the records are current and complete through discussion with all appropriate statutory bodies and is responsible for all disconnection, diversion, sealing or removing of existing services as necessary (unless otherwise advised by the client).

Trees, boundaries and other features of interest, which are to be retained, shall be clearly identified and protected by a robust fence to avoid accidental impact damage and prevent excavation within the root zone of influence of foundations. All works shall be undertaken in accordance with BS 5387: 1991 'Trees in relation to Construction'. All other trees and shrubs shall be grubbed up and disposed of appropriately off site.

Prior to any works, the site shall be cleared of rubbish, debris and approved vegetation. Surface vegetation shall be stripped from all areas prior to trafficking with heavy plant and the surface vegetation is to be chipped and stockpiled. The Topsoil testing undertaken to date indicates that generally the site won Topsoil is suitable for reuse following the removal of the localised contaminated topsoil and screening as detailed in *Activity E2*. The Topsoil should be stockpiled for reuse in any soft landscaping.

The contractor shall maintain records detailing the approximate location of any unsuitable material disposed, including a brief description.

All movement of materials shall be recorded, and records shall be kept detailing the nature and quantity of materials, haulier details, final destination and any other relevant information.

Water or liquids shall not be pumped or emptied into the existing sewers/drainage system without the appropriate treatment and written permission of the relevant authority. If mobile tankers/bowsers are to be used, then disposal shall be at suitably licensed facilities in accordance with current legislation.

Documentation/certification of all materials disposed of are to be included in the H&S file prepared by the contractor.

Activity E2 – Hotspot Removal of Contaminated Topsoil

The site is surfaced by both natural and Made Ground Topsoil. Elevations of heavy metals were recorded in the natural Topsoil in WS09, WS11 and WS12 along with asbestos fibres and ACM debris recorded in the Made Ground Topsoil in SUDS02 at a concentration of 0.019 mass%. The topsoil around these locations is not considered to be appropriate for reuse onsite and is required to be delineated, stripped and stockpiled separately prior to removal from site to a suitably licenced waste facility.

The contractor will need to have an experienced geo-environmental engineer present during validation excavations to inspect for suspect material and oversee effective segregation, stockpiling and validation of soils. Validation is to be undertaken on behalf of the contractor by Groundtech Consulting.

Any drawings indicating the extent of contamination are provisional. The contractor is to satisfy itself with regards to volumes of soil to be excavated, remediated or disposed of and replaced. Groundtech Consulting accept no liability with regards to volume estimates undertaken.

Validation of the removal of any hotspots is proposed by the geo-environmental testing of samples obtained from the sides and base of hotspot excavations. A 25m^2 validation grid (base and sides) is proposed. The validation works are to be undertaken on behalf of the enabling works contractor by Groundtech Consulting in accordance with the appended residential Remedial Target Values (RTVs).

Following the validation exercise, the remainder of the Topsoil on site is considered to be chemically suitable for reuse based on the geo-environmental testing undertaken to date and should be stripped and stockpile separately from the remainder of the material. However, prior to reuse the Topsoil will need to be screened in order to remove any minor anthropogenic constituents such as brick and ceramics recorded during the Ground Investigation.

Activity E3 - Reuse of Soils and Placement of Soils

Reuse of soils will need to be undertaken in accordance with the Contaminated Land: Applications In Real Environments (CL:AIRE) document: 'The Definition of Waste: *Development Industry Code of Practice' (Version 2) (CoP), dated March 2011*.

The enabling works contractor is responsible for producing a MMP signed off by a QP, if required. As part of the MMP, the contractor should produce a cut/fill balance plan and movement of soils schematic plan to define the movement of the following soils:

1. *Cut of soils to achieve earthworks profile*
2. *Reuse of suitable/acceptable soils*
3. *Reuse of crushed 6F2 soils*
4. *Final trimming to form finished remediation profile across development areas*

Testing of soils prior to placement is required as set out in the Remedial Specification.

If, in the opinion of the Consultant, the material is not suitable for use, the contractor is to remove and dispose of it in accordance with the Remedial Specification.

Activity E4 - Off-Site Disposal of Unsuitable or Surplus Material

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material (i.e. the contractor) to form their own view on whether it is waste. This includes determining when waste has been treated and it can cease to be classed as waste for a particular purpose. Any soils to be removed from site are to be removed to a licensed waste management facility. The waste is to be taken by a registered waste carrier in accordance with applicable Waste Management Regulations.

Any unsuitable Topsoil will be disposed of once delineated and stockpiled separately from the remainder of the population.

All testing to allow disposal of waste is to be undertaken by the contractor at the contractors cost.

Waste consignment/transfer notices will be required and are to be retained by the contractor. Copies of all waste consignment/transfer notices are to be provided to Groundtech Consulting for inclusion in a validation report. Water or liquids shall not be pumped or emptied into the existing sewers/drainage system without the appropriate treatment and written permission of the relevant authority. If mobile tankers/bowsers are to be used, then disposal shall be at suitably licensed facilities in accordance with current legislation.

Documentation/certification of all materials disposed of are to be included in the H&S file prepared by the enabling works contractor.

Activity E5 - Installation of Piling Mat

Piles and vibro improvement are to be installed for the proposed development due to the variable shallow ground conditions. A piling mat is required to be designed and placed prior to installation of the deep foundations.

Testing of the piling mat should be undertaken in accordance with this remediation specification. A testing frequency of 1 sample per 1000m^3 is proposed, with a minimum of five samples being tested per source.

Material for use in the piling mat will likely be imported to site and either left in-situ or can be constructed at a higher level and recovered if this is logistically possible.

The use of a geogrid within the working platform will also help reduce the thickness required, the design is outside scope of works.

Activity E6 - Watching Brief

A watching brief should be maintained for the duration of the works for visual or olfactory evidence of contamination. If identified, work should cease in that area and Groundtech Consulting consulted for advice and to revise the Remedial Specification, if required.

Asbestos was encountered in one of the samples screened during both phases of Ground Investigation in the Made Ground Topsoil in SuDS02 at 0.2m begl. If ACMs are encountered, work should cease and Groundtech Consulting informed and appropriate control measures should be put in place.

The Principal Contractor must manage the risks in accordance with their legal requirements and will need to prepare appropriate health and safety documentation and obtain appropriate approvals, licences, consents and permits prior to commencement.

Activity E7 - Validation Criteria During Works

The following sections detail validation criteria to be used during the enabling works.

Testing

All testing during the enabling works shall be undertaken by the contractor and all sampling, logging and testing of soils shall be undertaken in accordance with BS 5930:2020 'Code of Practice for Site Investigations' and BS 10175:2011+A1:2013 'Investigation of Potentially Contaminated Sites – Code of Practice'.

General Reuse

Soils proposed for general reuse should meet the following guidelines:

- *No visual contamination (oil staining etc.)*
- *Minimal deleterious material (organics, wood, metal etc.)*
- *No visible Asbestos Containing material (ACM)*

The visual requirements in the list above are to be confirmed by the watching brief by a suitably qualified geo-environmental engineer.

The contractor shall maintain a daily written and photographic record of the works undertaken.

All records provided by the contractor shall be available to the Client and Groundtech Consulting for comment.

5.3 Construction Phase Implementation

It is the responsibility of the contractor to have read and understood the requirements of the Remedial Specification and any geotechnical specification documents. If there are any queries, please contact Groundtech Consulting for clarification.

The following will be undertaken during the construction phase of works by the contractor. The contractor shall undertake:

- *Excavations for foundations*
- *Excavations for service runs and drainage*
- *Installation of correct level potable water supply pipe*
- *Placement of clean validated subsoil/topsoil in soft landscaping*

Activity C1 - Installation of Correct level of Potable Water Supply Pipe

The correct potable water pipework is to be installed by the contractor in accordance with local water company risk assessment. The works are to be validated by the contractor, who is to provide to Groundtech Consulting:

- *Provision of delivery tickets showing correct potable supply pipework has been delivered to site*
- *Photographic proof that the correct potable supply pipework (or similar) has been installed*

Activity C2 - Appropriate Materials Handling and Stockpiling to Allow Reuse of Excavated Soils

The contractor is to undertake a watching brief for materials which may potentially be contaminated during excavations of foundations and drainage. If suspect materials are encountered, the soils are to be stockpiled separately and Groundtech Consulting contacted immediately. Depending on the findings of the enabling works phase remediation, asbestos air monitoring may be required during groundworks to ensure fibre release is below relevant limits.

