



CAMPBELL ROAD, EASTLEIGH - VALIDATION REPORT

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ESL/DS/101	February 2024	R1 noting installation of gas membrane	David Slater	Simon Farr	Neil McLeod
ESL/DS/101	April 2024	R2 BH decomm addendum	David Slater	Simon Farr	Neil McLeod

Prepared For:

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Remediation Validation Report (R2)

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EXECUTIVE SUMMARY

Objectives	ADI Group appointed Envirotreast to provide technical support during the requisite enabling works for the redevelopment of Area 2 (western area) of the former industrial site at Campbell Road, Eastleigh.
Scope of work	• Provision of a “watching brief” during enabling works and earthworks including the management of surplus soil stockpiles on site to minimise risks to the client (especially in respect to potentially hazardous soils) • Provision of a “Discovery Strategy” for any unexpected contamination or contamination encountered in areas not previously investigated. • Decommissioning of existing on site deep boreholes • Supervision of enabling works activities (stockpile management) in accordance with the agreed Materials Management Plan (MMP). • Supervision of any required off site disposal of surplus soils • Verification of gas membrane installation (a gas membrane was installed notwithstanding the site being re-assessed as CS1) • Verification of clean service corridor installation • Verification of clean capping • Provide a comprehensive Validation Report which will detail all works undertaken, analysis (including analytical reports), a full photographic record and include all consignment notes, all licences and permits
Ground model	The Delta Simons – Report Ref 17-1080.05. dated March 2019 recorded the following for the site as a whole: Ground conditions were found to comprise generally granular Made Ground with localised areas of cohesive deposits to depths <1.0m bgl although locally to 2.5m bgl. The underlying natural strata was found to comprise a band of firm clay depths between 2.0 and 2.5m bearing onto River Terrace Gravels and in turn the London Clay Formation at approximately 6m bgl. Groundwater was consistently recorded at depths between 3.5m and 4.0m bgl.
Human health risk assessment	Human Health risks would be addressed by the development itself (gas membrane, concrete slab / hardstanding) and the 300 mm clean capping layer in soft landscaped areas.
Controlled waters risk assessment	Elevated contaminants of concern were not recorded in groundwater sampled from beneath the site (Area 2 – western area) that exceeded the adopted assessment criteria.
Further work	This report is the Final Validation Report

This executive summary is to be read in conjunction with the remainder of the report and should not be relied upon in isolation.

Remediation Validation Report (R2)

A. INTRODUCTION

1. Terms of Reference

Envirotreast Solutions Ltd (hereinafter referred to as Envirotreast) was appointed by ADI Group (hereinafter referred to as 'the client') to validate remediation of contaminant linkages associated with the development of Area 2 of the Former Eastleigh Works site, Campbell Road, Eastleigh ('the site').

2. Aims and Objectives

The aim of this Validation Report is to present details on the remediation works undertaken at the site to mitigate risks to human health and to confirm that works have been completed in accordance with the approved Remediation Strategy.

3. Previous Reports

Envirotreast has been provide with the following previous reports pertaining to the site *as a whole*:

- Delta Simons - *Geo-Environmental Assessment, Eastleigh Works, prepared for Diageo Investment Fund Limited* (report ref: 17-1080.15) Dated March 2019

The following report relates to the development area only (Area 2):

- *Envirotreast Solutions Limited* – Supplementary Site Investigation. Dated 21st February 2022 (relating to site works undertaken on the 3rd February 2022)
- Envirotreast Solutions Ltd – Eastleigh Works Units 200, 205 and 210 Ground Gas Risk Assessment. Dated May 2023
- Materials Management Plan

This report shall be read in conjunction with the above reports. Particular attention shall be made to the Remediation Strategy and Method Statement, which sets out the scope of works presented herein.

4. Regulatory Liaison

4.1. Planning Conditions

Planning permission has been granted for the redevelopment of the site (F/20/87841). This decision notice includes contamination related pre-commencement planning conditions (conditions 30 and 31). These stipulate that prior to commencement, a site investigation is undertaken, a Remediation Strategy submitted including measures for addressing any unexpected contamination and the submission of a Validation and Verification Report.

