



**REMEDICATION STRATEGY –
CONVERSION OF EXISTING
TEANFORD MILL, TEAN**

GSL2747R02

VERSION 1

05 SEPTEMBER 2022

FINAL

Prepared for:

Mr J Wilshaw

Prepared by: J Thorburn

GroundSolve Ltd

DOCUMENT CONTROL

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This report has been prepared by GroundSolve Ltd with all reasonable care and diligence, within the best practice and guidance current at the time of issue within the proposed redline boundary and proposed Site end use as presented by the Client.

This report is confidential to the Client and GroundSolve Ltd accepts no responsibility whatsoever to third parties to whom this report is presented.

Version No.	Description of Issue / Revision	Date of Issue	Author	Reviewed By	Approved By
1	FINAL	05/09/2022	J Thorburn BSc FGS	Stefan Imiolczyk BSc (Hons) MSc FGS CEng MICE	Sam Fishburne BEng MSc FGS CGeol RoGEP

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1 INTRODUCTION

1.1 Instruction

GroundSolve Ltd was commissioned by J Wilshaw to undertake a review of previous Ground Investigations and develop a Remediation Strategy and Verification Plan for the conversion of the existing Teanford Mill, Tean. (the “Site”).

The proposed development is understood to comprise the conversion of the Mill building with associated garden areas. Proposed site development plans are presented in Appendix A.

1.2 Objectives

The purpose of the report is to provide a preliminary assessment of the site using published information in relation to the proposed development of the site.

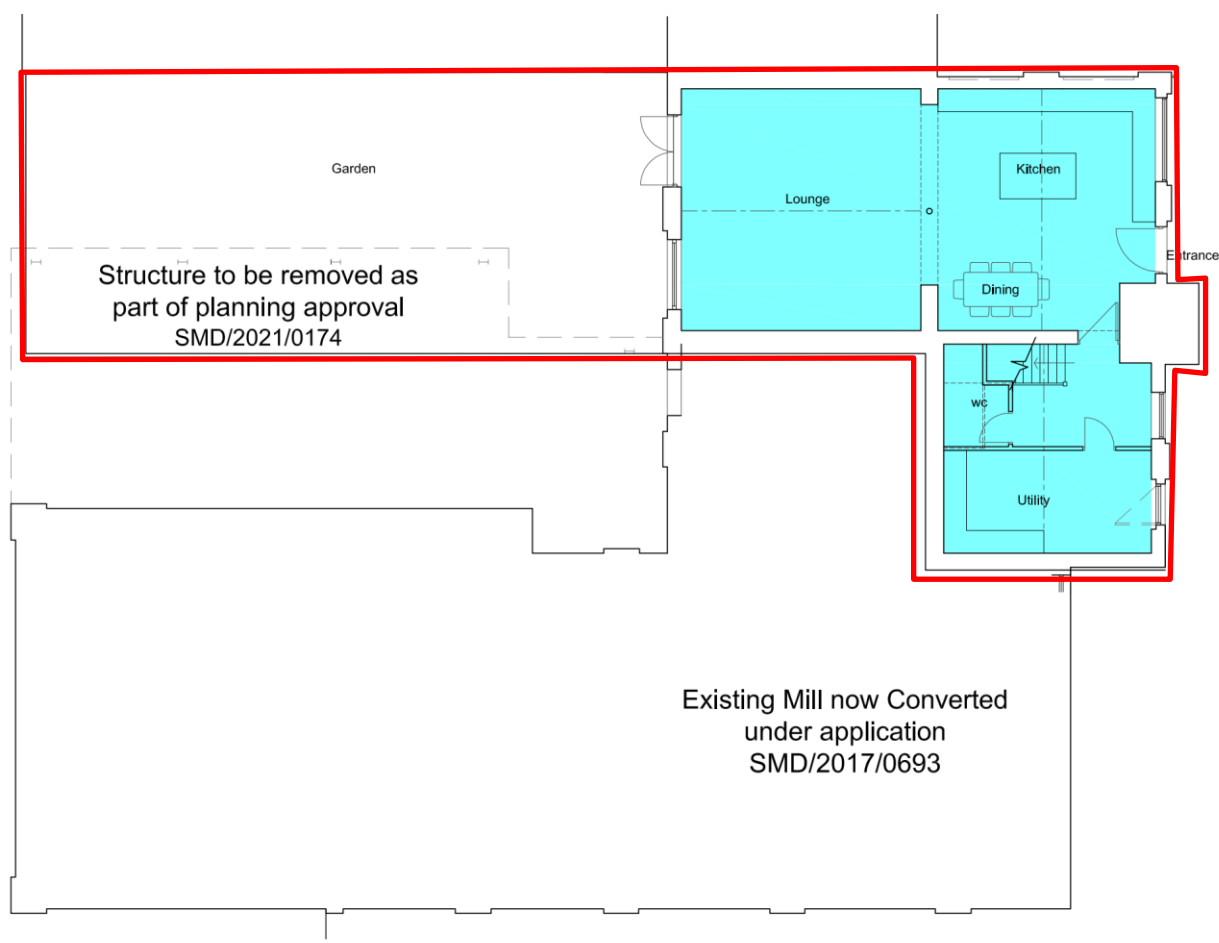
This report has been devised to comply with the relevant principles and requirements of a range of codes and best-practice documents regarding the geo-environmental appraisal of potentially contaminated land, including but not limited to:

- Part IIA of the Environment Protection Act, 1990;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (HCA, February 2019);
- BS5930:2015: Code of Practice for Site Investigations;
- BS10175: 2011 +A2:2017 Investigation of Potentially Contaminated Sites - Code of Practice;
- The Building Regulations 2010. Part C (HM Government 2013);
- Environment Agency Guidance (October 2020) Land Contamination Risk Management Land Contamination (LCRM);
- Environment Agency (2011) Report GPLC1 Guiding Principles for Land Contamination;
- Environment Agency (2017) The Environment Agency’s Approach to Groundwater Protection Version 1.1
- The ‘Service Constraints Report Limitations & Planning Requirements’ are presented as

1.3 Proposed Development

The proposed development of the site is understood to comprise:

- The removal from site or the treatment of any contaminated material encountered during construction; and;
- The conversion of the existing Mill building into a residential property including access roads, parking areas, private garden and service provision



Extract from proposed development plan (see Appendix A, Figure 1)

The findings and conclusions of the risk assessments have been set out and recommendations given for the proposed residential end use.

1.4 Planning Permission

The site has been granted planning permission (SMD/2022/0281) by Staffordshire Moorlands District Council.

This report has been designed to discharge Conditions relating to remediation strategy but conditions relating to verification works will be discharged once works have been completed.

1.5 Objectives

The objective of this document is to review previous Ground Investigations and present details of the remedial objectives. This report presents how the remediation of the site will be undertaken and sets out how the works will be validated. In addition, this document explains how the works will be permitted under current regulatory regimes. The remediation will ensure that upon completion of the proposed development, the ground and conditions at the site can be shown to be appropriate for its intended use, and that it will not pose unacceptable contamination risks to identified receptors.

The findings and conclusions of the risk assessments have been set out and recommendations given for the proposed residential with plant uptake end use.

This report provides a Remediation Strategy and Verification Plan in relation to the above contaminant sources, together with further details of how the developer will deal with encountering unexpected contamination, should this occur.

This document is a working document and may need to be updated, in agreement with the relevant regulatory bodies, at any stage during development dependent on the conditions encountered. This version of this document is to be issued to regulators for approval (i.e., Staffordshire Moorlands District Council).

1.6 Previous Investigations

A number of previous investigations have been undertaken by GroundSolve Ltd in relation to the proposed and current residential development. A list of these reports is presented below:

- GIP AJM/25890 PHASE I DESK STUDY - 8th May 2017
- SRL1319 Strata Renewable Ltd – Letter Report Phase1 Contamination – 03/03/2021.
- SRL1319 Strata Renewable Ltd –Phase2 Ground Investigation Report – 03/03/2021

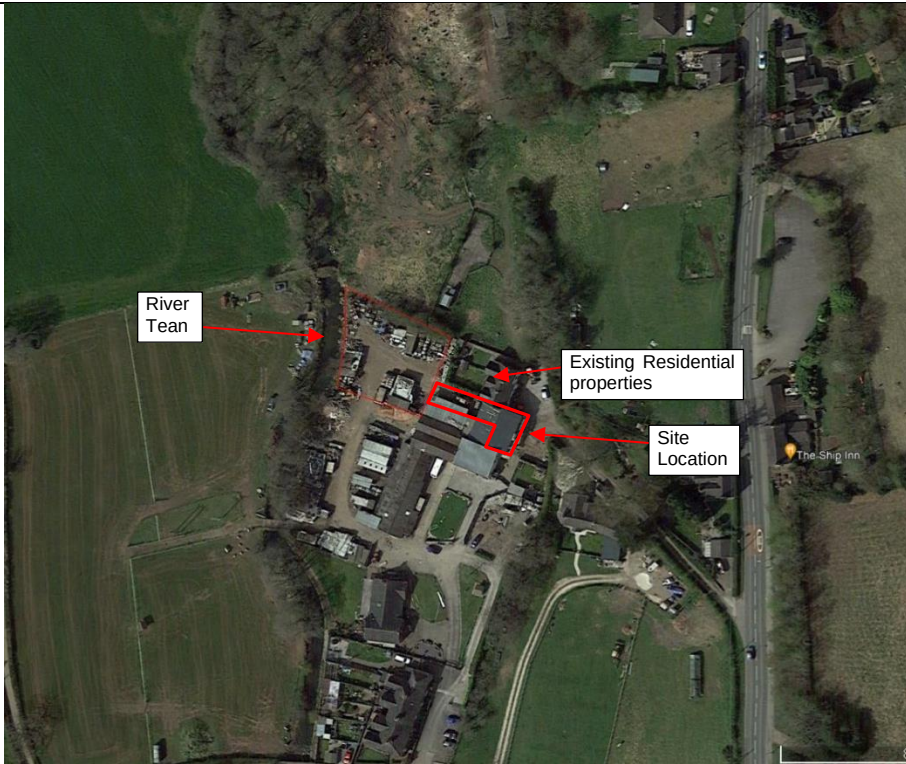
The previous site investigation reports are discussed and summarised in **Section 3** of this report.

1.7 Limitations

This report has been prepared for the sole use of Mr J Wilshaw. No other third party may rely upon or reproduce the contents of this report without the written approval of GroundSolve Ltd. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk.

2 SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

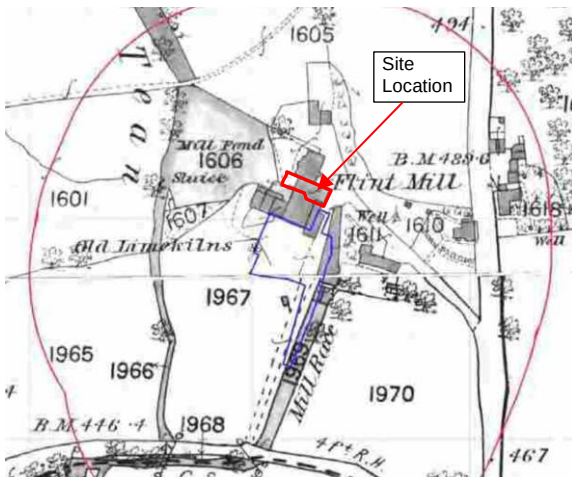
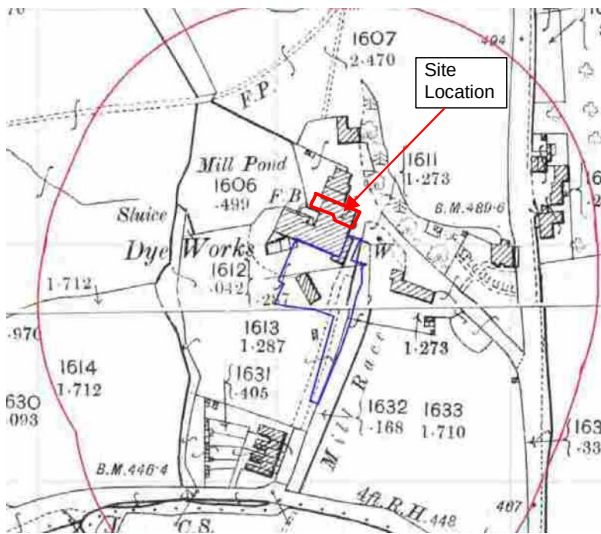
Site name	Teanford Mill, Tean
Site address	Part of Former Teanford Mill, off Breach Lane, Tean, ST10 4EP
National Grid Reference (NGR)	400602, 340630
Approximate Site area	
Site shape	Roughly 'L shaped'. The site is around 30m long and up to 20m wide.
Current land use on the Site	The development area is the existing Mill building with part of the adjacent lean-to buildings to be demolished. The construction area is accessed from Tean Road via an access road northward. The existing Mill Building comprises an existing concrete slab, which is in good condition with no evidence of cracking.
Surrounding land uses	The site is set within a residential area, with properties to the east and south. The River Tean is located further to the west. To the NW there is a buildings yard, which is also subject to the proposed residential development.
General topography and ground levels	The site is relatively flat.