Suspected contaminated material should be stockpiled separately to other suitable materials, on an impermeable membrane until it can be removed off site.

Any imported materials are to be tested by the contractor in accordance with this Remedial Specification to demonstrate they are suitable from a geotechnical and geo-environmental engineering perspective.

Reuse of soils excavated by the contractor will need to be undertaken in accordance with the CL:*AIRE Definition of Waste: Development Industry Code of Practice.*

Activity C3 - Importation of Material

Any imported soils should be from a source not expected to be contaminated and meet both physical and chemical criteria, as detailed in this Remedial Specification.

Any imported materials are to be tested by the contractor in accordance with this Remedial Specification to demonstrate they are suitable from a geotechnical and geo-environmental engineering perspective. Imported material should be free from:

- *Asbestos, metal, plastic, wood, glass, tarmac, brick, paper, concrete, or other potentially hazardous foreign material which could cause injury.*
- *Aggressive / invasive weeds (especially Japanese Knotweed and Giant Hogweed) and bulk vegetative growth.*

If the material is not from a supplier, it is recommended that testing is undertaken at the source to determine if the materials are likely to be suitable prior to import. Geo-environmental testing will also be required once the material arrives at site to confirm the soils imported are the same as those sampled at the donor site.

The results of geo-environmental testing for imported material are to be compared with the criteria presented in *Appendix 4*. If any of these thresholds are exceeded the material shall be considered unsuitable unless treatment, further testing and risk assessment shows it to be satisfactory.

Activity C4 - Installation of the Cover System

A clean cover system is required in soft landscaping areas to reduce the risk to an acceptable level. The cover system installation by the ground works contractor should be undertaken in the following steps:

1. *Undertake geo-environmental testing and assessment of all imported soils (cohesive and granular) to establish they are suitable for use. Groundtech Consulting should be provided with the testing certificates prior to import and additional testing may be required.*
2. *In areas where trees are planned as part of the landscaping the cover system should be increased to allow for the root ball. The dimensions of the tree pit (if required) are to be specified by a qualified arboriculturist.*
3. *Install house drainage and other services and storing excavated clean soils appropriately for re-use in gardens.*
4. *Validation of the cover system to be undertaken by Groundtech Consulting.*

The cover system requirements are set out below based on the specific use:

Specific Use	Requirements
Private Gardens	*600mm of clean cover comprising a minimum 150mm Topsoil and 450mm Subsoil*
Public Open Space	*450mm of clean cover comprising a minimum 150mm Topsoil and 300mm Subsoil*

Physical Requirements of Cover System Soils

The imported topsoil and subsoil for the cover system should be as agreed with the client and where possible should conform to BS 3882:2015 and BS 8601:2013. It should be noted that clay soils are not recommended as they are likely to become waterlogged during handling and placement.

Testing of the cover system and imported material should be undertaken in accordance with Manchester City Council cover system guidance. Testing should be carried out for the following general suite of contaminants:

- *Heavy metals, total cyanide, pH, speciated Polycyclic Aromatic Hydrocarbons, total phenol and organic matter.*
- *Total TPH and speciated TPH (TPHCWG).*
- *Asbestos screening.*

The sampling frequencies are set out in the table below, with a minimum of three samples being taken from each source used:

End Use	Greenfield Soils	Remediated Soils	Brownfield Soils	Unknown Soil Source
Residential Gardens	*1 per 200m^3*	*1 per 100m^3*	*1 per 50m^3*	*1 per 50m^3*
Soft Landscaping	*1 per 200m^3*	*1 per 150m^3*	*1 per 150m^3*	*1 per 150m^3*
Other	*1 per 200m^3*	*1 per 200m^3*	*1 per 200m^3*	*1 per 200m^3*

6.0 SUPERVISION, VERIFICATION AND REPORTING

Necessary changes to the agreed Implementation Plan, arising during the works, are to be agreed in writing with regulators prior to being undertaken on site.

It is recommended that details of the environmental works undertaken, the rationale and design for the implementation of this strategy and verification details of the works undertaken are appended to the deeds for the property to ensure the site is sold with full knowledge of the works undertaken and the ground conditions present.

6.1 Site Supervision

Remediation works are to be undertaken with a part-time site watching brief by Groundtech Consulting (The Consultant).

6.2 Collection of Samples

All sampling, logging and testing of soils shall be undertaken in accordance with BS 5930:2020 'Code of Practice for Site Investigations' and BS 10175:2026 'Investigation of Potentially Contaminated Sites – Code of Practice'.

Soils for inorganic analysis will be sealed in air-tight polythene tubs, and soils for organic analysis will be sealed in amber glass jars with the minimal practicable headspace.

Groundwater samples will be collected in suitable containers and with the correct preservatives, as provided by the laboratory.

All samples shall be scheduled on chain of custody forms prior to being dispatched to the UKAS accredited laboratory for analysis.

All testing should be undertaken at a laboratory which holds UKAS and MCERTS accreditation for the specific tests.

6.3 Verification Report

On receipt of the records from the contractor, to demonstrate that all of the works have been undertaken in accordance with the Remedial Specification, Groundtech Consulting will provide a validation report.

The report will be prepared by Groundtech Consulting and 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.

This shall be based upon LCRM, and specifically will include supporting information as summarised below:

- *Details of methodology and programme*
- *Decision records covering agreements with regulators*
- *Records of works undertaken and associated validation/monitoring records obtained from the contractor as detailed above*
- *As built drawings*
- *Final status of remediation and confirmation of remedial objectives to satisfy the planning conditions*
- *Additional risk assessments/reactive works undertaken.*

The appropriate documentation will be forwarded to the client, for forwarding to the Local Authority.

6.4 Construction Phase Works Verification

Potable Water Supply Pipe Installation
It is the responsibility of the contractor to record photographic evidence of the installation of pipework. This photographic evidence is to be provided to Groundtech Consulting for inclusion in the Verification Report

Cover System
Verification of cover system thickness will be required in residential gardens and any public open space. Testing of imported soils will be required in accordance with this Remedial Specification. Groundtech Consulting should be notified when the cover system has been placed and will undertake a visual inspection in the rear garden of each plot.

If the cover system is deemed to be inadequate, the site manager will be informed and advised on remedial measures. Verification of the cover system will only be carried out where the cover system has been completed.

The cover system validation report will include:

- *Confirmation of the source of imported material*
- *Confirmation of the physical suitability of the material*
- *Confirmation that the geo-environmental test results pass when compared to the appended RTVs*

7.0 REUSE OF SOILS AND MATERIALS MANAGEMENT

7.1 Waste Management Background

For the enabling works, the works contractor is responsible for ensuring all works are undertaken in accordance with current guidance.

7.2 Certainty of Use and Quantity of Material

Only materials deemed suitable for use by an appropriately qualified person will be utilised on site. Any out of specification material (geo-environmental and geotechnical) obtained from the site, which is not deemed suitable for use, will be classified as waste and will be disposed of or recovered in accordance with waste legislation.

Material reused or imported to site will be subject to the necessary testing/review and comparison to this Remedial Specification prior to delivery to site to minimise the risk of the importation of unsuitable material. Any material deemed unsuitable upon arrival at the site will be rejected.

Any surplus material or material which does not meet the required specification will be disposed of offsite. It is the responsibility of the contractor at each stage of the works to have checked all volume calculations and have allowed for disposal of unsuitable or excess materials.

7.3 On Site Material Management

Stockpiles
Site won material for potential reuse will be stored on site in stockpiles. The stockpiles are to be managed by the contractors during the relevant phases of work and will be subject to operational constraints at the time of stockpiling.

Stockpile locations will be clearly marked and documented on working drawings maintained in the site office.

The contractor for each phase of works is to take appropriate mitigation measures and environmental precautions as considered necessary at storage locations. However, as a minimum, stockpiles should be compacted to prevent dust, and they should be kept wet in periods of dry weather.

During the remediation works, materials will be excavated and consolidated into designated stockpiles, with the different soil types stockpiled in different clearly marked stockpiles. A record of the excavated quantities and reuse locations will also be maintained on site. A copy of all tracking forms and delivery tickets used for transportation of soils to site will be held at the site office.