During construction works, Envirotreast liaised with the LPA regarding the level of ground gas risk. Additional investigation of the plots under construction concluded that the ground gas regime could be reclassified as CS1 (characteristic situation 1) and thus gas protection measures were not required. These findings were submitted to the LPA on 22nd February 2023, with a response received on 4th May 2023. The LPA confirmed that, subject to provision of additional information, the conclusions were supported, and ground gas mitigation measures could be removed form the development. The additional information was submitted on 22nd May 2023.

It is intended that this report be submitted to the local planning authority to facilitate discharge of planning conditions 30 and 31.

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4.2. Regulatory Controls/ Permits

Due to the scale and nature of the works, formal deployment of the ESL Mobile Treatment License was not necessary.

The works were undertaken in accordance with the submitted Remediation Method Statement.

Soil movement and reuse was undertaken under a CL:AIRE approved Materials Management Plan.

B. BACKGROUND INFORMATION

5. Basic Site Details

5.1. Site Location

The **whole** site comprises an irregular parcel of land located off Campbell Road, 0.5 km south-east of Eastleigh town centre (see Figure 1). It occupies an area of around 18,000m² (Area 2). The Site is split into two phases, comprising Phase I in the north and Phase II in the south.

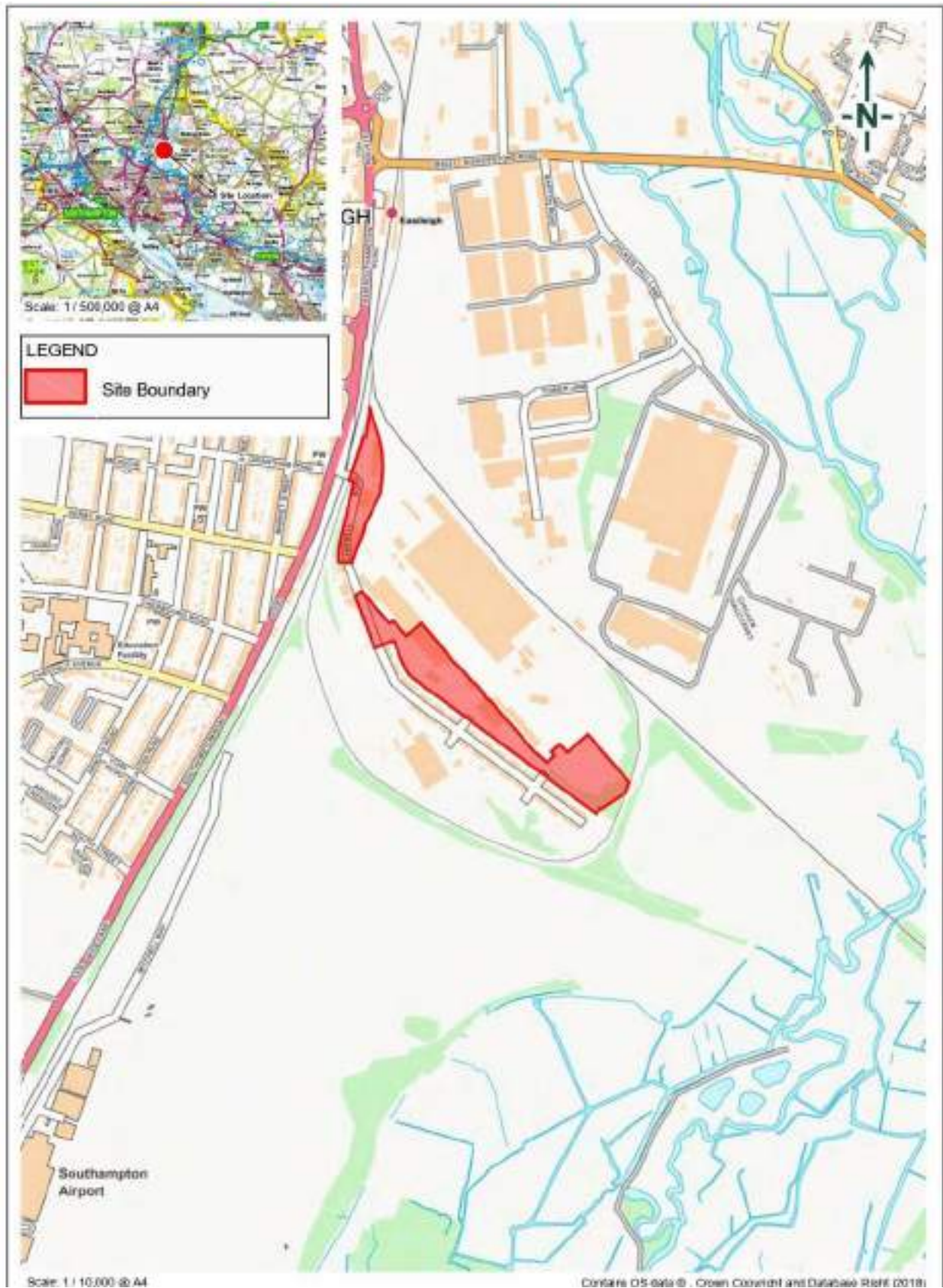
Surrounding land use comprises residential properties with gardens backing onto the southwest boundary, with the London to Southampton mainline forming the southwest boundary in the north of the site along with Campbell Road. The eastern boundary of the site is formed by Eastleigh Works comprising a series of railway sidings, maintenance depot, above ground tanks and plastic and metal recycling yards. The southern boundary is formed by Southampton Airport.