3 PREVIOUS INVESTIGATIONS

3.1 Site History Review

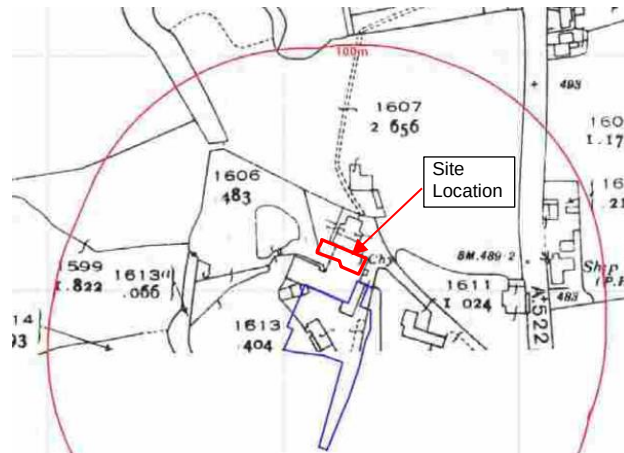
A number of previous investigations have been carried out on the site. A summary of the findings from the previous investigations are given below:.

Table 3.1 Current Site Overview.

Summary of main findings from the previous reports	
Site History	The historical mapping has shown that the site was previously part of Flint Mill with the former Mill pond to the west and Mill Race to the south. The flint mills from the Potteries area, calcined chert and then ground the product for use in porcelain manufacture. The mill pond was located to the NW of the site and was formed by diverting the River Tean and then allowing water to flow out over a sluice.  The 1:2500 map of 1900/01 shows the development still occupied by the mill building. The works has been changed to a "Dye Works". 

Summary of main findings from the previous reports

The map of 1939 shows that the development area hasn't changed but the Mill Pond was much smaller. The works is now untitled.



The 1:2500 map of 1969 shows the works has now been changed to a Precast Concrete Works, the mill pond appears to have been filled.



The existing Mill building hasn't changed to the present day.

Geological Setting

The 1:50,000 scale geology plan, Sheet 124 Ashbourne, confirms the site to be underlain by Recent Alluvium of the River Tean incised into River Terrace Deposits.

Bedrock: Triassic Age Chester Formation. The formation comprises conglomerates and reddish brown, cross bedded, pebbly sandstones with subordinate beds of red-brown mudstone. The conglomerates have a reddish-brown sandy matrix and consist mainly of pebbles of brown or purple quartzite, with quartz conglomerate and vein quartz.

The previous ground investigation has shown the following ground conditions within the proposed development area.

- Made Ground - compact rubble fill and compact brick rubble fill. Proven to a depth in between 0.65m to 0.8m.
- Alluvial Clay - Very soft and soft dark brown and brown slightly peaty slightly silty Clay, rare decomposing plat debris with organic odour proven to 2.3m.
- Sand and Gravel – proven to 2.5m composed of dense and very dense brown slightly sandy fine-coarse subangular subrounded GRAVEL.
- On the adjacent site to the west, it is likely that the weathered bedrock Sandstone is present at approx. 3.5m.

Summary of main findings from the previous reports	
Mining	The site is not located in a coal mining reporting area by the Coal Authority. The site is not in an area affected by historic brine or salt extraction. There are no records of any mining is the area of the development.
Hydrogeology	Groundwater Vulnerability the underlying Chester Formation 'solid' geology strata is classed as a 'Principal Aquifer'. The overlying superficial soils are classed as a Secondary A aquifer. • The site is within a Source Protection Zone I. • There is a groundwater abstraction license located 48m to the north. • There is a surface water abstraction license located 298m to the north. • There is a potable water abstraction license located 48m to the north. • The River Tean is located on western boundary. • There is a surface water feature, from the mill, located along the eastern boundary.
Waste	• There are no landfill sites within 1000m of the site, • The closest waste treatment / transfer sites is 951m from the site.
Contamination Sources	The general ground conditions encountered within the development area recorded 0.65m to 0.8m Made Ground associated with the site's previous use. The made ground is underlain by a thin layer of alluvial clay and fluvial sand and gravel. Elevated levels of several contaminants were recorded in the made ground across the adjacent site to the west, including lead, and asbestos. The exceedances are generally only slightly above the adopted GAC values, but nevertheless pose a risk to the identified receptors. It has been assessed that the nature of the made ground encountered within the proposed garden area for the barn conversion will potentially comprise the same contamination risk. Groundwater testing has generally shown very low concentrations. The risk to controlled waters is considered low. The EA have issued no objection to proposed development, however, if contamination not previously identified is found, construction is stopped until remediation strategy is agreed by the local planning authority. No radon protective measures are necessary in the construction of new dwellings or extensions.

4 GROUND CONDITIONS

4.1 General

The site investigations have allowed the site-specific ground conditions to be described and this information was used to provide an improved conceptual ground model. The geology encountered during the site investigations was generally consistent with existing publicly available information online on the British Geological Survey (BGS) GeoIndex (onshore) viewer. A summary of the general strata encountered across the site is provided in the Table 6.1 below, with more detailed description given in the following sub sections.

Table 4.1: Summary of Strata Encountered		
Geological Strata	Maximum Depth Below Ground Level to Base of Strata (m)	Maximum Strata Thickness (m)
Made Ground	0.65m to 0.8m	0.80
Alluvium	2.30m	1.75
Sand and Gravel	Proven to 2.5m	-

4.2 Anthropogenic Materials

As described in section 3, the Made ground generally comprises brown slightly sandy slightly loamy GRAVEL of brick, masonry, glass, pottery, wood and plastic varying between 0.65m and 0.8m.

No visual or olfactory evidence of contamination was noted during the fieldwork.

4.3 Alluvium

Soft brown/grey/dark brown slightly peaty slightly sandy CLAY with rare organic matter and fine to coarse sub-rounded to rounded; organic odour present.

4.4 Sand and Gravel

Dense and very dense brown slightly sandy fine-coarse subangular subrounded GRAVEL.

4.5 Groundwater

Groundwater seepages were encountered very shallow from 1.0m bgl .

4.6 Conceptual Site Model

The conceptual site model has been updated using the findings of the Phase 2 site investigation.

The site investigation revealed the following general downward succession:

- Site surface: reworked Made Ground and construction materials. / No Topsoil material has been recorded.
- Made Ground – relatively thin ranging between 0.65m to 0.8m comprised of demolition material with varying amounts of brick, concrete, ash/clinker with sand and clayey matrix.
- Alluvial Clay: Soft slightly peaty slightly sandy slightly gravelly clay proven to 2.3m
- Sand & Gravel: Dense to very dense fine to coarse sandy Gravel
- Bedrock: Weathered sandstone proven on adjacent site.

The updated contamination at the site has been assessed using the contaminant-pathway-receptor linkage approach.

Following the site investigation, the plausible contaminant sources have been updated or confirmed as follows:

- Elevated concentrations of heavy metals / phytotoxic elements (Lead and Asbestos) within the shallow Made Ground.

The results of site investigation and laboratory analysis generally record low concentrations of potential contaminants, however there are elevated concentrations of metals and presence of asbestos within the shallow made ground.

The risk assessments have concluded that remedial works is required within the proposed garden areas. The remedial measures will take the form of the removal of Made Ground and the installation of a 600mm thick cover system (comprising fully validated topsoil and subsoil) in all landscaped areas including patio areas.

The existing former mill building is solid and comprises of at least 330mm thick walls externally which thicken out to 440mm at the pier positions between the windows. The masonry to all the external and internal walls appears to be in good condition, plumb and free from signs of structural settlement or movement. The existing building comprises a concrete slab, which is in good condition with no evidence of cracking. It is understood that it has been recommended the provision of 100mm of insulation and a 75mm concrete or sand/cement screed above which will bring the floor up to the correct level and provide a threshold at any front and rear door openings.

Whilst unexpected contamination is not anticipated, the proposed redevelopment could encounter previously unrecorded hotspots of contaminants. These will be assessed and mitigated in accordance with current good practice.

5 REMEDIATION STRATEGY

5.1 Summary of Risk Assessments

Review of the CSM following the intrusive investigations, supplemental sampling and risk assessments identified heavy metals and Asbestos as the primary contaminants of concern to Human Health.

5.2 General Observations and Requirements

The risk assessments have concluded that remediation measures are required to address risks to human health only, resulting from minor contamination in the existing made ground.

The remedial actions required are:

- Made Ground can be left in-situ below building floor slabs and future permanent hard standing (e.g., parking areas, roads, footpaths), excluding service runs and areas where future excavation might be anticipated (assuming all geotechnical requirements are met).
- Remediation is only required for below areas of gardens/soft landscaping to enable provision of uncontaminated cover soils in areas of garden/soft landscaping (minimum of 600 mm);

Dust

During the construction works there will be a risk from dust to on site workers and people occupying adjacent properties. Appropriate risk assessments should be carried out by the contractor in accordance with the Control of Asbestos Regulations (2012) to allow appropriate controls for the mitigation of risk to health of construction workers to be put in place. This risk can be controlled to within acceptable limits by:

- Method statement for site activities including control of dust generation;
- having adequate site hygiene facilities allowing staff to keep a good level of personal hygiene;
- all groundworkers should have been trained in asbestos awareness and should keep a look out for this being encountered during excavations.
- the method statement shall have a contingency plan which should be implemented if the presence of asbestos is suspected in groundworks; and
- only permitting smoking or eating on site in appropriate pre-designated areas.

Given the low level asbestos concentrations and the heavy metals (principally lead) together with the proximity of residential receptors in the environs of the site and construction workers, control of fugitive dust will be a priority. As a minimum it is anticipated the works will be undertaken in accordance with BRE best practise guidance and that the following measures will be introduced to assist with control of dust generation during the groundworks phase of the works:

- access roads and any stockpiles created during groundworks should be regularly damped down with water;
- vehicles used to transport materials/wastes and aggregates should be enclosed or tarpaulined;
- vehicle movements and speed should be kept to a minimum within the site ;
- dust generating equipment (e.g. mobile crushing and screening equipment) should be located to minimise potential nuisance impacts to receptors as far as practicable; and
- minimising drop heights of all loading and unloading activities that involve the transfer of soils and demolition materials.

Main Earthworks

The proposed redevelopment will result in the provision of buildings, hardstanding (including roadways and pavements) and landscaped areas. Areas of buildings and hardstanding will be sufficient to break potential pollutant linkages relating to human health from the limited areas of Made Ground encountered on the site.

Made Ground is currently present the proposed soft landscaped areas, therefore the following procedures should be applied:

- Removal of Made Ground as required to accommodate 600mm thick clean cover system;
- Stockpiling of made ground, separately from all other materials, prior to suitable sampling, classification, and appropriate disposal;
- Placement of clean cover system, comprising min. 150mm topsoil and 450mm subsoil .

Imported topsoil and subsoil will be required to be analysed for a suitable suite of contaminants in relation to human health (in addition to topsoil being compliant with BS3882:2015). Further details regarding sampling frequency and analysis are presented in **Section 6**.

5.3 Unexpected Contamination

Whilst significant gross contamination is not anticipated, the proposed redevelopment could encounter previously unrecorded hotspots of contaminants. These will be assessed and mitigated in accordance with current good practice.

A 'watching brief' is to be maintained by the Principal Contractor during all earthworks at the site. This will enable any previously unidentified contamination on the site to be dealt with in an appropriate manner.

The Site Manager will be responsible for keeping this watching brief during earthworks. The Site Manager will have appropriate experience of earthworks including on brownfield sites and will have received appropriate training

regarding asbestos. All groundworks personnel will have appropriate training regarding asbestos and will have been given a tool box talk on unidentified contamination at the site. The groundworks personnel will be involved with the watching brief and will advise the Site Manager as soon as they encounter suspect unidentified contamination.

During the earthworks part of the contract, the Principal Contractor will keep a daily diary of operations which will include a record of visual assessment of contamination and earthworks, photographic record and any necessary validation testing. All works should be verified independently by suitably qualified and experienced personnel. All of this information will be incorporated into the Verification Report for the relevant part of the work.

If unexpected contamination is encountered, then the procedures set out in **Appendix C** should be implemented.