Material to be removed off site, will be stockpiled separately away from those proposed for reuse. Contaminated material should be stockpiled on an impermeable membrane and covered to prevent leaching of contaminants until the soils are removed off site.

Confirmatory Testing for Material for On Site Reuse - Excavated Material
Any soils proposed for reuse have already been tested during the Ground Investigation.

Materials found to be out of specification should be disposed of at a suitably licenced waste disposal facility.

Confirmatory Testing for Material for Offsite Disposal

Any material requiring disposal during any phase of works shall be disposed of by the contractor. They shall ensure adequate and appropriate disposal, including testing to satisfy the proposed waste facility.

Records of the removal of material off site should be maintained by the contractor including details of the disposal or treatment site to which they have been taken. These details are to be provided to Groundtech Consulting to form part of the validation report.

Confirmatory Testing for Imported Material

Imported soil will be tested to determine whether it is suitable for use in accordance with this specification.

The contractor importing the material is to provide laboratory testing results to Groundtech Consulting to prove the suitability of the material to be brought on to site in line with the requirements specified in this Remedial Specification. Once the soils are present on site, additional testing will be undertaken.

8.0 CONTINGENCY PLAN AND AREAS OF UNEXPECTED CONTAMINATION

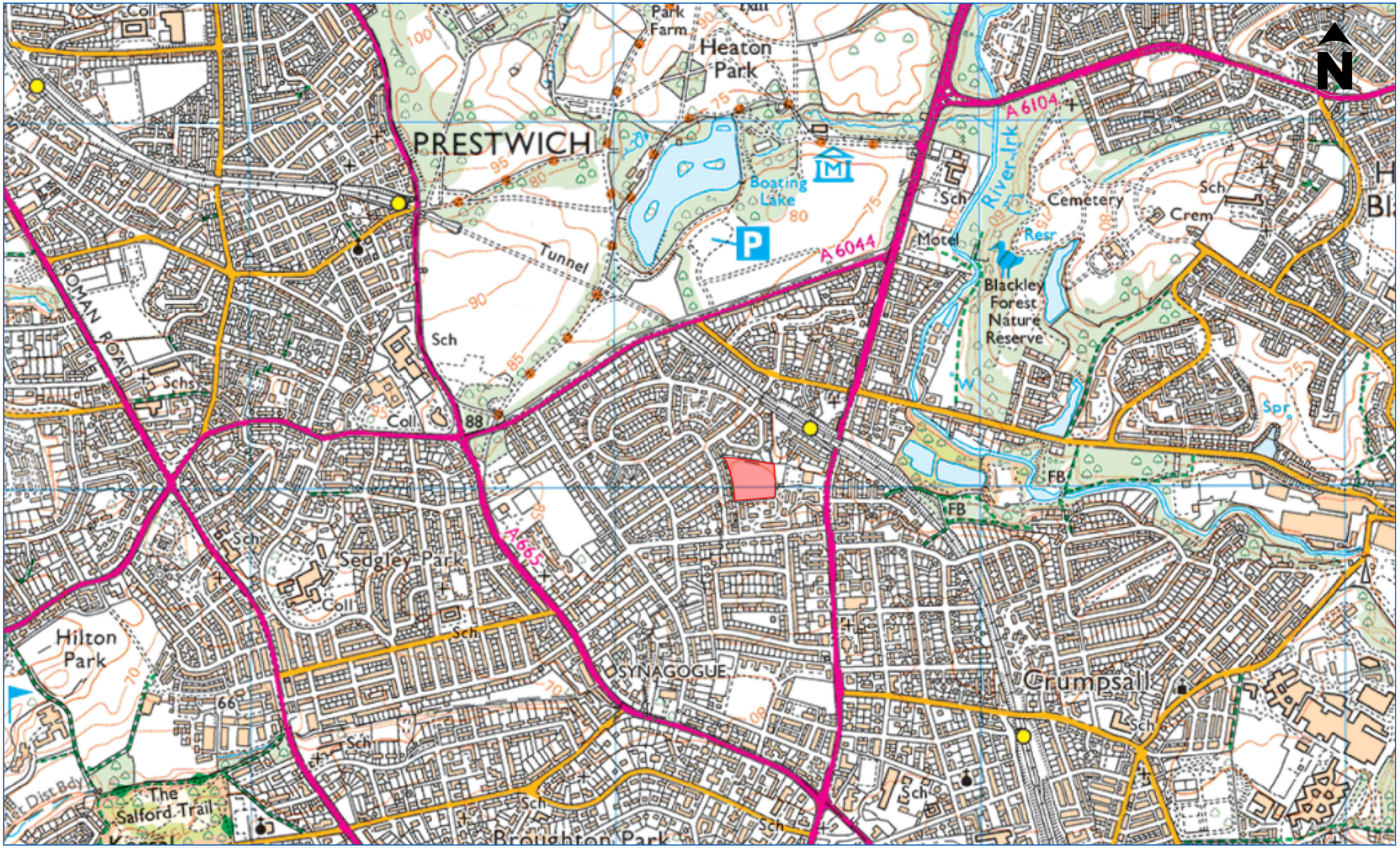
There is potential for areas of unexpected contamination to be present, due to the former use of the site. The strategy for unexpected contamination must be relayed to all site personnel during the enabling works phase and outline a clear allocation of responsibility for reporting and dealing with contamination.

Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the requirement to report this to the client and Groundtech Consulting.

A report will be prepared by Groundtech Consulting and submitted to the regulatory parties, the Local Authority and the Environment Agency where groundwater may potentially have been impacted.

If additional materials are identified, these materials will be subject to the procedures stated in this Remedial Specification.

APPENDIX 1 - Plans



GROUNDTECH CONSULTING

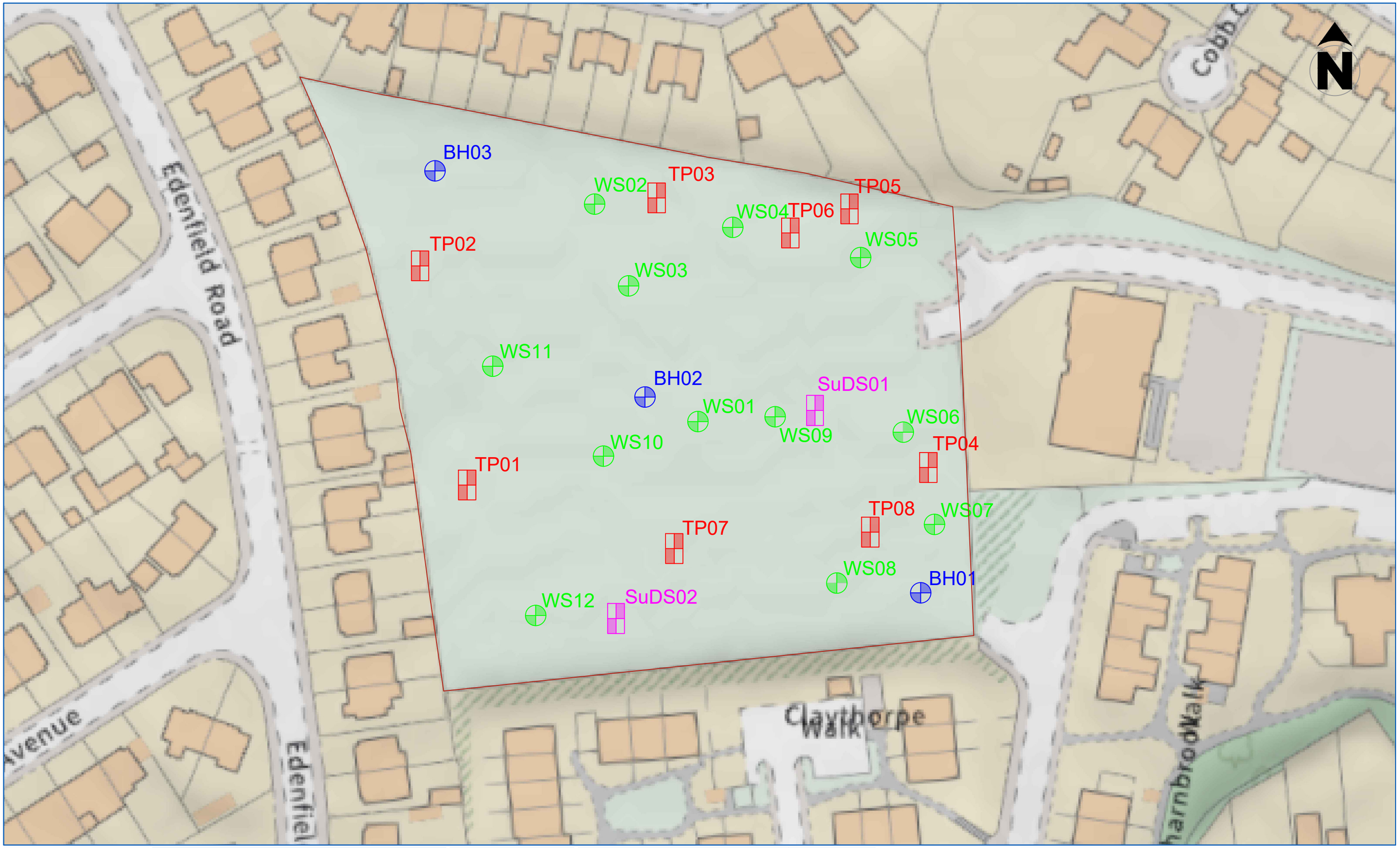
CLIENT	WAIN HOMES
PROJECT TITLE	MIDDLETON ROAD, CRUMPSALL
PLAN TITLE	PROJECT LOCATION PLAN
DATE	JULY 2026
SCALE	NTS
PLAN NUMBER	GRO-26222-P01

