



Your Environment

REMEDIAL STRATEGY SCHOLE LANE, SCHOLES, CLECKHEATON, For Traditional Stone

Your Environment

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For and on behalf of YourEnvironment				

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1.0 Introduction

We understand current plans for the redevelopment of the site include:

- Erection of four low rise residential properties;
- Creation of a driveway, car parking hardstanding and integral garage; and
- Inclusion of discrete areas of soft landscaping.

This remedial strategy was completed subsequent to a previously published Phase 1: Desktop Study and Preliminary Risk Assessment Report and Phase 2: Site Investigation, to which this report should be read in conjunction with. As such this report seeks to address the potential pollutant linkages identified within the Preliminary Conceptual Site Model contained within the Phase 1: Desktop Study report and Phase 2: Site Investigation.

All previous reports available for the site should be reviewed in their entirety in conjunction with this document.

2.0 Site Investigation Contamination Findings

2.0.1 Risks to Human Health

A review of the ground conditions within the boreholes indicates the presence of a surface covering of grass and topsoil.

Underlying the topsoil orangish brown mottled grey gravelly clays and clayey gravels were recorded to full depth of the trial pits. No visual and/or olfactory evidence of potential contamination was noted within any soils encountered during the SI works undertaken.

3.0 Remediation Strategy

The aim of the proposed remedial works is to reduce and/or remove unacceptable risks to the identified on site receptors. The adopted remedial measures to be introduced are intended to minimise and/or break the aforementioned pollutant linkages.

A pragmatic approach has been adopted with regard to the necessary remedial works to be undertaken at the site. The outlined remedial measures have been based upon the previous investigative works completed and the proposed plans for the site.

3.1 Remediation Objectives

Based on the site specific risk assessment the object of the remediation shall be as follows.

- To protect the site operatives during the construction process from the ingestion of soil or dust, dermal contact with the soil and inhalation of dust and vapours.
- To protect the neighbours from the effects of transportation of contaminated soil to a licensed landfill sites.
- To ensure that an appropriate landfill site is employed for the disposal of the excess material derived from the basement construction.
- To protect the end user from the inhalation of vapours.
- To protect the plants in landscaped areas from the uptake of contamination.

3.2 Development Requirements

It is understood that this development will include the construction of residential housing and associated parking areas and areas of landscaping.

3.3 Strategy

In order to fulfil the objectives defined above the following remedial strategy shall be employed. A pragmatic approach shall be undertaken, with observational techniques being employed at each stage of the work.

3.4.1 Ground-works

During the ground-works phase of the development, protection to the site operatives is required. The risk to site operatives is considered under the Health and Safety at Work Act 1974, together with regulations made under the act, which includes the Control of Substances Hazardous to Health (COSHH) regulations. Therefore, the risks to site personnel must be considered under the Construction Design and Management (CDM) regulations at the planning stage and be included in the contractor's Health and Safety Plan and site specific Method Statements. These documents should include the following main elements.

- Site operatives at all levels should be made aware of the hazards of working with contaminated soils.
- Personal hygiene facilities, including washing and messing, must be provided and site operatives encouraged to use them.
- Where work is undertaken in dry weather the site should be dampened down to avoid dust. In addition, dust masks must be provided to all site operatives for use in dry weather.
- Where work is undertaken in wet weather, vehicle and wheel washing facilities are required to ensure that the vehicles leaving the site do not transfer any contamination to surrounding areas.
- Where vehicles are transferring soil to the landfill site they should be covered to prevent contamination of the surrounding area by dust.
- Any stockpiles of contaminated soil on site should be sheeted over to prevent excessive amounts of airborne dust.

On completion of the ground-works a careful site inspection of the sub-grade would be required. Should visual or olfactory evidence of contamination be revealed then further testing may become necessary. It should also be appreciated that the landfill operator may require waste acceptance criteria (WAC) testing.

3.4.2 Construction

During the construction phase of the contract the following items are required to protect the end user from the potential contaminants revealed at this site.

- Beneath buildings, pavements and hard-standings clean inert granular sub-base should be employed.
- For buried concrete the results of the sulphate and pH testing indicate that the design sulphate class for the site should be DS-1.

3.5 Mitigation of Risks to Building Materials

3.5.1 Buried services

Given that new services may be installed as part of the redevelopment of the site, the local water board should be contacted to determine their specification for the type of pipework which should be used on this site.

All services and in particular potable water supply pipework should comprise of material that is resistant to attack and degradation by chemical attack, particular given the extent of Made Ground identified. This can include barrier pipework. Further information can be found within the Water Regulations Advisory Scheme. *Information and Guidance Notes for the Selection of Materials for Water Supply to be laid in Contaminated Land.*

3.6 Watching Brief and Discovery Strategy

A watching brief should be maintained by the Main Contractor at all times during the groundworks stage. Should any unforeseen contamination, such as oils or soils/groundwater with an unusual colour or odour, be encountered during groundworks then the following procedure should be implemented:

- Work to cease in that area to prevent exposure to ground workers and potential contaminants being spread around;
- Notify a Geo-Environmental Consultant, to attend site and sample material;
- Notify the Environmental Health Department / Contaminated Land Officer(s).

If the nature and extent of the contamination is unmanageable under the procedure set out above, then a suitable management, mitigation or remediation procedure will be agreed with the CLO. However, this is considered unlikely at this particular site.