5.4 Clean Cover System

A clean cover system, 600 mm in thickness, shall be installed in all garden and soft-landscaped areas, typically 450mm subsoil and 150mm topsoil. Where patios or decking is present, a 600mm thick capping layer will still apply, however some of the thickness may comprise the patio and any underlying imported stone/gravel structural make-up used in the patio construction.

For the garden and soft landscaped areas to all plots:

- Cover systems, 600 mm in thickness, are to extend across the whole garden area, regardless of the proposed surface cover (this includes any patio areas, decking and any areas of artificial lawn).
- Clean cover in garden and soft landscaping area to comprise a minimum thickness of 150 mm of topsoil over a 450 mm thick subsoil. At the base of the subsoil, it is possible to use inert granular fill (max 150mm), which will act as a separation / capillary break layer between the cover system and the made ground.
- No soils are to be imported to site until information on their source, the results of any soil analysis, and an assessment of their suitability for use. This is to ensure that soils used as part of the proposed development are suitable for use, and contaminated soil is not brought on and used within developments.
- Imported topsoil should be tested as a minimum of 3 samples or at a rate of one sample per 150m³ for topsoil from a greenfield source or one sample per 50m³ for topsoil from a brownfield source.
- Imported or reused subsoil should be tested as a minimum of 3 samples or at a rate of one sample per 250m³ for subsoil from a greenfield source or one sample per 100m³ for subsoil from a brownfield source

Table 5.1 – Acceptance Criteria for imported material (Topsoil and Subsoil)

Analyte	Soil Re-Use and Importation Criteria		Analyte	Soil Re-Use and Importation Criteria	
	mg/kg	Reference		mg/kg	Reference
Metals			BTEX		
Arsenic (total)	37	S4UL	Benzene	0.087	S4UL
Cadmium (total)	11	S4UL	Toluene	130	S4UL
Chromium (total)	520	HWT	Ethyl Benzene	47	S4UL
Chromium (hexavalent)	6	S4UL	Xylene – 0	60	S4UL
Copper (total)	200	BS3882	Xylene – M or P	56	S4UL
Lead (total)	200	C4SL			
Mercury (total inorganic)	40	S4UL	Petroleum Hydrocarbons[§]		
Nickel (total)	130	S4UL	Aliphatic > EC5 - EC6	42	S4UL
Selenium	250	S4UL	Aliphatic > EC6 - EC8	100	S4UL
Vanadium	410	S4UL	Aliphatic > EC8 - EC10	27	S4UL
Zinc (total)	2,009**	HWT	Aliphatic > EC10 - EC12	130	S4UL
			Aliphatic > EC12 - EC16	1000**	HWT
Inorganic			Aliphatic > EC16 - EC21	1000**	HWT
Sulphate	2400***	-	Aliphatic > EC21 - EC35	1000**	HWT
Phenol	120	S4UL			
			Aromatic > EC5 - EC7	70	S4UL
PAH[§]			Aromatic > EC7 - EC8	130	S4UL
Naphthalene	2.3	S4UL	Aromatic > EC8 - EC10	34	S4UL
Acenaphthylene	170	S4UL	Aromatic > EC10 - EC12	74	S4UL
Acenaphthene	210	S4UL	Aromatic > EC12 - EC16	140	S4UL
Fluorene	170	S4UL	Aromatic > EC16 - EC21	260	S4UL
Phenanthrene	95	S4UL	Aromatic > EC21 - EC35	1000**	HWT
Anthracene	2400	S4UL	Aromatic > EC35-44	1000**	HWT
Fluoranthene	280	S4UL	Aromatic > EC44-EC77	1000**	HWT
Pyrene	620	S4UL			
Benz(a)anthracene	7.2	S4UL	Asbestos	Not detected (<0.001%) for topsoil and subsoil	Lab LoD
Chrysene	15	S4UL			
Benzo(b)fluoranthene	2.6	S4UL			
Benzo(k)fluoranthene	77	S4UL			
Benzo(a)pyrene	2.2	S4UL			
Indeno(123cd)pyrene	27	S4UL			
Benzo(ghi)perylene	320	S4UL			
Dibenzo(ah)anthracene	0.24	S4UL			

5.5 Permitting

Re-Use of Soils

It is proposed that the existing made ground onsite will not be reused within garden areas. The material will be stockpiled until removal off site to appropriate landfill.

6 VERIFICATION PLAN

6.1 General

All stages of the remediation works should be verified independently by suitably qualified and experienced personnel. Verification reports should be prepared for each stage. Verification will be required in two stages:

- Initial earthworks/remediation;
- Verification of site won and imported subsoil and topsoil,

On completion a copy of the Verification Reports should be sent to the Local Authority Environmental Health Officer and the Environment Agency Contaminated Land Officer for their approval so that planning conditions can be discharged. A copy of the report should be sent to the NHBC, local authority building control officer or other similar authority for their approval. Where such organisations are involved in the development process, it is advised that approval be sought to any remediation works from these organisations prior to the commencement of development.

6.2 Verification of Earthworks/Remediation

The verification works/ report should include:

- A description of the works, sample location plan, test results, photographs, interpretation;
- Contractor's documentation (e.g., method statements, plant data sheets etc.);
- Manufacturer's/ supplier's product documentation (e.g., compliance certificates & delivery notes;
- Contractor's daily progress records;
- Records of all imported topsoil, subsoil and soil conditioning material for the site complete with laboratory test certificates demonstrating that the material is suitable for use (if appropriate);
- Verification Engineer's daily logs;
- Photographic Records;
- As-built Drawings;
- Description of how the use of materials links with the Remediation Strategy;
- Reference to site investigation data and risk assessments;
- Record of quantity of materials used;
- Details of any unexpected contamination encountered and how it was dealt with;
- In order that regulatory compliance can be confirmed, a copy of all site licences, consents, Waste Transfer Notes and imported material consignment notes shall be included.

6.3 Imported Subsoil and Topsoil

Imported soils will be tested to ensure suitability, GroundSolve propose the following soil validation strategy:

Pre-Placement of Soils

- Imported material (for both sub-soil and topsoil) to be tested as detailed in **Table 5.1** below, and compared to appropriate assessment criteria.
- Imported topsoil should be tested as a minimum of 3 samples or at a rate of one sample per 150m³ for topsoil from a greenfield source or one sample per 50m³ for topsoil from a brownfield source
- Imported or reused subsoil should be tested as a minimum of 3 samples or at a rate of one sample per 250m³ for subsoil from a greenfield source or one sample per 100m³ for subsoil from a brownfield source

Post Placement of Soils

- Place sub-soil and topsoil to a minimum thickness of 600 mm in garden areas, which includes a suitable thickness of topsoil as a growing medium.
- Method of Validating Capping Thickness:
 1. Engineer to verify thickness of capping layer via hand dug exploratory holes within the residential rear garden area.
 2. Engineer to digitally photograph every residential garden area post capping.
 3. All data to form part of a Validation Report which must include prints of all digital photographs titled with plot number, rear garden, or location of soft landscaped area.
- Submit a validation report confirming the works have been undertaken in accordance with this agreed strategy.

7 REGULATORY REQUIREMENTS

7.1 Remediation

Any proposals to remediate or develop the site should be agreed with the relevant authorities (e.g., local authority environmental health officer) to obtain Planning Permission prior to commencement of the works and should be agreed with the NHBC, or similar, or with the local authority building control officer prior to commencement of the works.

7.2 Health and Safety

The works should be undertaken in compliance with all relevant regulations, guidance and legislation. As outlined within the HSE publication “Successful Health and Safety Management – HSG65” this report should inform your development of safe systems of work and information as an input into the safety management system. The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2015. All risk control measures should be in accordance with the guidelines laid down within the Management of Health and Safety at Work Regulations 1999.

In accordance with the Construction Design and Management (CDM) Regulations 2015, GroundSolve has acted in the role of Principal Contractor and as Principal Designer for the works as described in this report. With issue of this report, GroundSolve has discharged and completed all contractual and legal requirements for these positions, and we have no further involvement with the project. The Principal Contractor is responsible for obtaining any necessary approvals from regulatory bodies and third parties to fully implement the works.

8 REFERENCES

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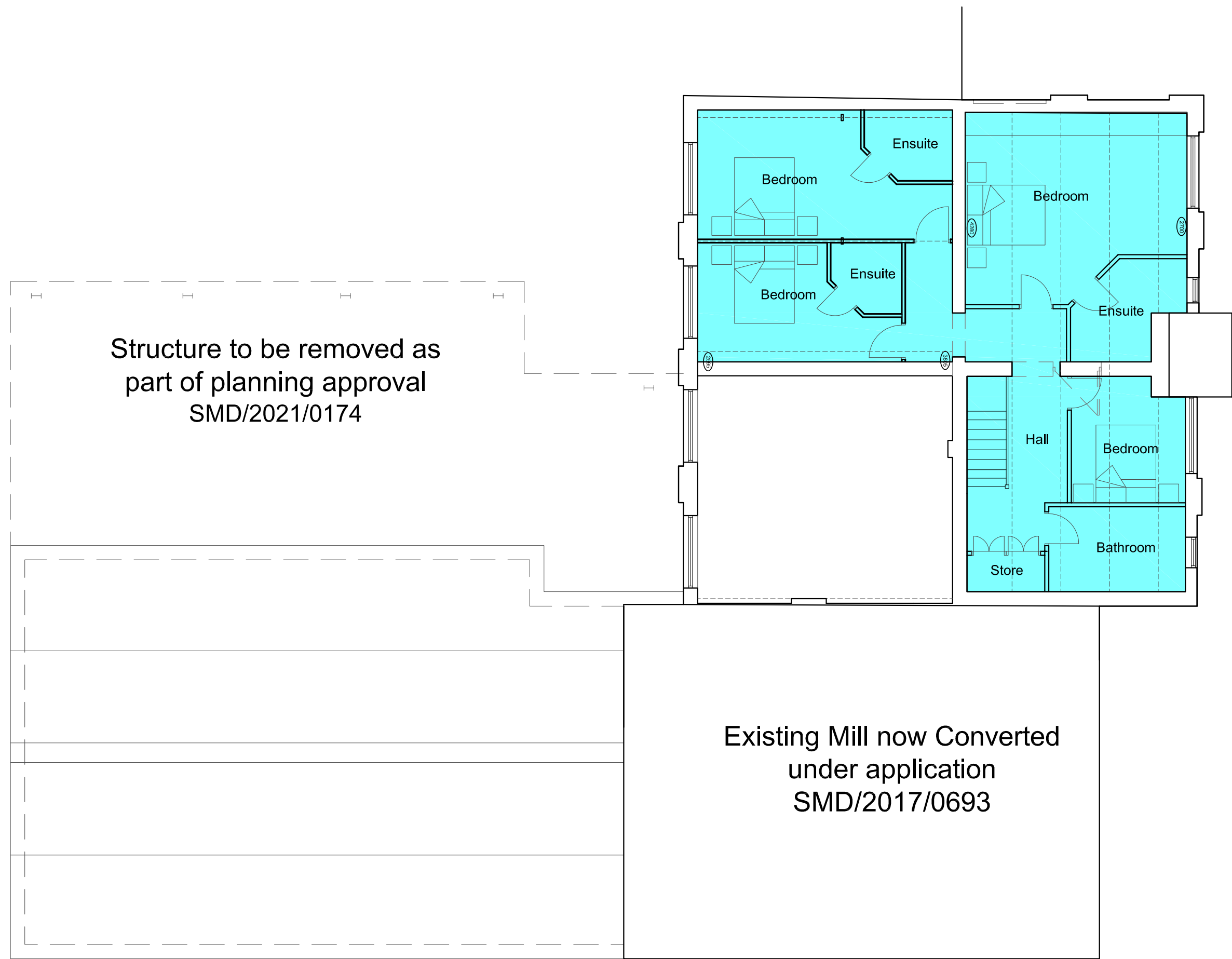
9 DEFINITIONS

AOD	Above Ordnance Datum
bgl	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GQRA	Generic Quantitative Risk Assessment
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
ppm	Parts per million
ppmv	Parts per million by volume
SAC	Special Area of Conservation
SPZ	Source Protection Zone (see Error! Reference source not found.)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest

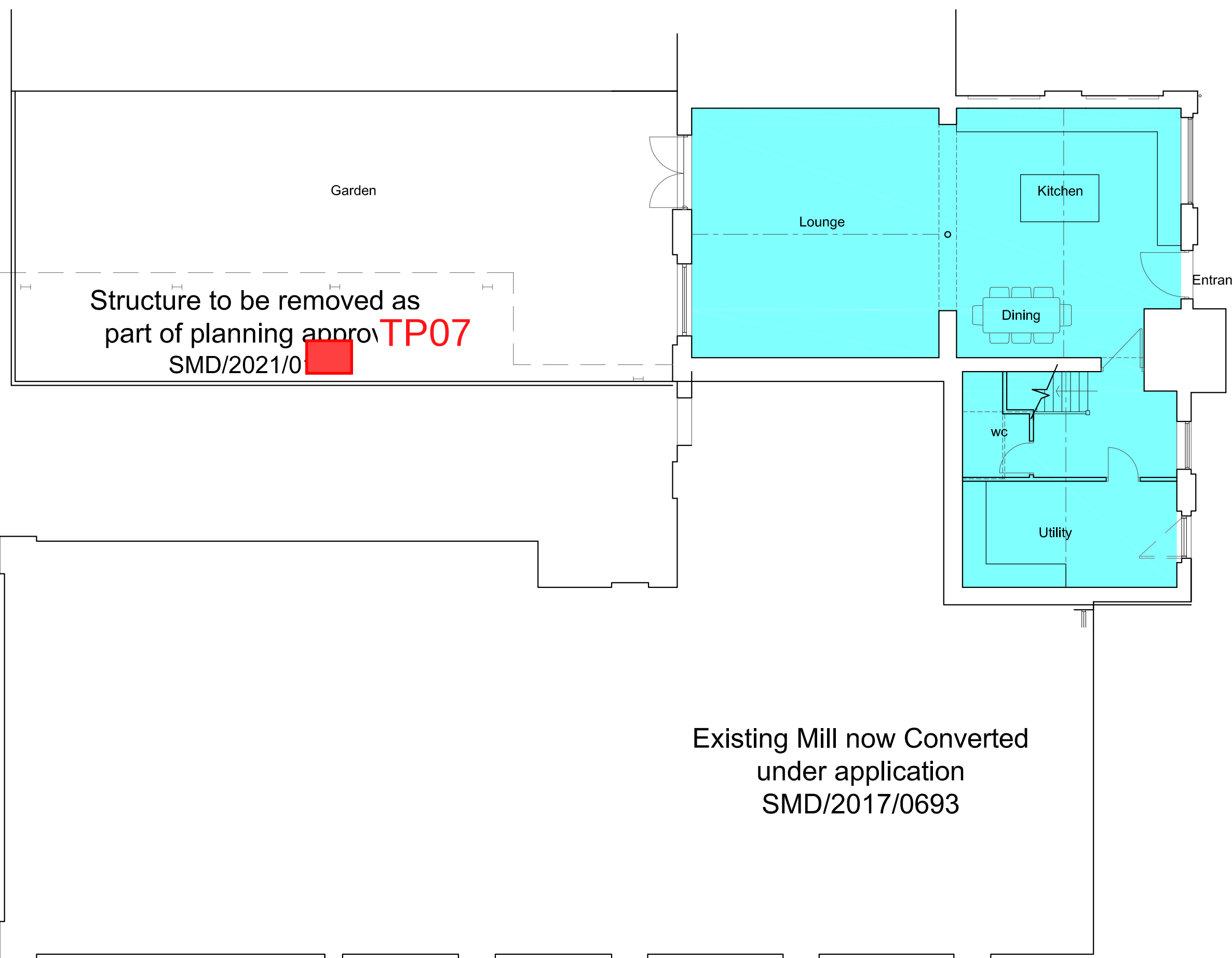
APPENDIX A - DRAWINGS

Copyright of this drawing is vested in the Architect and it must not be copied or reproduced without consent. Figured dimensions only are to be taken from this drawing. All contractors must visit the site and be responsible for taking and checking all dimensions relative to their work. Hewitt&Carr Architects Ltd are to be advised of any variation between drawings and site conditions. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND CLIENTS/CONTRACTORS ARE ADVISED TO CLARIFY DIMENSIONS WITH THE ARCHITECT PRIOR TO SETTING OUT.