The development works formed a part of whole site as shown in Figure 2 below, the development area consisted of Plot 305.

Envirotreast understands that the proposed development works at the site will comprise the demolition of existing buildings and erection of a new unit (split into units 200, 205 and 210), see Figure 3

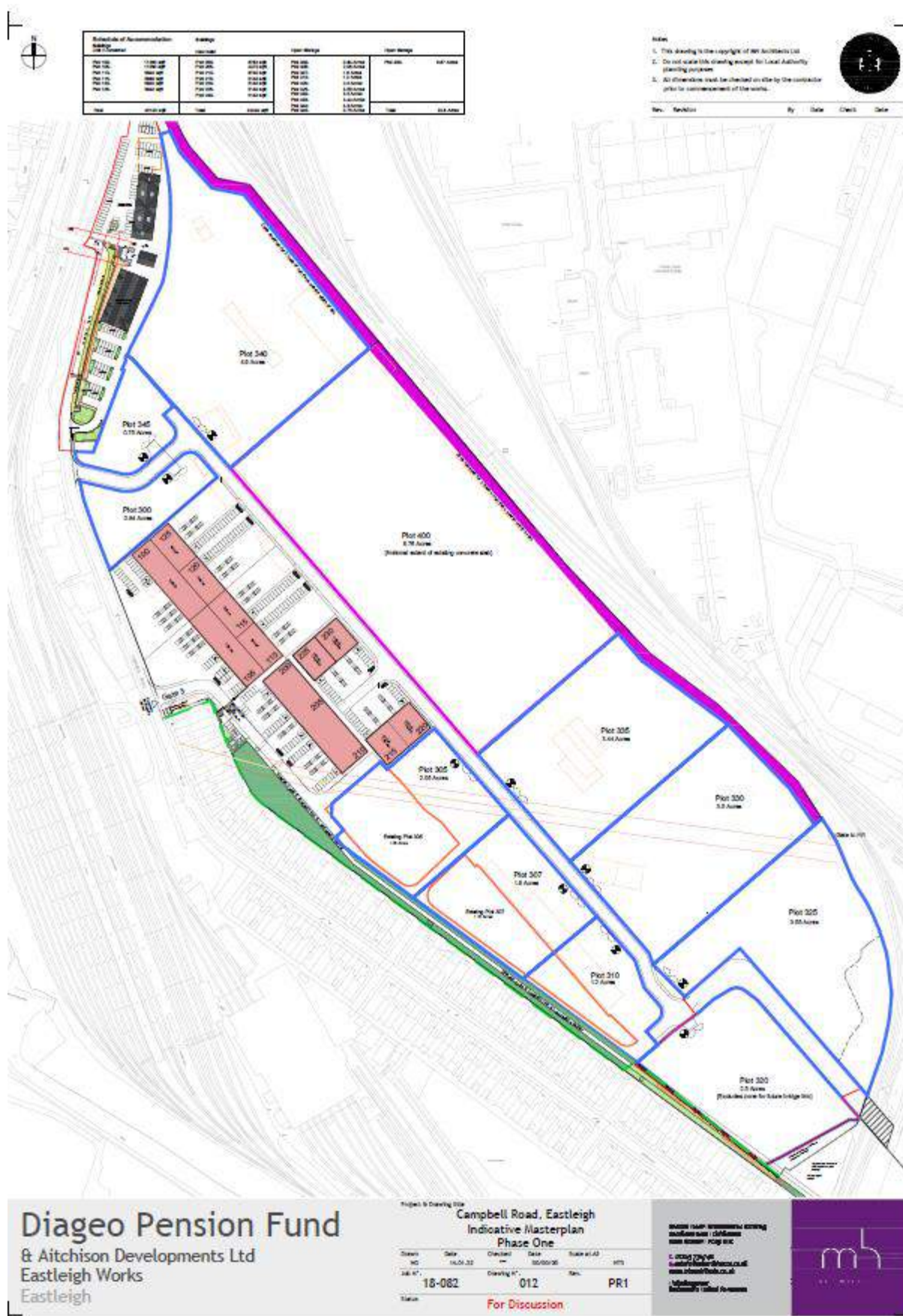
Remediation Validation Report (R2)