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

● Site Location



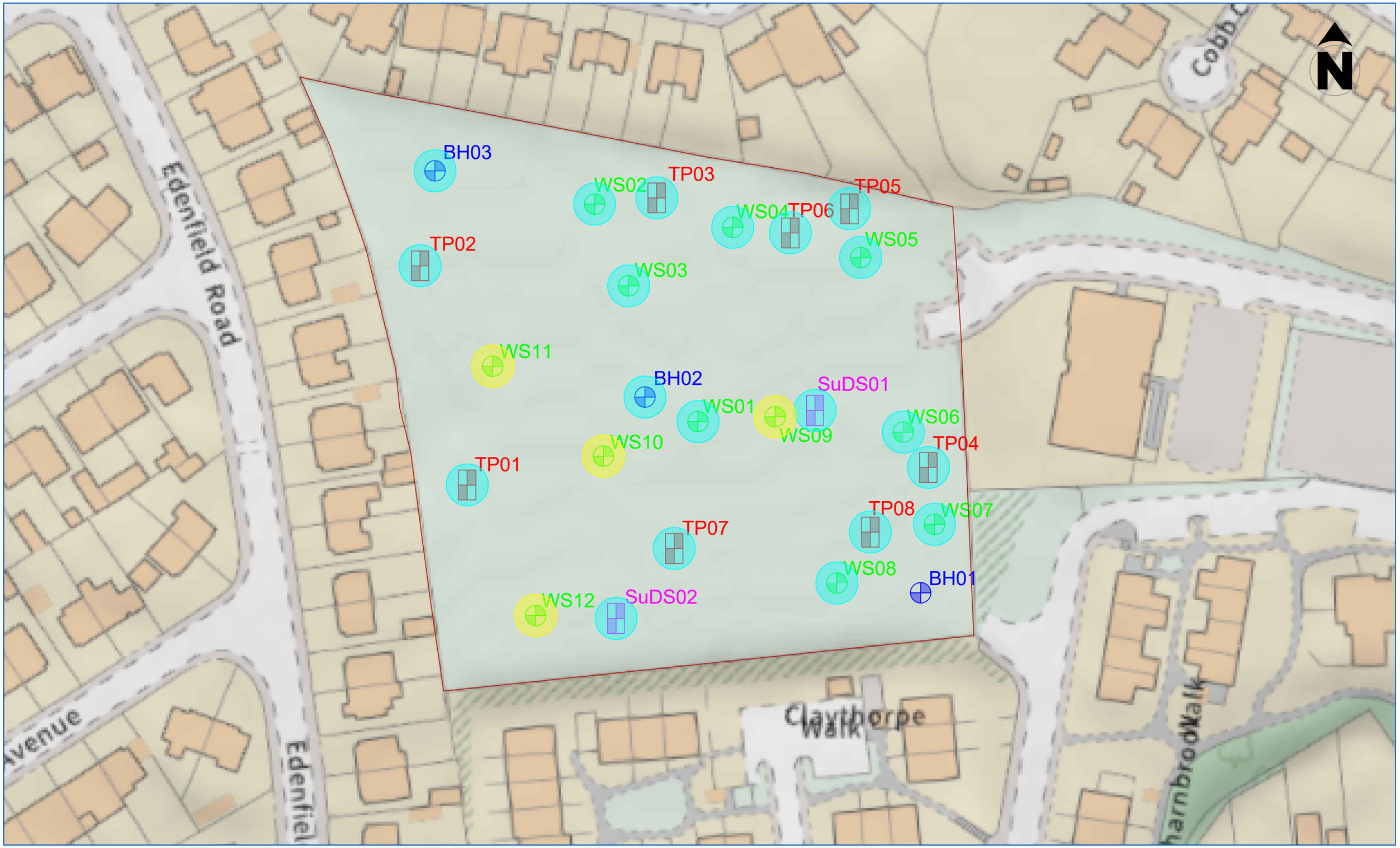
GROUNDTECH CONSULTING	CLIENT: WAIN HOMES	DATE: JUNE 2026
	PROJECT TITLE: MIDDLETON ROAD, CRUMPSALL	SCALE: NTS
	PLAN TITLE: EXPLORATORY HOLE LOCATION PLAN	PLAN NUMBER: GRO-26222-P02

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

- Cable Percussive Borehole Location
- Windowless Sample Borehole Location
- Soil Percolation Test Location
- Trial Pit Location



GROUNDTECH CONSULTING

CLIENT	WAIN HOMES
PROJECT TITLE	MIDDLETON ROAD, CRUMPSALL
PLAN TITLE	TOPSOIL CHARACTERISATION PLAN

DATE	JUNE 2026
SCALE	NTS
PLAN NUMBER	GRO-26222-P04

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

- Cable Percussive Borehole Location
- Windowless Sample Borehole Location
- Soil Percolation Test Location
- Trial Pit Location
- Made Ground Topsoil
- Natural Topsoil

General notes:

- All information on this drawing is copyright ©
- All sizes to be verified on-site
- No dimensions to be scaled off this drawing
- All dimensions to drawing in metres unless otherwise stated
- This drawing is to be read in conjunction with all other project drawings

DRAWING TO BE PRINTED IN COLOUR.

KEY

- Red Edge Application Boundary
- Adopted Roads
- Adopted footpaths
- Shared Drives
- Parking Bays
- Private Paths
- Private Gardens
- Open Space
- Feather Edge Fencing & gate
- Railings
- Plot refuse storage
- BCP — Bin Collection Point
- Plot cycle storage
- ASHP
- Indicative Tree Planting
- Removed Trees / Hedges
- Retained Trees / Hedges & RPA

0 2.5 5 10 15 25 m

SCALE BAR 1:500

REV.	DATE	DESCRIPTION	BY
P6	28.05.26	Railing & Knee rail boundary treatments added to plan. Refer to drawing 402 for further details.	JG
P5	18.05.26	Plots 06 & 07 subbed for a Coppice semi. Plots 11 & 12 subbed for a Oakrise semi Plots 20 & 21 subbed for a Coppice semi. Plots 24 & 25 subbed for a Oakrise semi.	JG
P4	30.04.26	Urban Apex sketch scheme P3 developed following internal comments.	JG

Wain HOMES

MIDDLETON ROAD, CRUMPSALL — Issue 07

Code	House Type	Bed & Type	Storey	Parking	Unit No.	Build Sq/Ft	Total Build Sq/Ft	Mix %
Affordable								
Open Market								
COP	Coppice	3B-4P Mews / Semi	2	2PS	**24**	1015	**24360**	**48%**
MEA	Meadowvale	3B-4P Semi / Detached	2	2PS	**8**	1094	**8752**	**16%**
OAK	Oakrise	4B-5P Semi	2.5	2PS + SDG	**18**	1284	**23112**	**36%**
TOTAL					**50**		**56224**	**100%**