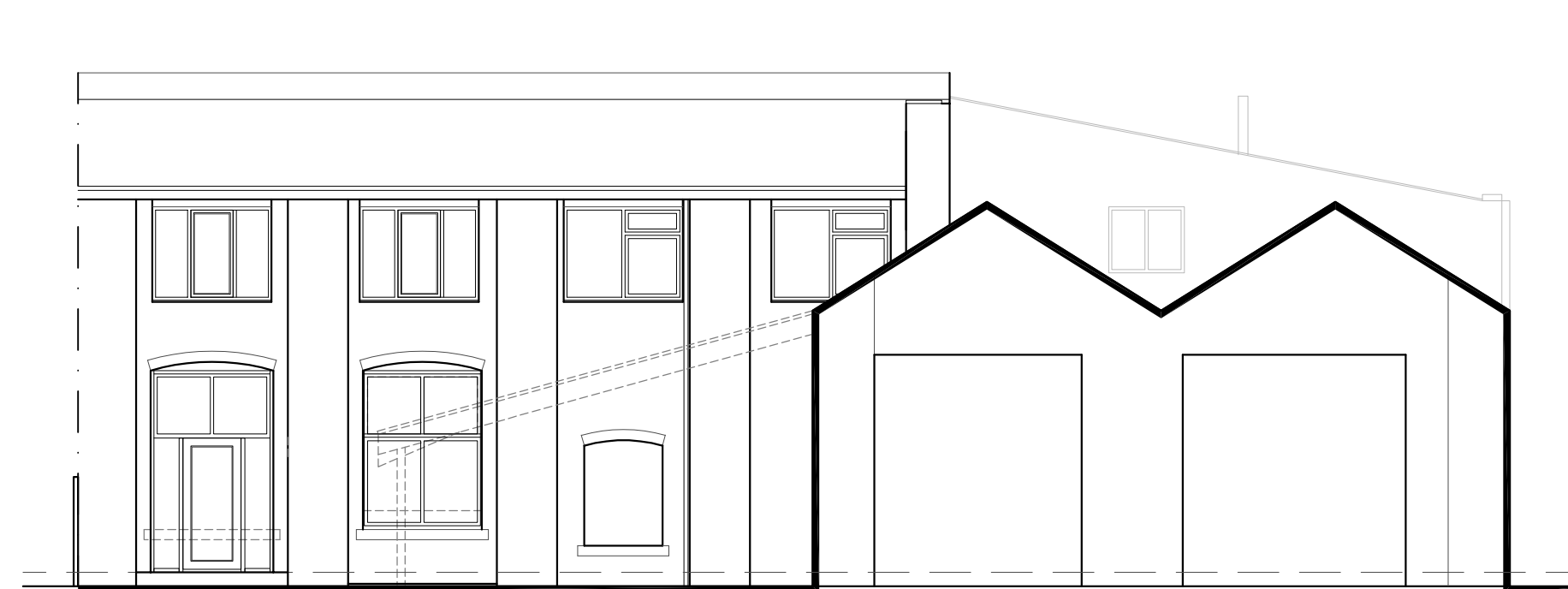
Rev. Drawn Comments Date



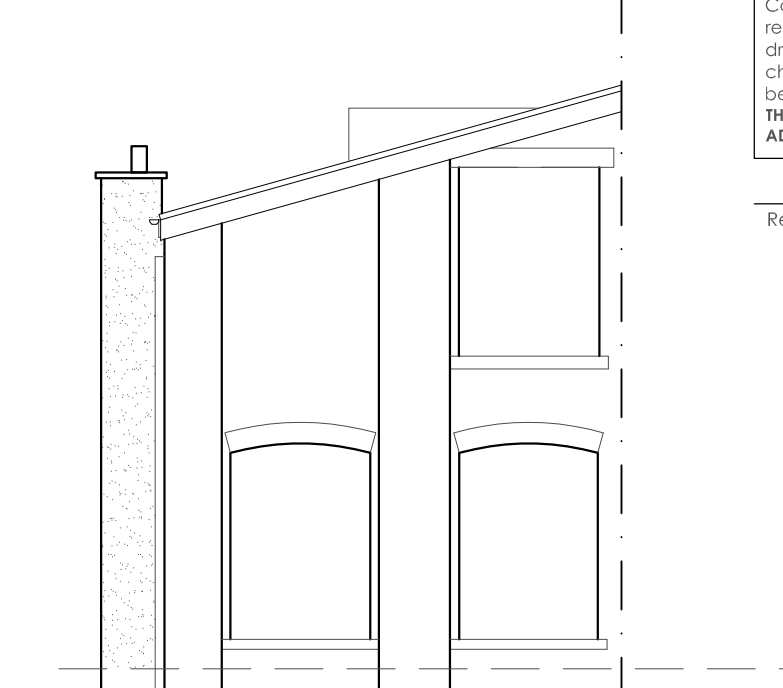
FIRST FLOOR PLAN 1:100



GROUND FLOOR PLAN 1:100



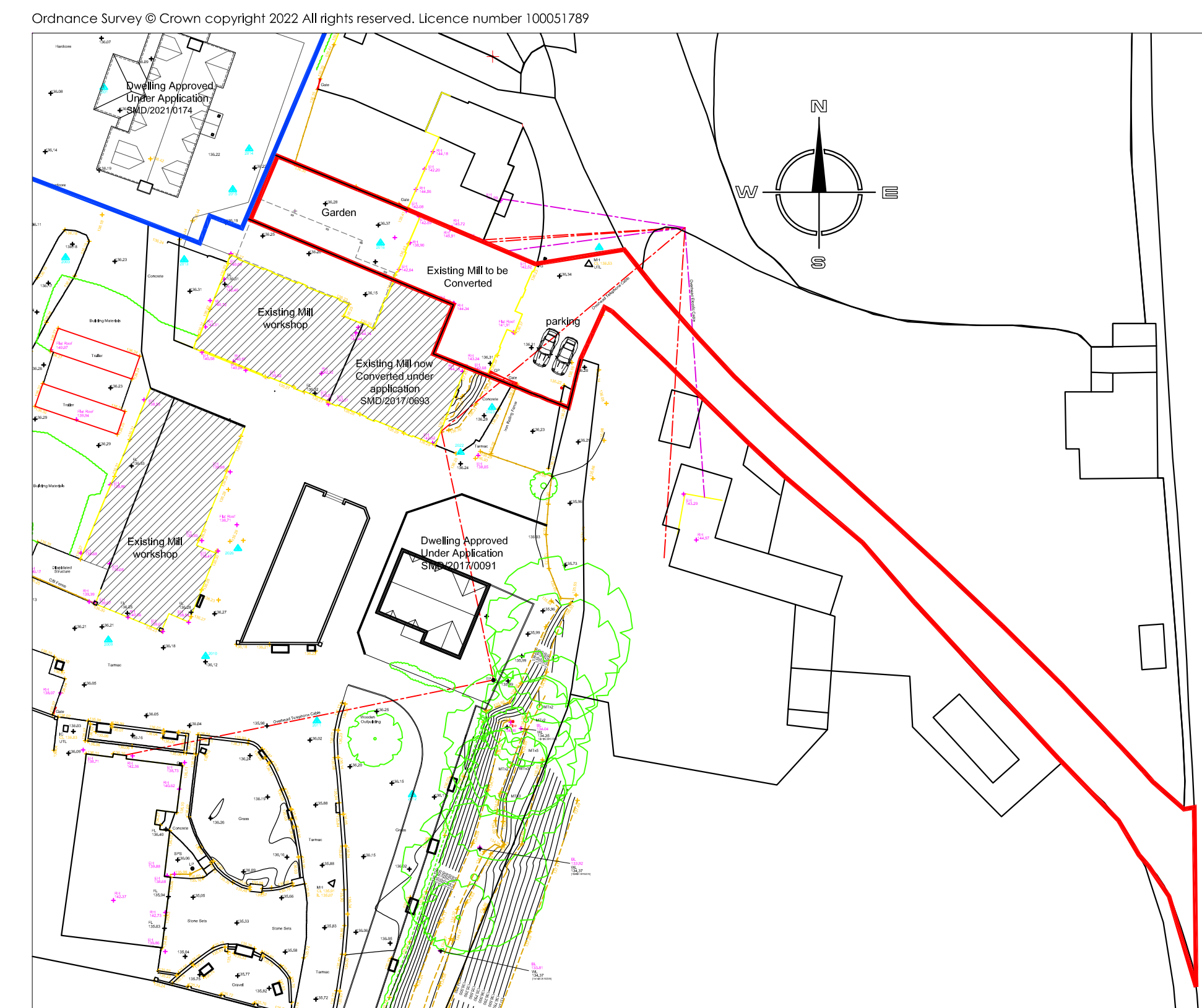
REAR ELEVATION 1:100



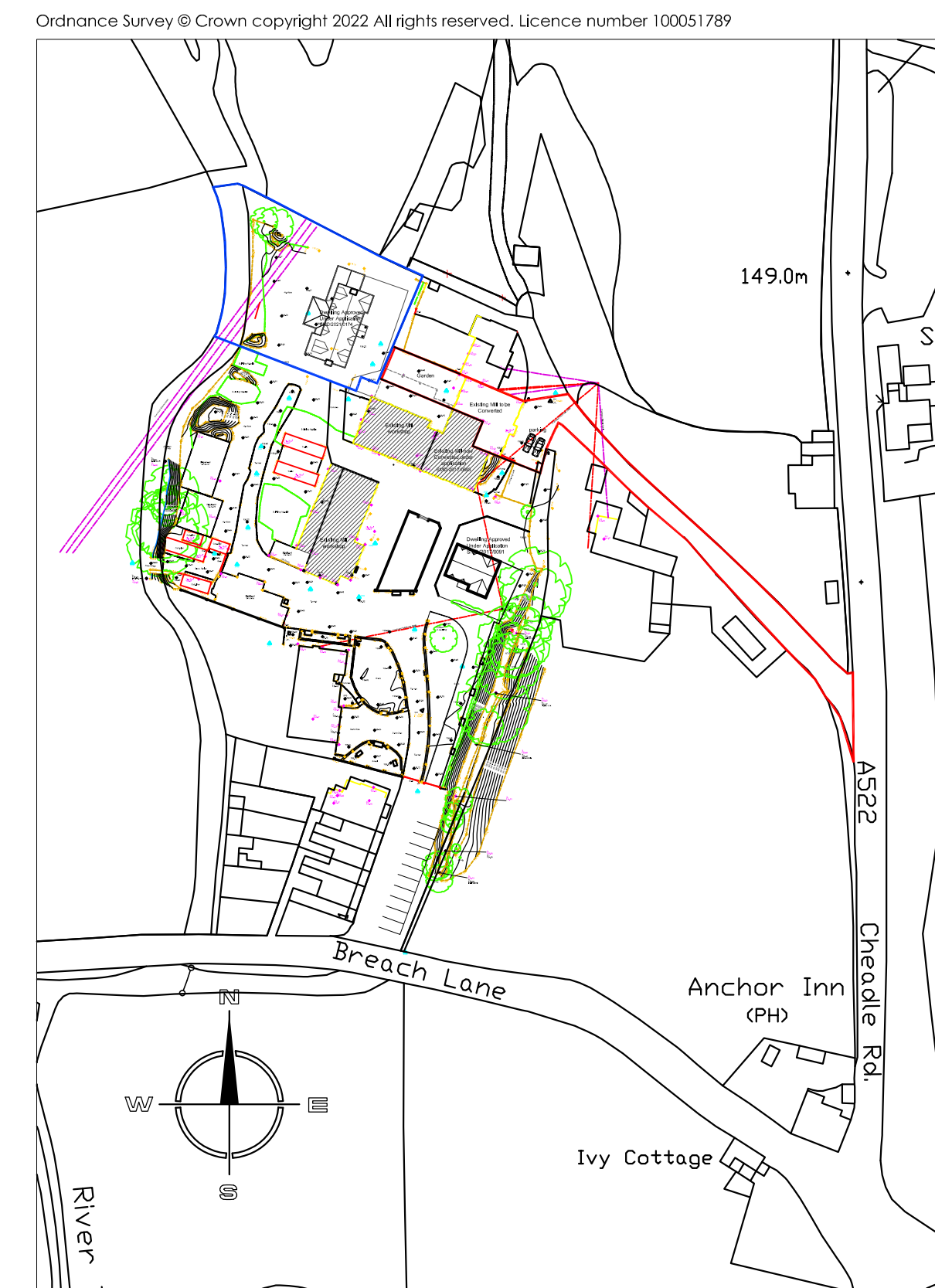
SIDE ELEVATION 1:100



SIDE ELEVATION 1:100



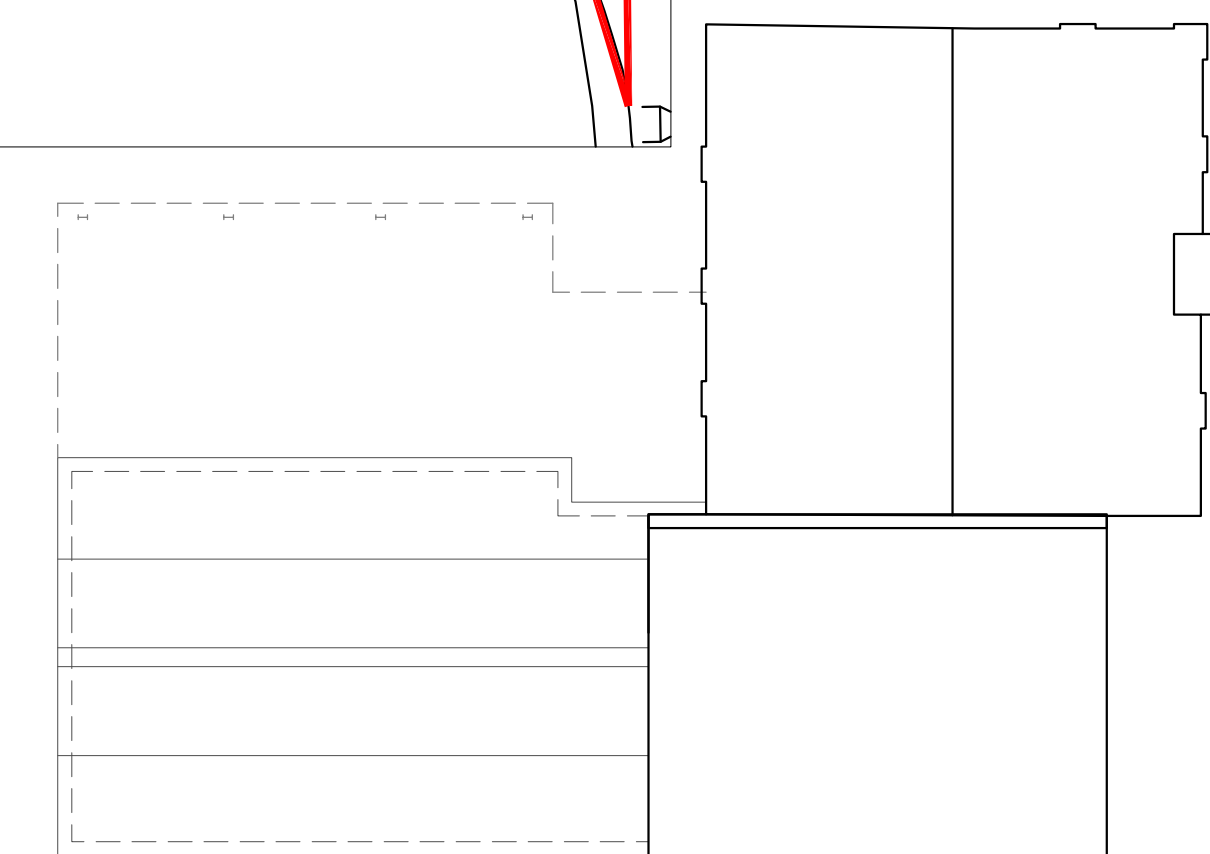
SITE LOCATION PLAN 1:500



SITE LOCATION PLAN 1:1250



SIDE ELEVATION 1:100



ROOF PLAN 1:200

Hewitt&CarrArchitects

A: 2-4 Cross Street | Cheadle | Staffordshire | ST10 1NP
T: 01538 756888
E: enquiries@hcarchitects.co.uk
W: www.hcarchitects.co.uk

Client
Mr Jake Wilshaw

Project
Conversion of Mill to Residential Dwelling
Teanford, Staffs ST10 4EW

Title
Plans and Elevations as Proposed

Status
PLANNING

Date
May 2022

Scale @A1
As Stated

Project No
00870

Drawing No.
AL(0)02

Drawn

Checked

Rev

PLANNING

File Ref: H-REF

APPENDIX B – EXPLORATORY HOLE RECORDS

Location **Teanford Mill, Tean**

Client: **Mr P Wilshaw**

Project Ref.:

Location No.
TP06

Job No.: **SRL1319**

Equipment and methods
JCB-3CX

Start Date: 14/01/2021

Final Depth: **2.50**

Logged By: **SAW**

Ground level m AD

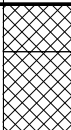
Co-ordinates:

Field Records	SAMPLES		Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
	Depth (m) from	to				
V21kPa	0.25	ES 1	(50mm hardcore over) MADE GROUND comprising brown GRAVEL of brick masonry, rebar, glass, pottery, wood and rare plastic	0.20		
			MADE GROUND comprising dark brown, slightly sandy, slightly clayey GRAVEL with rare brick, glass, mortar and metal wire; gravel is fine to coarse, angular to sub-angular	0.35		
	0.75	HV 1	(Possible MADE GROUND comprising) Very soft to soft, brown/dark brown, slightly silty, sandy CLAY with occasional thin bands of sandy gravel	0.55		
	1.50	ES 2	--- stratum becomes dark brown/grey with rare brown streaks, silty and peaty	(1.75)		
			Dark brown/grey, fine to coarse sandy GRAVEL with frequent cobbles and occasional slightly clayey pockets; gravel is fine to coarse, sub-rounded to rounded	2.30		
			End of Excavation	2.50		



Remarks

- 1) Excavated with 600mm bucket
- 2) HV1 taken in situ; 33mm vane used

Field Records	SAMPLES		Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
	Depth (m) from to	SAMPLE Type & No				
	0.20	ES 1	(50mm hardcore over) MADE GROUND comprising brown GRAVEL of brick masonry, rebar, glass, pottery, wood and rare plastic	(0.30)		
	0.50	ES 2	MADE GROUND comprising dark brown/grey, soily, sandy GRAVEL of broken brick, mortar, slate, domestic plastic waste, pottery and glass	(0.50)		
			Very soft, dark brown/grey, silty CLAY --- <i>slow water entry approx. 1.00m</i>	(0.30)		
			End of Excavation	1.10		



Remarks

- 1) Excavated with 600mm bucket

APPENDIX C – CHEMICAL TEST RESULTS



Certificate of Analysis

Certificate Number 21-01004,21-01089

Issued: 27-Jan-21

Client Strata Renewables
Jodrell Bank Service Station
Knutsford Road
Cranage
Cheshire
CW4 8HU

Our Reference 21-01004,21-01089

Client Reference SRL1319

Order No Carl-18121

Contract Title Teanford Mill, Tean

Description 8 Soil samples.

Date Received 19-Jan-21

Date Started 19-Jan-21

Date Completed 27-Jan-21

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1789016	1789017	1789018	1789019	1789020	1789021	1789471
Sample ID	TP02	TP04	TP04	TP06	WP01	WP02	TP03
Depth	0.15	0.50	1.10	1.50	0.60	0.30	0.30
Other ID	1	1	2	2	1	1	
Sample Type	ES	ES	ES	ES	ES	ES	SOIL
Sampling Date	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	7.3	12	9.6	22		
Barium	DETSC 2301#	1.5	mg/kg	330	360	200	340		
Beryllium	DETSC 2301#	0.2	mg/kg	0.6	0.7	1.3	1.6		
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	1.1	0.5	3.3	1.9		
Cadmium	DETSC 2301#	0.1	mg/kg	1.7	1.2	1.3	5.5		
Chromium	DETSC 2301#	0.15	mg/kg	12	22	12	19		
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	34	42	46	140		
Lead	DETSC 2301#	0.3	mg/kg	380	70	33	120		
Mercury	DETSC 2325#	0.05	mg/kg	0.41	0.07	< 0.05	0.08		
Nickel	DETSC 2301#	1	mg/kg	11	26	24	43		
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.3		
Vanadium	DETSC 2301#	0.8	mg/kg	20	43	19	28		
Zinc	DETSC 2301#	1	mg/kg	210	200	410	1200		
Inorganics									
Conductivity	DETSC 2009	1	uS/cm				290	310	
pH	DETSC 2008#		pH	8.4	10.1	6.8	7.6	7.8	8.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.1	0.2	0.2		
Organic matter	DETSC 2002#	0.1	%	2.2	2.3	6.8	6.2		
Redox Potential	DETSC 2016*	-500	mV				160	170	
Sulphide	DETSC 2024*	10	mg/kg	< 10	100	92	190		
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.29	0.32	0.13	0.24		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5		2.8
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4		130
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10		130
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9		3.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5		6.4
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6		12
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4		340
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10		360
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10		500
EPH (C11-C20)	DETSC 3311	10	mg/kg					< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1789016	1789017	1789018	1789019	1789020	1789021	1789471
Sample ID	TP02	TP04	TP04	TP06	WP01	WP02	TP03
Depth	0.15	0.50	1.10	1.50	0.60	0.30	0.30
Other ID	1	1	2	2	1	1	
Sample Type	ES	ES	ES	ES	ES	ES	SOIL
Sampling Date	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
EPH (C20-C40)	DETSC 3311	10	mg/kg					< 10	49	
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.05	0.05	< 0.03	< 0.03			
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.08	0.14	< 0.03	< 0.03			
Pyrene	DETSC 3303#	0.03	mg/kg	0.07	0.13	< 0.03	< 0.03			
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.05	< 0.03	< 0.03			
Chrysene	DETSC 3303	0.03	mg/kg	0.04	0.07	< 0.03	< 0.03			
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	0.06	< 0.03	< 0.03			
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.05	< 0.03	< 0.03			
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03			
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.32	0.55	< 0.10	< 0.10			
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3			