Figure 1 – Site Location



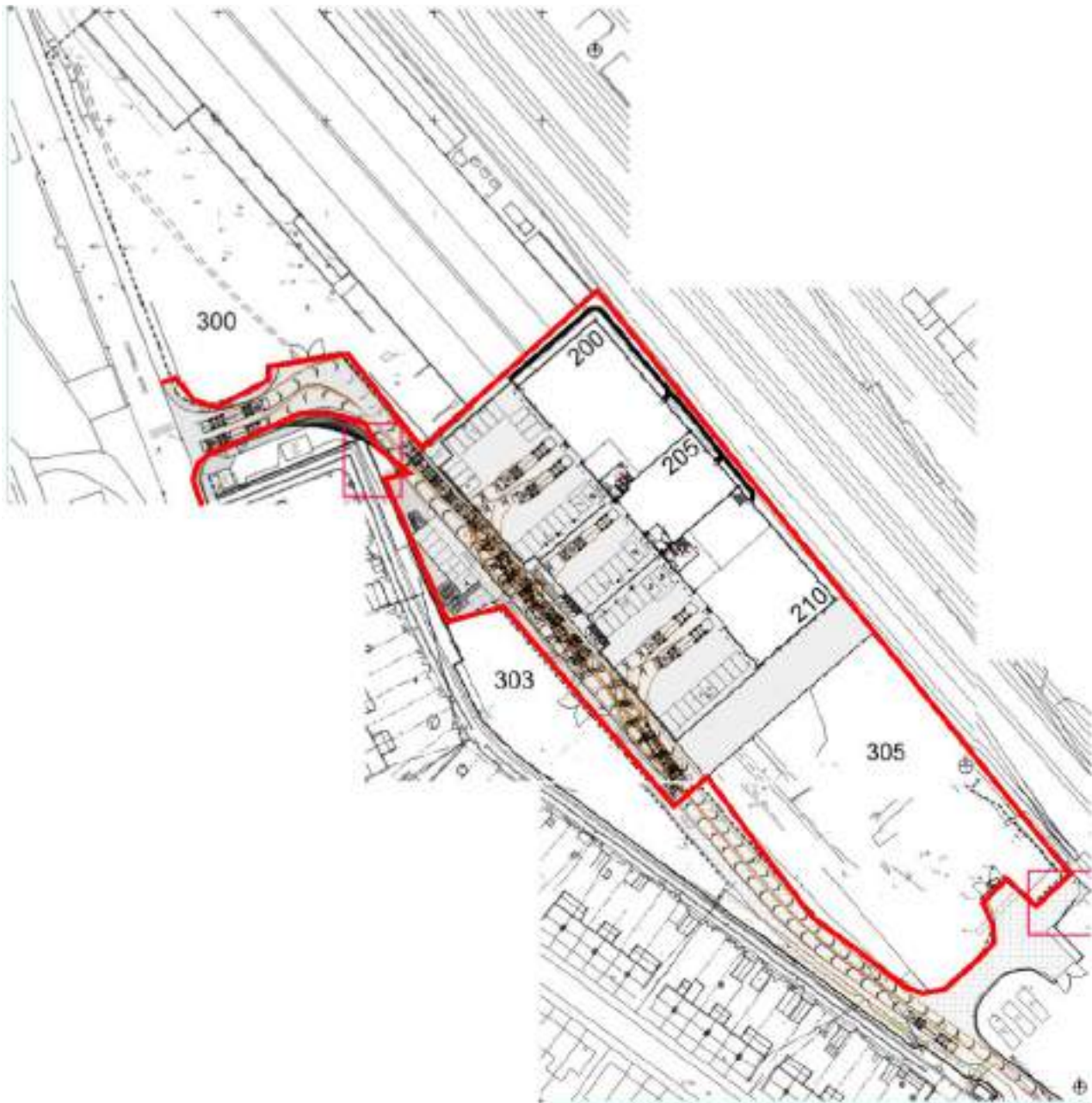
Remediation Validation Report (R2)