Gross Site Area	3.10	Acres
Nett Site Area	3.10	Acres
Gross Density	16	Units / Acre
Net Density	16	Units / Acre
SqFt / Gross Acre	18137	SqFt / Acre
SqFt / Net Developable Acre	18137	SqFt / Acre

Wain HOMES

Project Title:
Middleton Road
Crumpsall

Drawing Title:
Site Layout Plan

PLANNING

Drawing No: WH-001-NW-A-401

Scale:	Date:	Site Code:
1:500@A2	Apr. 2026	001
Drawn by: JG	Checked by: -	Revision: P6

N:\Working Drawings (Commercial)\001 Middleton Road, Crumpsall\Architect Drawings\01. Site Layouts\01. DWG\01. Model\WH-001-NW-A-401-P6 - Proposed Site Plan.dwg

APPENDIX 2 - General Requirements

1. Compliance with Legislation and Standards

The works are to be undertaken in compliance with all relevant British Standards, codes of practice, regulations, guidance and legislation. Whilst not an exhaustive list, works shall be in compliance with the latest revision of all relevant legislation, HSE Guidelines and good working practice including, but not be limited to, the following:

- *The Health and Safety at Work etc. Act 1974.*
- *Construction Health Safety and Welfare Regulations 1996.*
- *Health and Safety Executive 'Protection of Workers and the General Public during Redevelopment of Contaminated Land' HS (G) 66, HMSO 1991.*
- *The Construction, Design and Management Regulations 2007.*
- *The Control of Substances Hazardous to Health Regulations 2002 (COSHH Regulations).*
- *The Control of Asbestos Regulations, 2012.*

The Contractor is responsible for obtaining all necessary approvals, licences, consents and permits from regulatory bodies and third parties prior to commencement.

2. Licences, Permits and Consents

Any conditions associated planning permission should be addressed prior to carrying out the works.

It will be a requirement of the Contractor to obtain any of the necessary permits and undertake the appropriate notifications and assessments.

The Contractor should only expect approvals have been sought by others where explicitly provided to the Contractor or advised in writing.

3. Health and Safety Requirements

The Principal Contractor must manage the risks in accordance with their legal requirements and all works are to be undertaken in compliance with all relevant regulations, guidance and legislation. A Construction Phase Health and Safety Plan (CPHASP) will be required to be submitted to the CDM co-ordinator, the Client and the LPA in advance of mobilisation to site. The CPHASP will be passed to the Site Manager who will implement all Health and Safety measures on site. The Site Manager will fully induct the Site Operatives prior to commencement of any works. The CPHASP will be kept as an open document and will be adapted as required to during the project. As a minimum this will include:

- *Welfare arrangements, storage and security.*
- *Air monitoring requirements (and action levels), if required.*
- *Traffic management plan.*
- *Segregation of working areas and site welfare (and decontamination units if required).*
- *Site inductions, daily safety briefings and toolbox talks.*
- *Activity specific risk assessments.*
- *Method statement briefings.*
- *Daily inspection records.*
- *Permits to work.*

During the works it will be necessary to protect the health and safety of the site personnel.

General guidance on these matters is given in the Health and Safety Executive (HSE) document 'Protection of Workers and the General Public during the Redevelopment of Contaminated Land' HS (G) 66. In summary, the following measures are suggested to provide a minimum level of protection:

- *All ground workers should be issued with protective clothing (including high visibility clothing), hard hats, footwear and gloves, personnel instructed as to how it should be used.*
- *All personnel shall wear hard hats, high visibility clothing and protective footwear at all times.*
- *Ensure that everyone on site complies with the health and safety plan.*
- *Take reasonable steps to ensure that only authorised persons are allowed on site.*
- *Display, where they can be easily read, any notification that has been sent to the Health and Safety Executive.*
- *Hand washing and boot cleaning facilities shall be provided.*
- *No smoking except in designated areas.*
- *Good practices relating to personal hygiene shall be adopted.*
- *Prepare method statements for construction operations as required by the Principal Designer.*
- *Provide the CDM Co-ordinator with any other relevant information.*

Before site operations are commenced, the necessary COSHH Assessments, Method Statements and Health and Safety Plans should be completed, approved to the Principal Designers satisfaction and issued in accordance with the CDM Regulations.

The Construction Phase Health and Safety Plan (CPHASP) should pay particular attention to the following hazards which may be encountered:

- *Potentially hazardous or contaminated materials used or encountered on site.*
- *Deep excavations.*
- *The potential for ground gases and risks on confined spaced entry.*
- *Working in the vicinity of existing underground or overhead services.*
- *Working in confined spaces.*
- *Working on, or in the vicinity of highways.*
- *Working with materials which have the potential to contain asbestos and the risk of inhalation of asbestos fibres.*
- *Manual handling.*
- *The potential for fire.*
- *Working with electrical apparatus in the vicinity of mobile plant and the potential presence of water.*
- *Poor lighting.*
- *The potential for falling/slipping/tripping and sustaining injury.*
- *The possibility for biological agents to be present, including, but not limited to: psittacosis, leptospirosis (Weill's disease), tetanus, legionella, human waste.*
- *Working in the vicinity of voids and openings.*

The Contractor shall take all necessary safety precautions throughout the ground treatment operations and shall comply with the Health and Safety at Work Act 1974 or any subsequent re-enactment thereof.

The Contractor shall submit for approval all necessary method statements to the Client prior to commencing the works.

The Contractor shall provide details of emergency procedures. Emergency services shall be informed of the site operations prior to commencement.

All statutory records to be kept in the site manager's office and these may include (not an exhaustive list and note not all may be required):

- *ASB NNLW1 – Notification of non-licensed asbestos work if the work is deemed not be requiring a licence (if required).*
- *Appropriate licence with regards to CAR 1012 if the work is deemed to require a licence.*
- *HSE Notification F10.*
- *Construction Phase Health and Safety Plan.*
- *Method Statements and Risk Assessments; Environmental Permit deployment form and associated paperwork.*
- *Discharge Consents for disposal of groundwater.*
- *Competence records (including asbestos awareness training and face-fit test records).*
- *Utility records.*
- *Plant and machinery maintenance records.*
- *Duty of Care paperwork.*

In addition, it is recommended that:

- *Asbestos Awareness training/briefing to be given to all staff.*
- *Background and ongoing air dust monitoring to be undertaken to check for presence of asbestos fibres during the works.*
- *Licensed asbestos contractors are employed to manage the licensed asbestos controlled areas, all other operatives involved in the operations must have appropriate training to satisfy the requirements of the Control of Asbestos Regulations 2012.*

4. Site Establishment and Security

Prior to the commencement of any works, the contractor, in conjunction with the Client and the Supervising Engineer, shall establish the boundaries of the site and working areas.

The Contractor shall make adequate provision to secure the site boundary and prevent unauthorised access onto the site during the course of the works.

Prior to the commencement of any works, the contractor, shall undertake a dilapidation survey of all adjacent features/construction including but not limited to boundary walls/ fences, adjacent footpath and road constructions etc. The survey is to be agreed with the Client or their representative prior to commencing any work on site.

The Contractor shall be responsible for all costs associated with rectification of damage to adjacent features/construction including but not limited to properties, boundary walls/ fences, adjacent footpath and road constructions etc. resulting from the demolition works.

The Contractor is to provide surveying capability as set out in this document facilitate the above. Prior to the completion of the works the Contractor is to discuss the continuation of the site security, including the fences, with the client and acceptable arrangements for continued security are to be agreed prior to the removal of the contractor's security provision.

5. Traffic Safety and Management

The Contractor shall comply in all respects with Chapter 8 of the Traffic Signs Manual for works on or affected the public highway and/or private roads forming the highway access to/from the site. The Enabling Works Contractor shall obtain all necessary consents from the Local Highway Authority for works on the public highway.

On-site access and haul routes should be provided and maintained by the Enabling Works Contractor in such a manner so as not to endanger either the user, those working in the vicinity of such accesses/haul routes and or the Works. Access to the site will be agreed with the Clients prior to commencement.

