Orchard Hill Special Free School -

West Drayton, Hillingdon

Project Remediation Strategy

April 2020

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Revision Schedule

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P01	08/04/2020	First Issue	Jonathan Paul	Peter Hewitt	Michael Elliot
P02	18/09/2020	Updated to suit comments and to reflect phased handover of project.	Jonathan Paul	Graham Atter	Michael Elliot

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1 INTRODUCTION

The following information provides details of the identification of contamination at Orchard Hill Special Free School and the remedial measures necessary to deal with the contamination. It also provides information on the methodology used to address the risk from ground contamination and the lines of evidence required to establish that the contamination has been dealt with correctly to address the Planning Condition 10 – COM30 Contaminated Land.

1.1 BACKGROUND

Laing O'Rourke Construction Ltd (LOR) is the Principle Contractor to design and build Orchard Hill Special Free School for the Department for Education.

As part of the development works a desk study, ground investigation and subsequent interpretative report were completed to examine geo-environmental and geotechnical risks associated with the site and to obtain information on the geo-environmental and geotechnical nature of the ground conditions in relation to the proposed development.

Details of these investigation works are provided in the following documents, which should be read in conjunction with this document

- Combined Geotechnical Assessment and Ground Contamination Status Report - FS0637-LOR-XX-XX-RP-W-100001.
- Ground Gas Risk Assessment - FS0637-LOR-XX-XX-RP-W-100002.

The above reports advise that the risk of contamination is low for this site. They make recommendations on how to identify unforeseen contamination. This document then sets out how contamination will be dealt with and how to reduce the risks to site users if required.

1.2 SCOPE

The purpose of this document is to provide a remediation strategy to address Planning Condition 10 – COM30 Contaminated Land, which states …

"A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action. Any changes to these components require the express written consent of the local planning authority. The scheme shall be implemented as approved."

(i) The development shall not commence until a scheme to deal with contamination has been submitted to and approved by the Local Planning Authority (LPA) in accordance with the Supplementary Planning Guidance Document on Land Contamination and the Environment Agency document 'Model procedures for the Management of Land Contamination' (CLR11). All works which form part of a remediation scheme shall be completed before any part of the development is occupied or brought into use unless the Local Planning Authority dispenses with any such requirement specifically and in writing. The scheme shall include all of the following measures unless the LPA dispenses with any such requirement specifically and in writing:

a) An interpretive report produced by a competent person, and submitted to the LPA for approval; the report is to include suitably updated conceptual model and risk assessment along with detailed conclusions and recommendations based on findings within the previously submitted Preliminary Ground Contamination Report and the Ground Investigation Factual Report), and also including, where relevant, details of soil, soil gas, surface and groundwater sampling, together with the results of analysis and risk assessment. The report should also clearly identify all risks, limitations and recommendations for remedial measures to make the site suitable for the proposed use; and

(b) A written method statement providing details of the remediation scheme and how the completion of the remedial works for each phase will be verified shall be agreed in writing with the LPA prior to commencement of each phase, along with the details of a watching brief to address undiscovered contamination. No deviation shall be made from this scheme without the express agreement of the LPA prior to its implementation.

(ii) If during remedial or development works contamination, not addressed in the submitted remediation scheme, is identified an addendum to the remediation scheme shall be agreed with the LPA prior to implementation; and

(iii) Upon completion of the approved remedial works, this condition will not be discharged until a comprehensive verification report has been submitted to and approved by the LPA. The report shall include the details of the final remediation works and their verification to show that the works for each phase have been carried out in full and in accordance with the approved methodology.

(iv) No contaminated soils or other materials shall be imported to the site. All imported soils for landscaping purposes shall be clean and free of contamination. Before any part of the development is occupied, all imported soils shall be independently tested for chemical contamination, and the results of this testing shall be submitted and approved in writing by the Local Planning Authority. All soils used for gardens and/or landscaping purposes shall be clean and free of contamination.

REASON

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems and the development can be carried out safely without unacceptable risks to workers, neighbours

and other offsite receptors in accordance with Policy DMEI 12 of the Local Plan: Part Two - Development Management Policies (2020).”

To address the above planning conditions, the following is proposed:

10 i) a) – The Combined Geotechnical Assessment and Ground Contamination Status Report (FS0637-LOR-XX-XX-RP-W-100001) and Ground Gas Risk Assessment (FS0637-LOR-XX-XX-RP-W-100001) will be submitted to the LPA for approval.

10 i) b) This Project Remediation Strategy will be submitted to the LPA for approval.

10 ii) Unforeseen contamination will be dealt with in this Project Remediation Strategy. This will be submitted to the LPA for approval.

10 iii) A Verification Report will be produced at the end of the project to prove that the measures outlined in the Project Remediation Strategy have been followed.

10 iv) Importation of non-contaminated material will be demonstrated within the Verification Report.

To address the above planning condition the following areas will be discussed in detail in coming sections:

- Ground Works
- Ground Gas
- Ground and Surface Water

1.2.1 Phased handover

In reference to the following statement within planning condition 10 i) b):

“All works which form part of a remediation scheme shall be completed before any part of the development is occupied or brought into use unless the Local Planning Authority dispenses with any such requirement specifically and in writing.”