Summary of Chemical Analysis

Soil VOC/SVOC Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1789020	1789021
Sample ID	WP01	WP02
Depth	0.60	0.30
Other ID	1	1
Sample Type	ES	ES
Sampling Date	16/01/2021	16/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Summary of Chemical Analysis

Soil VOC/SVOC Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1789020	1789021
Sample ID	WP01	WP02
Depth	0.60	0.30
Other ID	1	1
Sample Type	ES	ES
Sampling Date	16/01/2021	16/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis

Soil VOC/SVOC Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1789020	1789021
Sample ID	WP01	WP02
Depth	0.60	0.30
Other ID	1	1
Sample Type	ES	ES
Sampling Date	16/01/2021	16/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg	0.1	< 0.1
Anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg	0.3	< 0.1
Pyrene	DETSC 3433	0.1	mg/kg	0.2	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	0.1	< 0.1
Chrysene	DETSC 3433	0.1	mg/kg	0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
SVOC TICs					
Blank (TIC)	DETSC 3433*		mg/kg	None	None

Summary of Asbestos Analysis Soil Samples

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1789015	TP01 1 0.20	SOIL	Chrysotile	Chrysotile present as fibre bundles	D Wilkinson
1789016	TP02 1 0.15	SOIL	NAD	none	D Wilkinson
1789017	TP04 1 0.50	SOIL	Chrysotile	Chrysotile present as fibre bundles	D Wilkinson
1789018	TP04 2 1.10	SOIL	NAD	none	D Wilkinson
1789019	TP06 2 1.50	SOIL	NAD	none	D Wilkinson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 21-01004,21-01089

Client Ref SRL1319

Contract Teanford Mill, Tean

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1789015	TP01 0.20 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789016	TP02 0.15 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789017	TP04 0.50 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789018	TP04 1.10 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789019	TP06 1.50 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789020	WP01 0.60 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789021	WP02 0.30 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		
1789471	TP03 0.30 SOIL	16/01/21	GJ 250ml, GJ 60ml x2, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate of Analysis

Certificate Number 21-03128

Issued: 22-Feb-21

Client Strata Renewables
Jodrell Bank Service Station
Knutsford Road
Cranage
Cheshire
CW4 8HU

Our Reference 21-03128

Client Reference SRL1319

Order No Carl-10221

Contract Title Teanford Mill, Tean

Description One Water sample.

Date Received 15-Feb-21

Date Started 15-Feb-21

Date Completed 22-Feb-21

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Water Samples

Our Ref 21-03128

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1801704
Sample ID	BH03
Depth	1.80
Other ID	
Sample Type	WATER
Sampling Date	10/02/2021
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.7
Barium, Dissolved	DETSC 2306	0.26	ug/l	190
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	80
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.77
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	7.0
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.78
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	28
Inorganics				
pH	DETSC 2008		pH	7.3
Cyanide, Total	DETSC 2130	40	ug/l	< 40
Sulphate as SO4	DETSC 2055	0.1	mg/l	180
Sulphide	DETSC 2208	10	ug/l	< 10
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l	< 10
Benzene	DETSC 3322	1	ug/l	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0

Summary of Chemical Analysis

Water Samples

Our Ref 21-03128

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1801704
Sample ID	BH03
Depth	1.80
Other ID	
Sample Type	WATER
Sampling Date	10/02/2021
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	0.47
Acenaphthylene	DETSC 3304	0.01	ug/l	0.15
Acenaphthene	DETSC 3304	0.01	ug/l	0.20
Fluorene	DETSC 3304	0.01	ug/l	0.28
Phenanthrene	DETSC 3304	0.01	ug/l	0.81
Anthracene	DETSC 3304	0.01	ug/l	0.24
Fluoranthene	DETSC 3304	0.01	ug/l	2.6
Pyrene	DETSC 3304	0.01	ug/l	2.3
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	1.1
Chrysene	DETSC 3304	0.01	ug/l	1.4
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	1.9
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.78
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	1.4
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	1.3
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.20
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.99
PAH Total	DETSC 3304	0.2	ug/l	16
Phenols				
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100

Summary of Chemical Analysis

Water Samples

Our Ref 21-03128

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1801704
Sample ID	BH03
Depth	1.80
Other ID	
Sample Type	WATER
Sampling Date	10/02/2021
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1
2,2-dichloropropane	DETSC 3432	2	ug/l	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4
Chloroform	DETSC 3432	1	ug/l	< 1
1,1,1-trichloroethane	DETSC 3432	1	ug/l	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1
Benzene	DETSC 3432	1	ug/l	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1
Toluene	DETSC 3432	1	ug/l	< 1
trans-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1
1,1,2-trichloroethane	DETSC 3432	1	ug/l	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1
1,3-dichloropropane	DETSC 3432	1	ug/l	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1
1,2-dibromoethane	DETSC 3432	1	ug/l	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1
m+p-Xylene	DETSC 3432	2	ug/l	< 2
o-Xylene	DETSC 3432	1	ug/l	2
Styrene	DETSC 3432	1	ug/l	< 1
Bromoform	DETSC 3432	1	ug/l	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1

Summary of Chemical Analysis

Water Samples

Our Ref 21-03128

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1801704
Sample ID	BH03
Depth	1.80
Other ID	
Sample Type	WATER
Sampling Date	10/02/2021
Sampling Time	n/s

Test	Method	LOD	Units	
Bromobenzene	DETSC 3432	1	ug/l	< 1
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	2
4-chlorotoluene	DETSC 3432	1	ug/l	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l	< 1
MTBE	DETSC 3432*	1	ug/l	< 1
SVOCs				
Phenol	DETSC 3434*	1	ug/l	< 5.0
Aniline	DETSC 3434*	1	ug/l	< 5.0
2-Chlorophenol	DETSC 3434*	1	ug/l	< 5.0
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 5.0
2-Methylphenol	DETSC 3434*	1	ug/l	< 5.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 5.0
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 5.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 5.0
2,4-Dimethylphenol	DETSC 3434*	1	ug/l	< 5.0
2,4-Dichlorophenol	DETSC 3434*	1	ug/l	< 5.0
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 5.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 5.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 5.0
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 5.0
2-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0
3-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
4-Nitrophenol	DETSC 3434*	1	ug/l	< 5.0

Summary of Chemical Analysis

Water Samples

Our Ref 21-03128

Client Ref SRL1319

Contract Title Teanford Mill, Tean

Lab No	1801704
Sample ID	BH03
Depth	1.80
Other ID	
Sample Type	WATER
Sampling Date	10/02/2021
Sampling Time	n/s

Test	Method	LOD	Units	
Dibenzofuran	DETSC 3434*	1	ug/l	< 5.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Diethylphthalate	DETSC 3434*	1	ug/l	< 5.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 5.0
4-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
Diphenylamine	DETSC 3434*	1	ug/l	< 5.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 5.0
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 5.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 5.0
Pentachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 5.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 5.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 5.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 5.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0
Dimethylphthalate	DETSC 3434*	1	ug/l	< 5.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Azobenzene	DETSC 3434*	1	ug/l	< 5.0
Carbazole	DETSC 3434*	1	ug/l	< 5.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0

Information in Support of the Analytical Results

Our Ref 21-03128
 Client Ref SRL1319
 Contract Teanford Mill, Tean

Containers Received & Deviating Samples

Containers Received & Deviating Samples					Inappropriate container for tests
Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	
1801704	BH03 1.80 WATER	10/02/21	GB 1L, GV x2	Aliphatics/Aromatics (4 days), Chromium, Hexavalent (4 days), Kone (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	

Key: G-Glass B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

APPENDIX D – SUMMARY OF CHEMICAL RESULTS

Site: Teanford Mill, Tean
Job No. 2747



Residential with gardens (1% SOM)

	TP02	TP04	P04	TP06	WP01	WP02	TP03	TPA	TPB	TPC	TPC	TPD	TPE	TP01							
	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	16/01/2021	15/07/2022	15/07/2022	15/07/2022	15/07/2022	15/07/2022	14/03/2022	16/01/2021							
	0.15	0.50	1.10	1.50	0.60	0.30	0.30	0.25	0.55	0.50	0.85	0.30	0.25	0.20	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Metals & Non-Metals																					
Arsenic	7.3	12	9.6	22	-	-	-	6.1	21	6.5	14	7.5	11		6.1	22	11.7	10	37	C4SL	0
Cadmium	1.7	1.2	1.3	5.5	-	-	-	1.3	3.5	0.8	1.4	1.2	1.7		0.8	5.5	1.96	10	22	C4SL	0
Chromium III	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0	910	S4UL	0
Chromium, Hexavalent	<1.0	<1.0	<1.0	<1.0	-	-	-	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2		<1.0	<1.2	1.12	10	21	C4SL	0
Copper	34	42	46	140	-	-	-	33	93	32	61	55	54		32	140	59	10	2400	S4UL	0
Lead	380	70	33	120	-	-	-	79	160	250	250	150	240		33	380	173.2	10	200	C4SL	4
Mercury	0.41	0.07	<0.05	0.08	-	-	-	<0.3	<0.3	0.3	1.2	0.6	<0.3		<0.05	1.2	0.36	10	1.2	S4UL	0
Nickel	11	26	24	43	-	-	-	15	35	9.9	20	13	17		9.9	43	21.39	10	130	S4UL	0
Selenium	<0.5	<0.5	<0.5	1.3	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<0.5	1.3	0.88	10	250	S4UL	0
Zinc	210	200	410	1200	-	-	-	100	690	140	370	210	300		100	1200	383	10	3700	S4UL	0

	TP02	TP04	P04	TP06	WP01	WP02	TP03	TPA	TPB	TPC	TPC	TPD	TPE	TP01		Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
	0.15	0.5	1.1	1.5	0.6	0.3	0.3	0.25	0.55	0.50	0.85	0.30	0.25	0.2								
Petroleum Hydrocarbons																						
Benzene	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	0.87	C4SL	0
Toluene	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	130	S4UL	0
Ethylbenzene	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	47	S4UL	0
xylene	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	-	S4UL	11
Aliphatic C5-C6	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	42	S4UL	0
Aliphatic C6-C8	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	100	S4UL	0
Aliphatic C8-C10	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	27	S4UL	0
Aliphatic >EC10-EC12	<1.5	<1.5	<1.5	<1.5	-	-	<1.5	23	<1.0	<1.0	<1.0	<1.0	<1.0			<1.5	<1.5	3.23	11	130	S4UL	0
Aliphatic >EC12-EC16	<1.2	<1.2	<1.2	<1.2	-	-	<1.2	46	<2.0	94	53	55	<2.0			<1.2	<1.2	23.45	11	1100	S4UL	0
Aliphatic >EC16-EC35	<3.4	<3.4	<3.4	<3.4	-	-	132.8	3480	<8.0	1380	930	6980	456			<3.4	6980	1216.4	11	65000	S4UL	0
Aromatic C5-C7	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	70	S4UL	0
Aromatic C7-C8	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	130	S4UL	0
Aromatic C8-C10	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.01	<0.01	0.01	11	34	S4UL	0
Aromatic >EC10-EC12	<0.9	<0.9	<0.9	<0.9	-	-	3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			<0.9	<0.9	1.23	11	74	S4UL	0
Aromatic >EC12-EC16	<0.5	<0.5	<0.5	<0.5	-	-	6.4	<2.0	<2.0	36	<2.0	<2.0	<2.0			<0.5	<0.5	4.95	11	140	S4UL	0
Aromatic >EC16-EC21	<0.6	<0.6	<0.6	<0.6	-	-	12	230	11	530	55	60	26			<0.6	530	84.22	11	260	S4UL	1
Aromatic >EC21-EC35	<1.4	<1.4	<1.4	<1.4	-	-	340	6400	160	1000	770	3500	290			<1.4	6400	1133.24	11	1100	S4UL	2