Figure 2 – Plot 305 in relation to whole site.



Remediation Validation Report (R2)

Figure 3 – Development within Plot 305 ie 200, 205 and 210.



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5.2. Overall Objectives

Delta Simons identified potential contaminant linkages relating to the historic use of the site and receptors.

The following scope of works is proposed to address the remediation requirements:

- Decommissioning of existing on site deep boreholes
- Provision of a “watching brief” during enabling works
- Provision of a “Discovery Strategy”.
- Provision of a comprehensive Validation and Verification Report detailing the works undertaken, supporting documentation and photographic record.
- Human Health risks will be addressed by the development itself (gas membrane, concrete slab / hardstanding) and the 300 mm clean capping layer in soft landscaped areas.

5.3. Summary of Environmental Setting

5.3.1. Historical Site Uses

The site has seen historical uses as a locomotive repair and maintenance works (Eastleigh Works). The development area (Area 2) has been used for various manufacturing units / storage sheds more recently. The remaining Eastleigh Works, maintenance depot and railway sidings form the eastern boundary, with residential properties to the west.

5.3.2. Ground Conditions for the site as a whole

Geology - Published British Geological Survey mapping (1:50,000 ‘Solid and Drift’, Sheet Number 315, Southampton, dated 1987), indicates the entire Site to be underlain superficial deposits comprising the River Terrace deposits consisting of loam and clay, bearing onto gravels. The underlying solid strata is indicated to comprise the Wittering Formation in the south east consisting of sand, silt and clay bearing onto the London Clay Formation which is indicated to outcrop in the north west. The London Clay Formation is indicated to comprise clay bearing onto bands of sand and gravel. Deeper strata beneath the London Clay Formation is expected to comprise the Lambeth Group bearing onto the White Chalk Subgroup.

Ground conditions beneath the subject site typically comprised a thin veneer of granular Made Ground overlying cohesive natural soils. Made Ground was proven to between 0.3m and >1.1m and was generally black with tarmac and clinker. The underlying natural soils comprised orange-brown clay, occasionally slightly gravelly. This was interpreted as the uppermost, cohesive strata of the River Terrace Deposit. This deposit coarsened downwards through slightly sandy slightly gravelly clay to sand and gravel by circa 3.5m bgl.

The underlying London Clay was rarely identified in the window sample borehole but has been identified at depths ranging from 4.5m to 6.3m bgl in 3no positions.

Hydrogeology - The Environment Agency classify the River Terrace Deposits as a Secondary Undifferentiated Aquifer, the Wittering Formations as a Secondary A Aquifer and the London Clay Formation as an Unproductive Stratum. The deeper Lambeth Group is also expected to be classified as a Secondary A Aquifer whilst the deeper White Chalk Subgroup is expected to be classified as a Principal Aquifer.