Suitable precautions shall be taken to prevent the spread of mud and debris on the public highways. Regular inspections of the public highway adjacent to the site shall be carried out. If deemed necessary by the Contractor, the Client or the Supervising Engineer, the highway shall be swept regularly to remove any mud, slurry or dust deposited by vehicles entering or departing the site. If the Supervising Engineer considers that significant amounts of any detritus have been deposited on the public highway then operations shall be temporarily suspended until appropriate cleaning operations have been undertaken.

The Contractor is to co-operate with other Contractors if they are present during the works. The proposed works will generate a number of vehicle movements associated with the removal of soils and delivery to site of materials. Consideration should be given to the route and the timing of these vehicle movements, to minimise risk and disturbance to sensitive locations (such as schools, residential areas).

Risks associated with the transport of soils that are potentially containing contaminated, such as dust emission, should be appropriately managed.

6. Welfare Facilities

Site cabins and welfare facilities will be established at a location to be agreed with the Supervising Engineer.

The Contractor is deemed to have made provision and arrangements for all temporary utilities associated with the welfare facilities.

7. Working Hours

Noisy operations such as the use of hydraulic breakers shall be restricted to operating times as specified by the Client and by the Planning Permission. It is understood that these are 8:30 am to 5:30 pm, or other hours agreed with the Local Authority, Monday to Friday and 9.00 am to 1.00pm on Saturday. No working shall take place on Sunday or Bank Holidays.

Prior to commencement the Contractor is to make contact with the Local Authority to establish if any further restrictions apply.

8. Mobile Plant

Mobiles plant shall be operated by suitably trained and qualified operators experienced for each item of plant. When not in use all plant shall be locked to prevent all plant shall be locked to prevent unauthorised operation.

All traffic entering or working on site shall comply with a maximum 10 mph speed limit.

Fuelling of any plant shall be undertaken in a designated area and all above ground fuel storage tanks shall comply with the requirements of the Pollution Prevention Guidelines PPG2. Specifically, any storage tanks used should:

- *Be sited within an oil-tight secondary containment system such as an impermeable bund.*
- *The secondary containment must provide storage for at least 110% of the tanks maximum capacity.*
- *Be located within a secure area.*
- *All taps and valves should be fitted with a lock and kept locked shut when not in use. Maintenance of mobile plant should be undertaken in a designated area, unless absolutely necessary.*

Waste oil, hydraulic fluid etc. should not be tipped directly or discharged on to site. Such materials shall be stored separately, in a secure bunded area, for off-site disposal. Waste oil may be a special waste and disposal shall be undertaken by a registered carrier in accordance with the Duty of Care Regulations.

A spill kit shall be kept on site in an accessible place adjacent to the designated refuelling area.

9. Unexploded Ordnance (UXO)

The Zetica UXO risk maps indicate the site lies in a *Low* risk area and not at risk from UXO.

10. Surveying

The Contractor shall provide full time surveying personnel and equipment to undertake the following activities and any other requirement for topographical information relating to the project that arises through the duration of the enabling works contract. The survey personnel and equipment should be capable of providing accurate levels and co-ordinates in relation to the national grid and topographical survey provided within 1 day of request.

The following key activities are covered by the requirements for surveying:

- *Confirmation of topographical survey on possession of the site, and setting out of the site boundary.*
- *Confirmation of positions of existing utilities and site features.*
- *Surveying the base and extent of all excavations and remaining obstructions prior to backfilling.*
- *All setting out and levelling relating to delivery of the enabling works.*
- *The location of sub-structures removed.*
- *Interim surveys to be undertaken during the infilling works to provide information on issues such as depth of excavation, progress of earthwork, quantities of materials, testing depths and locations etc.*
- *The location and elevation of test samples and locations.*
- *As built survey information.*

The Contractor is required to undertake all necessary topographical survey works to verify these levels before the commencement of the contract. Should the Contractor find any discrepancies on the drawings they are to refer the matter to the Engineer for verification before proceeding with the part of the works affected.

The Contractor shall undertake a topographical survey following completion of the enabling works.

All topographical surveys shall include levels at maximum 10m spacing and details of any features, changes in slope, structures, services and any other features of interest.

All of the above features shall be surveyed for line and level at the site boundary and marked on a plan. Levels shall be to Ordnance Datum and locations to National Grid. The survey shall be calibrated against existing site surveys and benchmarks in the vicinity of the site.

11. Testing

The Contractor shall be responsible for undertaking all testing necessary to satisfy the Supervising Engineer that the works have been carried out in accordance with, and comply with this Remedial Specification.

All soils and geo-environmental testing shall be carried out by a UKAS and MCERTS accredited laboratory, with accreditation for the specific analysis, to the approval of the Supervising Engineer.

12. Offsite Disposal

Materials for offsite disposal shall be sampled and analysed, by the contractor, at rates sufficient to allow the material to be adequately classified by assessment.

WAC testing should be undertaken on material exported from site to landfill, or other appropriately licensed facility. Material shall be hauled by a registered waste carrier in accordance with the requirements of the Duty of Care Regulations, 1991, Environmental Permitting (England and Wales) Regulations 2016 and where appropriate the Special Waste Regulations, 1996 and Hazardous Waste (England and Wales) Regulations 2005. A transfer note shall be completed, signed and retained by all parties involved. The transfer note shall state the volume of waste, the nature of the material and statement to the chemical composition. The waste transfer notes shall be kept by the Contractor for a period of at least 2 years.

13. Contamination

Contractors should be made aware of the possibility of encountering contaminants within soils or groundwater at the site (including asbestos) through 'toolbox' talks.

Safe working procedures should be implemented in accordance with CIRIA132 and good standards of personal hygiene should be observed and appropriate levels of PPE provided and utilised.

Eating, drinking and smoking should be strictly prohibited in the development site other than in designated mess areas.

14. The Control of Noise, Vibration and Dust Nuisance

The Contractor shall comply with the recommendations for practical measures to reduce noise and vibration set out in BS5228-1:2009 and BS5228-2:2009 and with any specific Principal Contractor requirements.

The Contractor shall take all reasonable measures to prevent dust nuisance from being generated by construction traffic, etc.

If necessary working methods will be altered in order to ensure that the level of noise generated from the works is within published tolerable limits.

The requirements of the LPA are to be sought and undertaken.

General

No fires shall be permitted on site.

Dust Mitigation

Appropriate measures shall be implemented at all times during the demolition and enabling works to minimise any dust emissions.

Any main temporary haul roads shall, where practical to do so, be constructed of crushed hardcore products. The haul roads shall be maintained for the duration of their use to minimise any build-up of loose spoil etc.

Traffic both entering and working on site shall obey a maximum speed limit of 10 mph. Wagons that are to be used for the haulage of any contaminated material from site shall be appropriately sealed or sheeted to prevent the release of fugitive dust.

Mobile water bowsers and sprayers shall be available on site at all times to water unpaved haul roads and working areas. The water spray may include chemical dust suppressants or wetting agents to improve dust control. An adequate supply of water shall be maintained on site at all times to allow for dust suppression activities to be carried out at short notice.

Where mobile water bowsers are not effective in suppressing dust then vapour masts shall be used. Such vapour masts shall be deployed at 20m centres on the downwind side of haul roads or excavations giving rise to significant dust or emissions of odour.

Air quality and dust monitoring stations will be set up and monitored by the Contractor to record the dust concentrations during the works.

With regards to stockpiles:

- *Stockpiles should be kept to a minimum to reduce 'wind whip' causing potentially hazardous material to be blown from the pile.*
- *Stockpiles should be placed on a suitable polythene membrane in a bunded area to prevent any cross contamination and care should be taken not to pierce the sheeting when placing the bulky elements of the material.*
- *Stockpiles should be dampened down or covered to prevent dust, whilst the final choice should be made by the Contractor based on site constraints, but the options include covering with plastic/polythene membrane, or by a layer of clean soil material.*
- *The drop distance from excavator bucket to stockpile will be kept as short as reasonably practicable to reduce dust.*

Odour

In general terms the excavation works are not considered likely to give rise to any significant odour problems. However; possible 'hotspots' of hydrocarbon contamination cannot be discounted and it is advised that odours are assessed by twice daily inspections of all Site boundaries.

If highly odorous materials are encountered, which may give rise to nuisance to neighbouring properties, appropriate vapour masts shall be deployed to provide suitable odour control. Any odorous materials shall be covered at the end of each working day and any stockpiles will be located away from any sensitive areas.