	TP02	TP04	TP04	TP06	WP01	WP02	TP03	TPA	TPB	TPC	TPC	TPD	TPE	TP01							
Polyaromatic Hydrocarbons (PAH)	0.15	0.5	1.1	1.5	0.6	0.3	0.3	0.25	0.55	0.50	0.85	0.30	0.25	0.2	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Acenaphthene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.03	0	0.04	10	210	S4UL	0
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.03	0	0.04	10	170	S4UL	0
Anthracene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	0.73	0.42	<0.05	<0.05		<0.03	0.73	0.15	10	2400	S4UL	0
Benzo(a)anthracene	0.04	0.05	<0.03	<0.03	-	-	-	0.92	0.79	1	0.75	<0.05	0.66		<0.03	1	0.43	10	7.2	S4UL	0
Benzo(a)pyrene	<0.03	0.05	<0.03	<0.03	-	-	-	1.6	0.81	0.66	0.64	<0.05	0.78		<0.03	1.6	0.47	10	5	C4SL	0
Benzo(b)fluoranthene	0.04	0.06	<0.03	<0.03	-	-	-	1.2	0.8	0.92	0.66	<0.05	0.96		<0.03	1.2	0.48	10	2.6	S4UL	0
Benzo(g,h,i)perylene	<0.03	<0.03	<0.03	<0.03	-	-	-	2.1	0.49	0.54	0.61	<0.05	0.5		<0.03	2.1	0.44	10	320	S4UL	0
Benzo(k)fluoranthene	<0.03	<0.03	<0.03	<0.03	-	-	-	1.4	0.41	0.37	0.77	<0.05	0.6		<0.03	1.4	0.37	10	77	S4UL	0
Chrysene	0.04	0.07	<0.03	<0.03	-	-	-	0.78	0.86	1.1	0.72	<0.05	0.76		<0.03	1.1	0.44	10	15	S4UL	0
Dibenzo(a,h)anthracene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.03	0	0.04	10	0.24	S4UL	0
Fluoranthene	0.08	0.14	<0.03	<0.03	-	-	-	1.3	1.4	3.7	2.1	0.61	1.4		<0.03	3.7	1.08	10	280	S4UL	0
Fluorene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.03	0	0.04	10	170	S4UL	0
Indeno(1,2,3-c,d)pyrene	<0.03	<0.03	<0.03	<0.03	-	-	-	1.2	0.38	0.34	0.46	<0.05	0.34		<0.03	1.2	0.29	10	27	S4UL	0
Naphthalene	<0.03	<0.03	<0.03	<0.03	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.03	0	0.04	10	2.3	S4UL	0
Phenanthrene	0.05	0.05	<0.03	<0.03	-	-	-	0.35	<0.05	1.6	0.64	<0.05	0.7		<0.03	1.6	0.36	10	95	S4UL	0
Pyrene	0.07	0.13	<0.03	<0.03	-	-	-	1.7	1.3	3.2	1.9	0.63	1.2		<0.03	3.2	1.02	10	620	S4UL	0

	TP02	TP04	TP04	TP06	WP01	WP02	TP03	TPA	TPB	TPC	TPC	TPD	TPE	TP01
	0.15	0.5	1.1	1.5	0.6	0.30	0.3	0.25	0.55	0.50	0.85	0.30	0.25	0.2
VOC / SVOC														
VOC					<0.01	<0.01								
SVOC (excluding PAHs)					<0.01	<0.01								
SVOC Tics					None	None								

Other Contaminants / Testing	TP02	TP04	TP04	TP06	WP01	WP02	TP03	TPA	TPB	TPC	TPC	TPD	TPE	TP01							
	0.15	0.5	1.1	1.5	0.6	0.30	0.3	0.25	0.55	0.50	0.85	0.30	0.25	0.2	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Organic Matter	2.2	2.3	6.8	6.2	-	-	-	11	6.1	2.5	5.3	2.8	2.4		2.2	11	4.76	10	-	-	-
pH	8.4	10.1	6.8	7.6	7.8	8.1	-	10.1	7.7	8.2	9.4	8.3	8.1		6.8	10.1	8.38	12	-	-	-
Sulphide	<10	100	92	190	-	-	-	54	300	72	100	37	17		<10	300	97.2	10	-	-	-
Cyanide, Total	0.3	0.1	0.2	0.2	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	0.3	0.68	10	-	-	-
Asbestos Fibres	No fibres detected	Chrysotile present as fibre bundles	No fibres detected	No fibres detected				Not-detected	Not-detected	Not-detected	-	Not-detected	Not-detected	Chrysotile present as fibre bundles							

APPENDIX E - GUIDANCE FOR CLASSIFICATION OF SOIL FOR OFF SITE DISPOSAL AT A LANDFILL SITE

Guidance for Classification of Soil for Off Site Disposal at a Landfill Site

Many site developments create a portion of excess soils and Made Ground which if not re-usable, are required to be disposed off-site at a suitably licensed landfill site. The regulations and associated guidance published by the Environment Agency is relatively complex and lengthy. This guidance provides a summary of the following documents which should be referred to when assessing soil (and common constituents found within Made Ground on remediation sites) for off-site disposal:

- Guidance for Waste destined for disposal in landfills: Interpretation of the Waste Acceptance Requirements of the Landfill (England and Wales) Regulations 2002 (as amended) (EA, 2004);
- Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance Procedures (EA, April 2005);
- WM3 - Hazardous Waste: Interpretation of the Definition and Classification of Hazardous Wastes (EA, May 2015);
- European Regulation No 1272/2008 on Classification, Labelling and Packaging of substances 2015 (CLP 2015);
- Guidance on Waste Destined for Disposal in Landfill (EA, June 2006);
- Treatment of Non-hazardous wastes for Landfill (EA, February 2007).

It is important to distinguish between the waste classification system and the designation of materials as “suitable for use” on site. A material may be retained on site for an appropriate end use if that end-use is clearly designated and that a site-specific risk assessment ensures that it does not pose a risk to human health or controlled waters. However, if this material is excavated and sent for disposal, the material is then subject to waste management regulations and the two systems cannot be directly correlated. It is therefore important to note that classifying a material as hazardous (should it be excavated and become a waste) does not necessarily indicate that it might not be suitable to be kept on site for re-use. Separate guidance in the form of a Code of Practice (CL:AIRE Version 2, 2011) has been developed jointly between the development industry and the Environment Agency to provide best practice when assessing whether materials are wastes or not, and for determining when waste can cease to be waste for a particular use.

In accordance with the current waste regulations (or Landfill Directive, as they are more commonly known), from 30th October 2007 all waste materials produced from construction sites have to be pre-treated prior to disposal. Pre-treatment includes waste minimisation, recovery (e.g., separation of demolition waste to be used as hardcore) and separation of materials into different waste categories (e.g., separate inert waste from hazardous waste etc). Mixing of different waste types shall be avoided and intentional mixing of inert materials with hazardous waste to ‘dilute it’ and hence change its waste classification, is illegal.

The current waste regulations (based on the EU landfill directive) introduced a two-tier classification system for waste materials, defining them as either being hazardous or non-hazardous. Landfills are licensed to take wastes based on a three-tier classification system with the non-hazardous waste divided into two sub-categories:

- Non-Hazardous - inert;
- Non-Hazardous - non-hazardous;
- Hazardous.

Waste materials are categorised with a six-figure numeric code in the European Waste Catalogue. Commonly found construction and demolition wastes including excavated soil from contaminated sites and Made Ground with their waste codes are summarised below (this is not a comprehensive list):

Waste Code	What is it?	Likely Waste Category–		
		Inert Waste	Non-Hazardous	Hazardous Waste
17 01 01 Concrete	Concrete, possibly with reinforcement (from Construction & Demolition)	✓		
17 01 02 Bricks		✓		
17 01 06* Mixtures of concrete, bricks, tiles & ceramics containing dangerous substances	These are not normally considered hazardous but if they are contaminated (e.g., by asbestos) then could be hazardous – see comment above			✓
17 01 07 Mixtures of concrete, bricks, tiles & ceramics other than those in 17 01 06	This is mixed inerts c.f. 17 09 04	✓		
17 05 03* soils and stones containing dangerous substances				✓
17 05 04 soils and stones other than those mentioned in 17 05 03	Soil and stones only (excluding top soil, peat, soil and stones from contaminated sites)	✓		
17 06 05* Construction materials containing asbestos	e.g., corrugated asbestos sheeting			✓
17 08 02 Gypsum-based construction materials other than those mentioned in 17 08 01	Plaster & plasterboard (although specific disposal requirements are required for high sulphate waste – see EA guidance ‘Understanding the Landfill Directive’ version 1.0 March 2010.		✓	
17 09 01* Construction & demolition wastes containing mercury				✓
17 09 02* Construction & demolition wastes containing PCBs	Waste with more than 50 mg/kg of PCB’s are hazardous			✓

Waste Code	What is it?	Likely Waste Category–		
		Inert Waste	Non-Hazardous	Hazardous Waste
17 09 03* Other mixed construction & demolition wastes containing dangerous substances	Broad range of potentially (see notes below – if asterix the waste is hazardous) hazardous wastes			✓
17 09 04 Mixed construction & demolition wastes other than those mentioned in 17 09 01, 17 09 02 & 17 09 03	Mixed inerts with soil, tarmac, cables, vegetation, plaster, etc. (this waste can only be considered inert if it passes the waste acceptance criteria identified in the regulations).	✓	✓	

Note: all wastes with an asterix code are hazardous regardless of whether they are mirror or absolute entries in the EWC list the decision to with regard to composition must come before applying the code for mirror entries.

Some materials are classified as Inert Waste based in its origin (e.g., 17 01 01 Concrete, or glass) without any requirement for laboratory chemical analysis.

However, most soils will require laboratory testing to confirm whether they are classified as Hazardous Waste. The protocol for assessing these materials and the appropriate threshold values is complicated and are set out in the Environment Agency’s “Technical Guidance WM3 Hazardous Waste – Interpretation of the Definition and Classification of Hazardous Waste” (2015). If the test results for the waste indicates that it is not hazardous then further analysis of the waste is required to determine whether it is Inert Waste. If the waste does not meet the criteria for either Hazardous or Inert, then it is by default classified as Non-hazardous Waste.

As an alternative location to landfills for off-site disposal of inert and non-hazardous waste, there are a number of sites which have Waste Permit Exemptions that can accept certain categories of inert and non-hazardous wastes. Additionally, some quarries can accept certain types of wastes to be used for quarry restoration material. For both alternatives to disposal at landfill sites the material still requires chemical testing as these sites have site specific acceptance criteria for wastes. It should also be noted that these types of sites do not incur landfill tax which in the 2018/19 tax year is £2.80 for inactive waste (inert and some types of non-hazardous waste) and £88.95/Tonne for active waste (some types of non-hazardous waste and hazardous waste. Note that the Inland Revenue uses a different classification scheme for waste for tax purposes to the European Waste Classification scheme.

Waste Categorisation

The process of determining the category of wastes is a three-stage process:

- Stage 1 – is the waste either Hazardous or Inert by definition without the requirement for chemical analysis (if it is then Stages 2 and 3 are not required);
- Stage 2 - Waste characterisation;
- Stage 3 - WAC classification.

Waste characterisation determines if a waste is hazardous or not. Excavated soil is characterised using a system based on the contaminants present and their hazardous properties. The system uses total concentrations of the contaminants. Thresholds (as a percentage of the waste) have been set for the various hazardous properties.

Fourteen hazardous properties together with other scenarios where material could cause a hazard have been defined:

- Hazardous properties: explosive, oxidising, highly flammable/flammable, irritant, harmful, toxic, carcinogenic, corrosive, infectious, toxic for reproduction, mutagenic and ecotoxic;
- Substances which can release toxic/very toxic gases in contact with water, acid or air;
- Substances which, after disposal, can yield another substance, e.g., a leachate, which possesses any of the above hazardous properties.

Some of the hazardous properties are sub-divided e.g., there are three categories of carcinogenic, mutagenic and toxic for reproduction substances. The hazardous properties were originally defined in the European Hazardous Waste Directive 91/689/EC. Should a waste contain a contaminant with one or more of the listed hazardous properties at a concentration equal to or above the threshold value for the particular property, then the waste is hazardous. The hazardous properties of a wide range of chemicals are sourced from CLP 2015.