And the following statement within planning condition 10 (iv):

“Before any part of the development is occupied, all imported soils shall be independently tested for chemical contamination, and the results of this testing shall be submitted and approved in writing by the Local Planning Authority.”

The new school building is to be constructed on the playing field of the existing school while the existing school is still in use (Phase 1). Once the new school building has been constructed it will be brought in to use permitting the existing school building to be

vacated and then demolished. This will allow the area of the existing school building to be turned in to sports pitches, a carpark and landscaped areas (Phase 2).

As a result, due to the phased nature of the works, a verification report will be produced on completion of the new school (Phase 1) to prove that the measures outlined in the Project Remediation Strategy have been followed for this phase of the works. This will allow the planning conditions to be discharged in writing and permit the new school building to be occupied and brough in to use.

A subsequent verification report, or revision to the initial verification report, will be produced on completion of the new sports pitches, carpark and landscaped areas (Phase 2). This will be approximately 6 to 9 months after this initial report and will prove that the measures outlined in the Project Remediation Strategy have been followed for this secondary phase of the works. This will allow the planning conditions to be discharged in writing and permit use of the remainder of the development.

2 GROUND WORKS

2.1 CONTAMINATION, RISKS AND RECOMENDATIONS

The Combined Geotechnical Assessment and Ground Contamination Status Report (FS0637-LOR-XX-XX-RP-W-100001) advises that from the testing carried out the madeground soils are not considered to pose an unacceptable risk to future end users of the site or controlled waters. As a result, remedial measures were not considered to be required in respect of the soils at the site.

However, it was recommended that a watching brief should be in place throughout the development works and the following discovery strategy implemented:

> If during the course of the site clearance and development works, any materials not previously identified by the investigation that are suspected of being ‘contaminants’ are encountered, then the following procedure should apply:
>
> - All works in that area should cease and the site manager/project leader should be informed.
> - Advice should be sought from suitably qualified and experienced personnel as to whether any further site inspection, sampling, testing and/or assessment is deemed necessary.
> - If required, the conclusions of any assessment and any proposed remedial works (if required) should be agreed by the local authority.
> - If necessary, full details of any remedial works should be included in a verification report for the site.

Suspected 'contamination' may take the following form, though it is noted that this list is not exhaustive and site operatives should ask if they are at all unsure of any findings:

- Soil or water looks oily and/or has an oily odour.
- Soil or water has a solvent type of odour.
- Significant quantities of man-made materials within fill such as paint cans, car parts, glass fragments.
- Suspected asbestos containing materials (insulating boards, cement, loose fibres, etc).
- Significant volumes of clinker like or ashy material.
- Sandbags, and/or subsurface concrete structures.
- Animal carcasses or evidence of animal burial pits.

Should suspected contamination be identified, details of the general requirements for the ground works are provided in section 3.2.

To ensure that imported materials do not contain contamination the measures described in 3.2.4 will be implemented.

2.2 REMEDIAL MEASURES TO DEAL CONTAMINATION

2.2.1 VALIDATION SAMPLING

All validation sampling works will be undertaken by a suitably qualified Engineer/Scientist appointed by LOR. Soil samples should be collected using a shovel, spade, trowel, rock pick or coring device. The sample collection device should be made of a material that is compatible with the material to be sampled and the purpose of the testing in order to avoid cross-contamination of the sample during collection (i.e. stainless steel or PTFE-coated tools).

All exported material needs to be tested. The frequencies should be as follows:

- Non-naturally occurring material (madeground) = testing every 500 cubic meters.
- Naturally occurring material (virgin material) = testing every 1000 cubic meters.

Sample containers shall be compatible with the material sampled and the planned analyses to avoid cross-contamination or loss of contaminants after collection. Preservatives should be included where necessary. Once taken, samples shall be stored in the dark between 2°C and 4°C and shall be couriered to the testing laboratory within 24 hours.

Samples shall be clearly labeled in accordance with BS5930. Measures shall be taken to ensure that all sampling equipment is decontaminated at the start and end of the investigation and between sample locations. This will involve washing sampling equipment between samples with detergent solution followed by de-ionised water rinse. If particularly oily or tarry soils are encountered more stringent decontamination procedures will be required i.e. use of a stronger detergent solution followed by drying with prepared wipes. Where it is necessary to obtain samples directly from the excavator bucket, all traces of existing material shall be removed from the bucket by high pressure hosing prior to excavation of material for sampling.

2.2.2 LABORATORY TESTING

All laboratory testing shall, in the first instance, hold MCERTS and UKAS accreditation for all soil tests. Where the laboratory is not accredited under MCERTS for any parameter, the laboratory shall ensure the works is either subcontracted to a laboratory with the appropriate MCERTS accreditation or provide appropriate in-house Analytical Quality Control (AQC) data allowing an estimate of the likely precision and bias associated with the particular analysis.