Plant and machinery shall be serviced regularly to ensure that exhaust fumes are compliant with best practice and relevant regulations.

Noise

The requirements of the Local Planning Authority and BS 5228: 1997 'Noise and vibration control on construction sites' shall be adhered to at all times.

All machinery shall be fitted with effective silencers and shall be serviced at regular intervals. No items of plant shall be operated with engine covers raised.

The location of any crushing plant shall take into consideration the location of neighbouring properties and other noise sensitive receptors and shall be located away from these areas and located adjacent to proposed stockpile locations where possible.

15. Asbestos in Soils

The Contractor must manage the risks in accordance with their legal requirements and will need to prepare appropriate health and safety documentation.

Asbestos was detected in one of the samples screened during both phases of Ground Investigation in the Made Ground Topsoil in SuDS02 at 0.2m begl at a concentration of 0.019 mass%.

A watching brief should be carried out during the enabling works for any evidence of Asbestos Containing Materials (ACMs) and hand picked if necessary.

16. Water Quality Controls

The Contractor shall provide for such measures as may be necessary to ensure that water, whether groundwater, from precipitation or any other source does not accumulate in excavations or on sub-grades.

Adequate drainage sumps will be installed during works and cut off trenches/dewatering measures will be used as required to manage surface water run-off, to prevent any water from entering watercourses, either directly as surface water run-off, or indirectly via the surface water drainage systems; If materials escape, appropriate the Contractor is to undertake (at their cost) appropriate remedial action as soon as possible.

17. Utilities

Utility records are to be provided by the Client for information purposes within the enabling works documentation. However, the Contractor shall be responsible for liaison with the statutory utility providers to ensure all service records are current and correct. The Contractor is also responsible for the safe disconnection of existing utilities entering the site, except those which are to remain operational.

Prior to site work commencing, the position of all utilities indicated as on site or offsite but close to the site boundary shall be determined and clearly identified where on site. The locations should be confirmed on site by appropriate investigation, observations and survey. Any discrepancies between the anticipated positions and confirmed locations are to be reported to the Supervising Engineer.

All retained manholes should be located and clearly identified on site to prevent damage. The location, depth, diameter and invert level of each manhole and the size and depth of all stream connections shall be recorded. Where drains or sewers are to be grubbed up the downstream ends should be plugged prior to commencement to prevent offsite systems becoming blocked or contaminated.

Where existing drains or sewers are to remain, CCTV surveys are to be provided by the contractor. These surveys must be undertaken on commencement prior to any physical work and on completion to demonstrate no damage has occurred.

Where damage has occurred, any remedial work must be agreed with the Supervising Engineer and relevant authority/owner prior to repairs commencing. The repair costs will be borne by the contractor.

All utilities on site that are to be retained through the works are to be positively located on site, reliance shall not be placed on existing records. Utilities are to be visibly marked and protected for the duration of the works. Appropriate methods are to be put in place to ensure all site staff working in the vicinity of retained utilities are fully briefed.

The Contractor is responsible for ensuring that all hydrant covers, stop tap boxes manhole covers and the like are raised or lowered to suit the finished levels associated with the proposed enabling works plateaus and future construction thicknesses.

Following the completion of the works, a survey plan of the location of terminated services is to be provided.

18. Damage to Property

All works are to be undertaken in accordance with the Party Wall etc Act 1996. The Contractor shall ensure that all precautions are taken in order to avoid any damage to existing property arising from the Works and shall be responsible for same in the event that any damage should arise from his failure to exercise due care.

Any adjacent structures, services and the like shall be inspected prior to commencement of the Works for evidence of existing defects and, if necessary, a dilapidation survey shall be carried out by the contractor, with the agreement of the Client and/or the Supervising Engineer, prior to works commencing on site. A re-inspection shall take place on completion of the Contract to verify that no damage or deterioration of the said structure, service or apparatus has occurred as a result of the Works. A schedule of the findings of this re-inspection shall be circulated to all parties concerned for their records.

The Contractor shall execute the works with care so as to avoid damage to existing structures and drains or other services to be retained.

All fences, trees, paths, shrubs, grassed areas and other surfaces required to be retained shall be protected by the Contractor from spillage and damage caused by site operations and upon completion of the works they shall be handed over in an undamaged and proper state to the satisfaction of the Engineer.

Refer to landscape architect drawings and specifications that define the areas that require protection. The Contractor shall not raise or lower the ground level beneath the spread of the branches of any tree to be retained without the approval of the Engineer.

19. Drawings and Supplied Information

Whilst efforts have been made to ensure that the information provided to the Contractor is correct and current, the Contractor is responsible for corroborating the existing information with the benefit of their site presence and to report any discrepancies encountered or anticipated to the Supervising Engineer immediately.

Where cutting and filling operations are to be carried out the Contractor is to undertake comparative assessments with the benefit of existing information, additional survey and their anticipated sequence of work to ensure sufficient and suitable material is available to undertake the works as proposed. Any anticipated shortfall or surplus is to be report immediately.

20. Photographs

A detailed dilapidation survey shall be undertaken of the site and adjacent properties including joint site boundaries, in conjunction with adjacent land owners. Such survey shall include roads, footpaths, street lighting and road signs. A copy of the survey, including record photographs shall be provided to the Client within seven days of commencement of site works.

The Contractor is to provide on-site a digital camera and e-mail facilities to enable electronic transfer of site photographs and other information for the full duration of the contract. Progress photographs are to be taken at least weekly across all parts of the site for inclusion within the contractor's report. Photographs are to be made available to the Engineer/Client in electronic format should they be requested during the contract. Record photographs should be provided as part of the validation information

APPENDIX 3 - Remediation Options Appraisal

Introduction

This Options Appraisal has been undertaken in general accordance with Options Appraisal of LCRM 'Model Procedures for Management of Land Contamination'. There are four main stages to this appraisal:

1. *Identifying Key Risk Drivers.*
2. *Identifying viable remediation options for each relevant pollutant linkage.*
3. *Carrying out a detailed evaluation of viable remediation options to identify the most appropriate option for each pollution linkage.*
4. *Producing a remediation strategy that reduces all relevant pollutant linkages to an acceptable level.*

Key Risk Drivers for Remedial Action

Groundtech Consulting have identified that the key risk drivers requiring remediation are:

- *Delineation and Removal of Topsoil*
- *Cover system installed in all soft landscaping areas*

The following sections of this report are intended to identify suitable and practical remedial techniques which can be applied in order to achieve a site which is suitable for the proposed residential development.

Ground gas risks and potable water pipelines are not discussed in the Remediation Options Assessment as they are mitigated by measures outlined British Standards and by good practice.

Remediation Options and Evaluation of Feasibility

Preliminary Assessment of Remediation Options
Investigation and risk assessment has concluded that the requires remediation to reduce the risk to receptors to an acceptable level.

The objectives of the remediation are to remove one or more elements of each of the *source-pathway-receptor* linkages.

The initial screening process considers the available remedial techniques based on following key criteria:

- *Effectiveness* - *the strategy must work within the context of the site and be effective in the removal of contamination linkages.*
- *Practicality* - *the strategy has to have been successfully used in similar situations on other sites and readily available within the UK market. Novel solutions or those still in the research stage are not considered here.*
- *Durability* - *the strategy needs to be durable and not reliant on ongoing maintenance to continue being effective.*
- *Relative Cost* - *the strategy must not be excessive cost.*
- *Relative Operational Time* - *the strategy should work in a feasible and realistic time scale.*
- *Sustainability* - *more sustainable options are preferred.*

The table below summarises all of the accepted remedial techniques readily available and assess each against the six key parameters listed above.

In the first instance, the feasibility of each of the listed remedial option is assessed in terms of effectiveness at treating the contamination, which is broken down into; effective (Y), partially effective (P) or ineffective (N).

The techniques are then assessed in terms of relative cost ranging from negligible cost (£) through moderately expensive (££) to prohibitively expensive (£££+).

The timescale the remedial technique is operational has been generally assessed in units of weeks, months, years and decades. The longevity of the technique should be for the duration of the development to be effective.

The main reasons for rejection of a remedial option are generally the ongoing operational constraints, the cost and the ineffectiveness to mitigate the risk from all contaminants present. In some situations, several treatment options may be applicable and will therefore be considered as part of the appraisal.