There are many reasons why waste soil is classified as being hazardous, but the majority of reasons can be divided into the following four groups:

- Hydrocarbons – this is probably the most common reason for the hazardous classification of soils. For most soils hydrocarbon analysis will be required for both Polycyclic Aromatic Hydrocarbons (PAH) and speciated Petroleum Hydrocarbons (PHCs) but depending on the site's history other groups of organic contaminants may also be included in any analysis suite for soil samples;
- Metals – Particularly sites from former metal processing or mining sites and also some types of ash have metal concentrations that are sufficiently high to characterise materials requiring disposal as hazardous waste.
- Asbestos;
- Anions – e.g., sulphate in plasterboard (there are special disposal requirements for high sulphate waste and specific WAC requirements); it is possible that sulphate salts of metals and semi-metals could make the waste hazardous – the sulphate concentration could possibly be significant under H12, H13 and H14.

The characterisation of wastes with significant metal concentrations involves some processing of the analysis data. The chemical analysis results for inorganic substances are generally reported as total concentrations e.g., total lead, total arsenic, total sulphate etc. However, CLP 2015 deals with the hazardous properties of actual compounds e.g., lead sulphate, arsenic pentoxide, nickel carbonate. Therefore, the total metal results have to be converted into assessed chemical analysis results for the compound most likely to be present in the soil samples. For example, if the sample contains high total lead concentrations and high sulphate concentrations, then the lead is likely to be present

in the soil as lead sulphate. The most likely compounds can often be determined from a desk study or previous site uses. If the site has been derelict for a number of years, consideration should be given as to whether water soluble compounds should or should not be chosen, as rainfall could have removed them from the soil (this does not apply if the soil has been taken from below under a concrete slab etc). Chemical knowledge and common sense needs to be used in choosing a suitable compound.

If no data is available, then a worst-case scenario has to be assumed and the most hazardous compound likely to be present has to be chosen. For example, metal chromates (lead chromate, nickel chromate) are often the most hazardous compounds formed by many metals, but if the chromium concentrations in the soil are low, chromates are unlikely to be present. It should also be noted that for many of the hazard categories, the cumulative hazard from different compounds is added (e.g., add the concentrations of the copper, lead and zinc compounds together to assess the Hazard Category H14 Ecotoxicity).

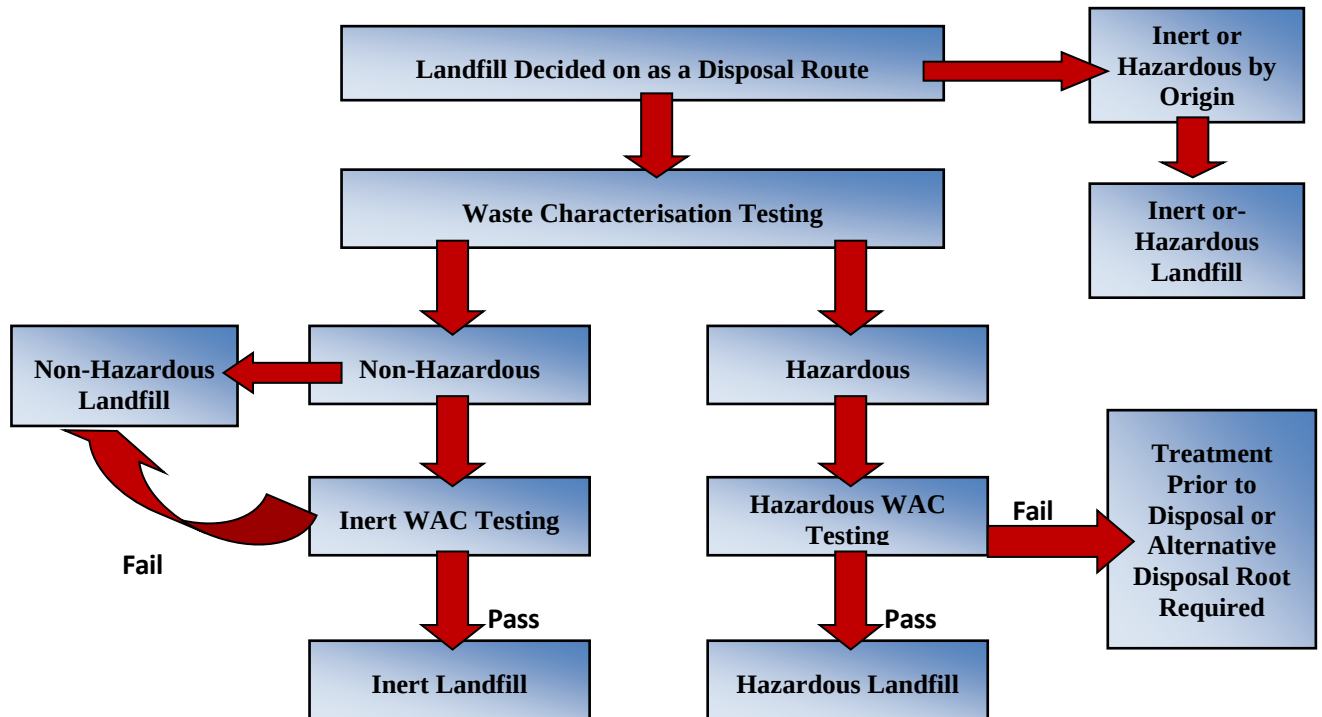
If the results of the above assessment determine that the waste is hazardous, it must then be analysed for the Waste Acceptance Criteria (WAC) analysis contained within appropriate Environmental Permitting Regulations (this comprises mainly leachate but also analysis for TOC and Loss on ignition). WAC limit values have been set for the listed determinands. If any of the determinands exceed their limit value, the waste must be pre-treated to reduce concentrations to below the limit values before the waste may be disposed of at a landfill site licensed to take hazardous waste.

For waste classified as not being hazardous, then there are two options available. Currently, waste correctly characterised as not being hazardous may be disposed of without WAC testing to a non-hazardous landfill. Alternatively, WAC testing for Inert Waste can be carried out (this is similar to the list for hazardous waste with the addition of PAH's, BTEX and Mineral Oil). If the results pass the Inert WAC criteria it can be disposed of at an Inert Waste Landfill. If any of the WAC test results exceed the Inert WAC criteria the waste has to be disposed at a non- hazardous landfill. There are WAC limits for non-hazardous waste set for pH and TOC. If these two criteria are not met then the waste must be pre-treated to so that it meets the criteria before it can be disposed.

If materials fail the WAC criteria it may be possible to pre-treat the waste on-site or be taken to a soil treatment centre for pre-treatment to reduce the soil's hazardous properties (e.g., by bioremediation of hydrocarbons).

It should be noted that in order to dispose of Hazardous Waste, the site must register as a producer of Hazardous Waste with the Environment Agency. When disposing of waste materials to landfill sites the appropriate Duty of Care Waste Transfer procedures must be followed.

Landfilled Waste Decision Tree



Landfill Tax

It should be noted that HM Revenue and Customs (HMRC) classify wastes for tax purposes using a different scheme to the threefold landfill EU Landfill Directive scheme (i.e., the hazardous, non-hazardous and inert). HMRC have a two-fold system for landfill tax. The Standard Landfill Tax is currently £88.95/T and applies to all wastes unless they qualify for the reduced rate of landfill tax of £2.80/T. The wastes that qualify for the reduced rate of Landfill Tax are set out in The Landfill Tax (Qualifying Material) Order 2011 with supplementary information on the interpretation of these regulations in HMRS "Notice LFT1 – A General Guide to Landfill Tax" (May 2012) and HMRC Briefing Notes 15/12 and 18/12.

APPENDIX F - UNFORESEEN GROUND CONTAMINATION

Unforeseen Ground Contamination

There is the potential for areas of previously unexpected contamination to be present, as is the case with any “brownfield” site. Any significant quantities of asbestos, significant ashy soils, unusual, brightly coloured or significantly oily or odorous material should be considered in this category. If unexpected contamination is found the following procedures should be adhered to:

1. All site works at the position of the suspected contamination will cease.
2. A suitably trained geo-environmental specialist should assess the visual and olfactory observations of the condition of the ground and the extent of contamination, and the Client and the Local Authority should be informed of the discovery. Should the contamination be likely to affect controlled waters the Environment Agency shall also be informed.
3. The suspected contaminated material will be investigated and tested appropriately in accordance with the assessed risks. The investigation works will be carried out in the presence of a suitably qualified geo-environmental engineer. The investigation works shall commence to recover samples for testing and, using visual and olfactory observations of the condition of the ground, delineate the area over which contaminated materials are present.
4. The unexpected, contaminated material will either be left in situ or be stockpiled whilst testing is carried out and suitable assessments completed to determine whether the material can be re-used on site or requires to be disposed as appropriate.
5. Where the material is left in situ awaiting results it will be reburied or covered with plastic sheeting.
6. Where the potentially contaminated material is to be temporarily stockpiled it will either be placed either on a prepared surface of clayey Alluvium, or on 2000-gauge Visqueen sheeting (or other impermeable surface) and covered to prevent dust and odour emissions.
7. Any areas where unexpected visual or olfactory ground contamination will be surveyed, a photographic record kept, and testing results incorporated into the Verification Report.
8. A photographic recorded will be made of relevant observations.
9. The testing suite will be determined by the independent geo-environmental specialist on the basis of visual and olfactory observations.
10. Test results will be compared against current assessment criteria suitable for the future use of the area of the site affected.
11. The results of the investigation and testing of any suspect unexpected contamination will be used to determine the relevant actions. After consultation with the Local Authority and if necessary the Environment Agency, materials should either be:
 - re-used in areas where test results indicate that it meets compliance targets so it can be reused without treatment; or
 - treatment of material on site to meet compliance targets so it can be reused; or

- removal from site to a treatment centre or to a suitably licensed landfill or permitted treatment facility.

12. Verification Report will be produced for the work.

Asbestos

Asbestos cement products and asbestos fibres have not been encountered in the soils at the site but based on the age of the Made Ground material containing asbestos could be expected to be encountered. If non-notifiable asbestos (e.g., chrysotile asbestos cement board) is encountered in excavations then it will be dealt with in accordance with the Control of Asbestos Regulations 2012 (CAR 2012) and the HSE's ACoP for asbestos (2013). Finding non-notifiable asbestos is a very common occurrence on brownfield sites and is a relatively low risk activity and can be dealt with as a matter of routine. Therefore, it is not proposed that the Council will be notified but an appropriate record will be kept of confirmatory testing and disposal. This will be included in remediation verification reports.

If suspect notifiable asbestos is encountered then the Council and the HSE will be notified. An appropriate action plan will be agreed with the Council and the HSE in accordance with CAR 2012. The action plan will include the preparation of the Risk Assessment and Plan of Work in accordance with CAR and other statutory requirements including:

- Site mobilisation;
- Excavation methodology;
- Handling, movement and storage on-site of excavation arisings;
- Any processing of excavation arisings containing ACMs;
- Movement and placement of arisings to final destination;
- Placing of cover system over soils with and ACMs remaining on-site;
- Off-site disposal of ACMs;
- Licences;
- PPE & RPE; and,
- Dust and fibre monitoring.

Potential mitigation measures that would be required include:

- Ensuring works are carried out by suitably trained and experienced personnel with working with asbestos;
- Site investigation and risk assessment;
- Removal or treatment of asbestos hotspots;
- Use of PPE and RPE by construction workers; and,

- Compliance monitoring.

Unexpected Tanks

No buried underground fuel storage tanks have been encountered during the site investigation works; however, there remains a low risk that tanks are present on-site. Should an underground tank be encountered, operations should cease in the area. Additionally, there may be pipework associated with these tanks which could have oily residues. The following procedures are to be adhered to if tanks and pipework are identified:

1. All site works at the position of the tanks/pipework should stop.
2. A description of the tank should be made by the geo-environmental engineer including; condition and surround, along with visual and olfactory observations should any contents in the tank be apparent. A photographic record will also be made of relevant observations.
3. The tank's position and depth should be determined and marked on a plan of the site.
4. The independent geo-environmental engineer will inform Client and the Local Authority.
5. During the presence of the independent geo-environmental engineer, investigation works should be undertaken to obtain samples of any liquid or sludge contents and to establish dimensions of the tank.
6. Testing will be determined on the basis of visual and olfactory observations by independent geo-environmental engineer.
7. Test results will be compared against current assessment criteria and proposals for disposal of any contents determined in agreement with the appropriate Regulatory Parties.
8. Emptying the tank and disposal of contents to a suitable licenced disposal facility.
9. Degassing and removal of the tank by a suitably qualified contractor will be required, and a Naked Flame Certificate should be provided.
10. Once the tank has been emptied in accordance with the above proposals, it is to be removed for disposal to a licensed waste management facility. Copies of the relevant waste consignment notes are to be kept and included in the Verification Report.
11. Excavation and remediation of any contaminated soils around the tank will be carried out.
12. Samples of the base and sides of the resultant hole will be sampled and supervised by the independent geo-environmental engineer to confirm whether risks to human health or controlled waters.