2.2.3 EXCAVATION, REMOVAL AND DISPOSAL OF CONTAMINATED SOIL

Following testing, waste classification and segregation will be undertaken. Material classified hazardous will be stored separately from the general non-hazardous site won material. All classified hazardous site won material will be collected by a tipper lorry for the disposal either to landfill or off-site remediation.

LOR shall be responsible for ensuring all wastes generated at the site are disposed of correctly by registered carriers to licensed landfills or restoration/reuse facilities.

Chemical testing results and indicative waste classification information shall be provided to the license holder for agreement prior to disposal/reuse. Additional testing requested by the license holder shall be undertaken by LOR accordingly. Any additional testing shall be undertaken using a competent accredited laboratory.

2.2.4 IMPORTATION AND VALIDATION OF IMPORTED MATERIALS

Where imported materials are required (including topsoil) the source of the material should be approved by Atkins prior to material arriving at site. Information required for approval will include; location of source, means of manufacture/production and QA testing confirm compliance with contract specification and contamination threshold requirements.

On delivery to site compliance samples shall be taken from the imported material. Compliance testing will be carried out at a rate of between 1 per 100m3 and 500m3 dependant on the means of production, quality of supplied information and risk of variance from the supplied data.

Test results will be included within the Verification Report which will be complied at the end of the project and submitted to the LPA.

2.2.5 HEALTH AND SAFETY PRECAUTIONS

Risk Assessment and Method Statements shall be prepared by the LOR for all remediation and below ground works to be undertaken at the site. These risk assessment and method statement should be prepared with reference (where appropriate) to the HSE Publication Protection of Workers and the General Public during the Development of Contaminated Land.

All staff and third party entry into the work area shall utilise appropriate Personal Protective Equipment (PPE). As a minimum PPE will comprise hard hat, reflective vest, disposable overalls, gloves and hard toe footwear. All machine drivers shall also hold the appropriate CITB Certificate of Competence.

LOR shall be responsible to ensure appropriate measures are implemented for the protection of human health and other local sensitive receptors. For protection of construction workers the following minimum control measures should be adopted during development and be incorporated in the Construction Health and Safety Plan for the proposed works:

- All workers engaged in earthworks and working in trenches/excavations should minimise physical contact with the soil and be rigorous in matters of personal hygiene
- All workers should adhere to normal site practice and employ appropriate personal protective equipment (PPE) to minimise direct contact with soils and inhalation of dust generated during the handling of the excavated material.
- Exposed and stockpiled material should be either covered or keep damp to minimise the generation and dispersion of dust, which may potentially impact receptors outside the working area

2.2.6 REPORTING REQUIREMENTS

On completion of the works, whether contamination of found or not, a Validation Report will be produced provide evidence to demonstrate compliance with this Project Remediation Strategy by presenting validation documents and other supporting evidence

gathered during the works. This Validation Report should include, but not necessarily be limited to, the following:

- If applicable, a summary of the remediation works undertaken at the site, including details of volumes (m3) of materials excavated from remediation areas and dates of sampling and construction progress;
- Legible copies of all laboratory test data, together with laboratory testing certificates, and if necessary, in-house AQC data, and
- Confirmation of licensed waste haulage subcontractor and waste disposal facilities, including legible photocopies of appropriate licenses and chain of custody forms, consignment and/or transfer notes for waste materials.
- Records of the testing of imported materials to confirm that they contained no contamination.

The local authority contaminated land officer shall confirm whether additional information will be necessary for the verification report prior to the commencement of the site works. The precise scope of the Validation Report should be agreed with the local authority. The Validation Report will be produced to satisfy the requirements of Planning Condition 10 – COM30 Contaminated Land.

3 GROUND GAS

The Ground Gas Risk Assessment (FS0637-LOR-XX-XX-RP-W-100001) classified the site as Characteristic 1, neither CIRIA C665 nor BS8485 required any specific protection measures to be provided.

It advises that a risk assessment reported the site is within an area where less than 1% of properties are above the action level requiring radon gas protection measures to be installed in new buildings. It also advises that no radon protection measures are reported by the BGS to be necessary in the construction of new dwellings.

4 GROUND AND SURFACE WATER

The Combined Geotechnical Assessment and Ground Contamination Status Report (FS0637-LOR-XX-XX-RP-W-100001) advises that no ground water was encountered during the site investigation works. As the foundations are relatively shallow (pads and strip footings) and excavations for below ground drainage and services will be no deeper than the boreholes undertaken during the site investigation works, no ground water is expected to be encountered during the construction works.

Surface water run-off into excavations will be dealt with by conventional sump pumping to the surface water drainage network. It will be ensured the Thames Water Discharge License is in place prior to any ground water disposal to the mains.

Samples of water will be collected during excavation works and will be tested for the suite shown in the Table 1 to ensure compliance with Thames Water Discharge Consent.

pH	Sulphate	Arsenic
Conductivity	Chloride	Sodium
Alkalinity	Nitrate	Magnesium
Hardness	Nitrite	Potassium
BOD	Phosphate	Iron (dissolved)
COD	Ammonia	Iron (total)
Total dissolved solids	Cyanide	Manganese
Total suspended solids	Phenol	TPH
Dissolved Oxygen		

Table 1: Ground water testing suite