The walkover survey had not identified any potential ACMs on the structures on site.

As referred to above the risks from asbestos fibres in the made ground soils at the site have been assessed to present a very low risk to human health and the environment. It is still appropriate to minimise dust arisings during groundworks when potential risks will be at their highest and to allay fears about asbestos risks (and complaints) from neighbours. For a small development site such as this, simple best practice measures will be appropriate, such as:

- Site contact details on site gate;
- Keep a record of daily site checks;
- Keep a solid screen/ hoarding on site boundary;
- Minimise length of time bare soils are exposed at the site before removal of made ground in garden areas
- Dampen exposed soils in dry and/ or windy conditions
- Minimise handling of excavated made ground - can it be excavated and loaded directly into muck away lorries? If not stockpiles/ skips to be kept covered ideally (or at least dampened down)
- Minimise drop heights when loading soils
- Keep access road clean of mud/ dust (and avoid dry sweeping)
- No bonfires on-site.

However, it cannot be guaranteed that asbestos is not present within the soils across the remainder of the site. Consequently, we would recommend that a watching brief be adopted with regards to the site for the potential of finding any Asbestos Containing Materials (ACMs). If any ACMs are identified these need to be dealt with accordingly in relation to the Hazardous Waste Regulations 2005.

3.7 Materials Management

8.7.1 Off-site disposal

It is possible that the surplus soils that will be generated during groundworks will require disposal off site. The Contractor will be responsible for the appropriate segregation, classification and disposal of material.

All material intended for off-site disposal should be transported and disposed in accordance with the Environmental Protection (Duty of Care) Regulations, 1991 and the Landfill (England and Wales) Regulations.

The materials that will be excavated as part of the proposed development will only be eligible for inert disposal, without the requirement for Waste Acceptance Criteria (WAC) testing, under the following criteria:

- Uncontaminated naturally occurring soils;
- Uncontaminated 'reworked soils' and demolition 'stone' comprising only materials (such as concrete, brick, glass and ceramics).

As such, it is likely that the majority of soils will be eligible for disposal at a non-hazardous landfill facility. Copies of the soil logs, general contamination test results and available WAC results should be provided to a licensed landfill facility to agree upon a suitable end point for disposal of site arisings.

Waste legislation stipulates that hazardous and non-hazardous waste should be pre-treated prior to disposal. Pre-treatment can be undertaken either at the site of origin or may be carried out at a licensed off-site facility and can include selective segregation of soils conducted on site.

Excavated soils should be appropriately stored with preventative measures against infiltration/leaching and/or nuisance odours to protect the environment and human health during temporary storage on site. Ideally, site arisings would be loaded directly to waste haulage vehicles for immediate transfer off-site to a suitably licensed facility.

All waste handling procedures should be documented by the Main Contractor with appropriate Duty of Care records maintained and held on site.

8.7.2 Reduction of Waste to Landfill

There are other material management options that can be considered in order to minimise the volumes of material received at landfill. Providing the appropriate protocols are followed these options can include:

- Disposal of non-hazardous material to a soil hospital/recycling facility, where the soil can be disposed and subject to treatment for a particular end use and does not incur landfill tax;
- Recycling of materials such as metals, concrete and tarmac;
- Re-use of site won demolition concrete/hardcore for use as pile mats and/or sub-base materials in accordance with the WRAP Protocol; and/or

- Re-use of soils on/off-site (where there is a specified need for them and they do not pose a human health/environmental risk) in accordance with the CL:AIRE Definition of Waste Industry Code of Practice.

3.7.3 Imported Fill material

It should also be appreciated that any imported fill should be subjected to the following validation testing to assess its suitability. This criterion is based on screening values appropriate for a residential site with plant uptake. The frequency of such testing should be sufficient to give statistical confidence for the validation results. For sub-soil the frequency should be 1 per 250m³ with a minimum of 3 (whichever is greater) for Greenfield/manufactured soils. Further details can be found in the YALPAG guidance, Verification Requirements For Cover Systems.

3.8 Constraints

In the event of any changes in the design scope and specification for the installation of any of the mitigation measures as outlined within this document, YE should be contacted to determine whether these amendments will lead to any increased risk to the receptors.

It will be the responsibility of The Client to inform YE of any changes in the design scope and specifications.

3.9 Verification Reporting

Upon completion of remediation/mitigation works completed on site a verification will be completed.

The verification Report will include, but not be limited to, the following:

- Site visit records and photographic records from the watching brief;
- Site visit records and photos from visits completed by a Geo-Environmental Consultant from YE;
- Validation records of installation of various proposed capping layers;
- Duty of care records for disposal of waste material including the landfill site(s) or disposal facility where the material has been disposed and a copy of the Contractor's current waste carrier's licence (to be provided by Contractor);
- Records and test certificates relating to the management and disposal or unforeseen contaminants;
- Details of source and chemical test results for imported materials, if any;
- Confirmation of water supply pipe materials and its installation.

4.0 Limitations

This report has been prepared by YE with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources.

The opinions given in this report have been dictated by the finite data on which are they based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and has accepted in good faith as providing true and representative data with respect to site conditions. Should additional

information become available which may influence the opinion expressed in this report, YE reserves the right to review such information and, if warranted, to alter the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed.

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time and as such is not a guarantee that the study site is free of hazardous conditions.

This report has been prepared solely for the use of the named client, and may not be relied upon by other parties without written consent from YE. YE disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