Viable Remedial Options

As described above, certain technologies were rejected based on the above reasons. The short-list of options presented below represents those technologies which were not rejected at the pre-screening process and as such, are taken forward to the options appraisal process:

- *Watching brief during works*
- *Installation of a cover system in soft landscaping areas*
- *Materials management, comprising excavation, screening, and reuse of suitable material*
- *Disposal of unsuitable soils*

Cover System

A cover system is a proven technology for mitigating the risk from numerous contaminants. The process comprises the placement of a cover system to form a barrier between the contaminated Made Ground and site users breaking the pollution linkage.

This option is technically simple and represents a low-cost strategy that can be implemented rapidly, subject to favourable site levels to accommodate the cover system.

The timescale for installing a barrier is relatively quick allowing for rapid completion of the remediation objectives and this remediation solution could be designed and implemented within a matter of weeks/months.

Materials Management

This process can be carried out a low cost ensuring contaminated soils are at a greater depth or beneath proposed hardsurfacing.

Disposal of excess or unsuitable soils

Disposal involves the removal of contaminated soils and disposal at an appropriately licensed waste management facility or surplus material potentially to a recycling facility. The benefits of excavation and disposal is short term implementation and the soils can be removed with a high degree of certainty by meeting proposed RTVs.

The cost of the method however can be significant depending on the classification and end disposal route, particularly in comparison to a cover system. The option will also take up valuable landfill space and present a significant carbon footprint in terms of vehicle movements.

The watching brief will enable olfactory/visual contamination to be identified and can be effective, this method is combined with the disposal of unsuitable soils.

Applicability of Remediation Options and Initial Assessment – Soils

Remedial Activity	Effective on Asbestos	Effective on Metals	Effective on PAHs	Effective on TPH	Relative Cost	Relative Operational Time	Comments (Practicality/Sustainability/Durability)	Feasibility
Containment - Cover System	*n/a*	*Y*	*Y*	*n/a*	*£*	*Weeks*	*A 600mm cover system should be placed in private garden areas with a minimum 150mm Topsoil and 450mm Subsoil. A 450mm cover system should be placed in areas of POS.*	*Y – In conjunction with materials management.*
Excavation and Disposal	*Y*	*Y*	*Y*	*Y*	*££*	*Weeks to months*	*Delineation and removal of Topsoil around WS09, WS11 and WS12 and Made Ground topsoil of SuDS02 due to elevations of CoC and asbestos.*	*Y – in conjunction with materials management and watching brief.*
Containment - hydraulic barriers	*n/a*	*Y*	*n/a*	*Y*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Containment - in ground barriers	*n/a*	*Y*	*n/a*	*Y*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Soil flushing	*n/a*	*Y*	*n/a*	*N*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Surface amendments	*n/a*	*Y*	*n/a*	*N*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Soil washing	*n/a*	*Y*	*n/a*	*N*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*

Remedial Activity	Effective on Asbestos	Effective on Metals	Effective on PAHs	Effective on TPH	Relative Cost	Relative Operational Time	Comments (Practicality/Sustainability/Durability)	Feasibility
Hydraulic binders (such as cement)	*n/a*	*Y*	*n/a*	*N*	*££*	*Weeks to months*	*Not Required and not cost beneficial.*	*n/a*
Vitrification	*n/a*	*Y*	*n/a*	*N*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Incineration	*n/a*	*N*	*n/a*	*N*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*
Thermal desorption	*n/a*	*N*	*n/a*	*Y*	*£££*	*Months*	*Not Required and not cost beneficial.*	*n/a*

APPENDIX 4 - Remedial Target Values

Remedial Target Values

Proposed End Use	Unit	Residential with Plant Uptake			Source
SOM	%	1	2.5	6	
Arsenic	mg/kg	37	37	37	LQM S4ULs
Beryllium	mg/kg	1.7	1.7	1.7	LQM S4ULs
Boron (water soluble)	mg/kg	290	290	290	LQM S4ULs
Cadmium	mg/kg	10	10	10	SGVs
Chromium (Total)	mg/kg	910	910	910	LQM S4ULs
Chromium (VI)	mg/kg	21	21	21	DEFRA C4SLs
Copper	mg/kg	2400	2400	2400	LQM S4ULs
Lead	mg/kg	200	200	200	DEFRA C4SLs
Organic Mercury	mg/kg	1.2	1.2	1.2	LQM S4ULs
Nickel	mg/kg	180	180	180	LQM S4ULs
Selenium	mg/kg	350	350	350	SGVs
Vanadium	mg/kg	410	410	410	LQM S4ULs
Zinc	mg/kg	3700	3700	3700	LQM S4ULs
Aliphatic EC 5 - 6	mg/kg	42	78	160	LQM S4ULs
Aliphatic EC 6 - 8	mg/kg	100	230	530	LQM S4ULs
Aliphatic EC 8 - 10	mg/kg	27	65	150	LQM S4ULs
Aliphatic EC 10 - 12	mg/kg	130 (48) [vap]	330 (118) [vap]	760 (283) [vap]	LQM S4ULs
Aliphatic EC 12 - 16	mg/kg	1100 (24) [sol]	2400 (59) [sol]	4300 (142) [sol]	LQM S4ULs
Aliphatic EC 16 - 35	mg/kg	65000 (8.48) [f,sol]	92000 (21) [f,sol]	110000 [f]	LQM S4ULs
Aliphatic EC 35 - 44	mg/kg	65000 (8.48) [f,sol]	92000 (21) [f,sol]	110000 [f]	LQM S4ULs
Aromatic EC 5 - 7	mg/kg	70	140	300	LQM S4ULs
Aromatic EC 7 - 8	mg/kg	130	290	660	LQM S4ULs
Aromatic EC 8 - 10	mg/kg	34	83	190	LQM S4ULs
Aromatic EC 10 - 12	mg/kg	74	180	380	LQM S4ULs
Aromatic EC 12 -16	mg/kg	140	330	660	LQM S4ULs
Aromatic EC 16 - 21	mg/kg	260 [f]	540 [f]	930 [f]	LQM S4ULs
Aromatic EC 21 - 35	mg/kg	1100 [f]	1500 [f]	1700 [f]	LQM S4ULs
Aromatic EC 35 - 44	mg/kg	1100 [f]	1500 [f]	1700 [f]	LQM S4ULs
Benzene	mg/kg	0.33	0.33	0.33	SGVs
Toluene	mg/kg	610	610	610	SGVs
Ethyl Benzene	mg/kg	350	350	350	SGVs
Xylene - o	mg/kg	250	250	250	SGVs
Xylene - m	mg/kg	240	240	240	SGVs
Xylene - p	mg/kg	230	230	230	SGVs
MTBE (methyl tert-butyl	mg/kg	49	84	160	CL:AIRE 2010
Acenaphthene	mg/kg	210	510	1100	LQM SAULs
Acenaphthylene	mg/kg	170	420	920	LQM S4ULs
Anthracene	mg/kg	2400	5400	11000	LQM S4ULs
Benz(a)anthracene	mg/kg	7.2	11	13	LQM S4ULs
Benzo(a)pyrene	mg/kg	2.2	2.7	5*	DEFRA C4SL*/LQM S4ULs
Benzo(b)fluoranthene	mg/kg	2.6	3.3	3.7	LQM S4ULs
Benzo(ghi)perylene	mg/kg	320	340	350	LQM S4ULs
Benzo(k)fluoranthene	mg/kg	77	93	100	LQM S4ULs
Chrysene	mg/kg	15	22	27	LQM S4ULs
Dibenz(ah)anthracene	mg/kg	0.24	0.28	0.3	LQM S4ULs
Fluoranthene	mg/kg	280	560	890	LQM S4ULs
Fluorene	mg/kg	170	400	860	LQM S4ULs
Indeno(123-cd)pyrene	mg/kg	27	36	41	LQM S4ULs
Naphthalene	mg/kg	2.3 f	5.6 f	13 f	LQM S4ULs
Phenanthrene	mg/kg	95	220	440	LQM S4ULs
Pyrene	mg/kg	620	1200	2000	LQM S4ULs
Phenol	mg/kg	420	420	420	SGVs
Asbestos	No fibres detected				

APPENDIX 5 - Limitations

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2025, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous properties and as investigation exploratory locations only allow examination of the ground at discrete

locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.