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The Environment Agency data also indicates that the Site is not in a designated groundwater Source Protection Zone. According to the Envirocheck® Report, there are no licensed abstraction records from groundwater located within 2 km of the Site.

Hydrology The following controlled water / environmental receptors have been identified:

- A surface water drain feature 140 m to the east; and
- The River Itchen running north to south approximately 500 m south east of the Site

During the previous site investigation works groundwater was noted in 3no boreholes within the granular River Terrace Deposits at depths ranging from 4.0m to 4.4m bgl (9.33m to 9.98m AOD (above ordnance datum)). Groundwater was estimated to flow from north to south.

5.4. Development Proposal

5.4.1. Development Team

The site will be redeveloped for commercial end use with associated parking, access and landscaped areas.

The development will be carried out by:

ADI Group

66 Melchett Rd,

Kings Norton Business Centre,

Birmingham

B30 3HX

5.4.2. Proposed Development

The Proposed development is shown in Figure 4 below.

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Figure 4 - Proposed Development



Remediation Verification Report

C. REMEDIATION WORKS

6. Introduction

The CSM carried out by Delta Simons for the site as a whole identified risks to human health (asbestos and heavy metals) and controlled waters (TPH and PAH). Envirotreast evaluated the contamination relating to Plot 305 and considered that human health risks (namely asbestos and heavy metals) would be mitigated by the import of clean capping material and the areas of hardstanding to be incorporated within the proposed development. These would provide an effective pathway break between any contamination (source) and human receptors.

Boreholes installed in this area (namely BH106, BH107, BH105, BH109 and BH110) did not record contaminants that exceeded the appropriate screening criteria, therefore groundwater remediation in this area is not required.

Additional ground gas risk assessment completed by Envirotreast has concluded that mitigation of ground gas risk is not required in the subject plots.

The overall approach for remediation was as follows:

1. Provision of a “watching brief” during enabling works and earthworks including the management of surplus soil stockpiles on site to minimise risks to the client (especially in respect to potentially hazardous soils) in accordance with the agreed Materials Management Plan (MMP).
2. Provision of a “Discovery Strategy” for any unexpected contamination or contamination encountered in areas not previously investigated.
3. Decommissioning of existing on site deep boreholes
4. Supervision of any required off site disposal of surplus soils
5. Verification of gas membrane installation
6. Verification of clean service corridor installation
7. Verification of clean capping

7. Watching Brief

Envirotreast provided a watching brief during enabling and earthworks operations at the site. This related to the following elements:

Reduced Level Dig

The development required a reduced level dig to accommodate the floor slab makeup.

The Site Investigation carried out by Delta Simons (relating to the site as a whole) and the Supplementary Site Investigation carried by Envirotreast (relating to Plot 305 only) confirmed the site to be underlain by a thin layer of ash / clinker made ground (approx. 100 mm – 500 mm increasing in depth toward the southwest of the development site). Under the declared MMP the intention was to reuse Made Ground on site as far as practically possible (assuming chemical and geotechnical suitability). A cut and fill assessment indicated a net surplus of soils for the development, this would consist of natural soils and unsuitable Made Ground. All surplus soils were to be removed from site to a suitably licenced facility.

Remediation Verification Report

Hardstanding areas (predominantly reinforced concrete) were broken out and stockpiled to await crushing. The underlying ashy made ground was removed and stockpiled as per the agreed stockpile management plan (see Appendices D of declared MMP), there were deviations from this in terms of actual stockpile locations, however the basic principles were adhered to. Equally, the underlying natural clay was removed to the required depth and stockpiled separately. All materials were visually inspected prior to stockpiling. During each watching brief visit, a check was carried out to ensure stockpiles were appropriately separated to avoid potential cross contamination.

On site geotechnical assessments undertaken by the groundworks company at formation level, indicated that the required ground bearing capacities had not been achieved. The client took the decision to further reduce the formation level to enable an increase in slab make up. This resulted in an additional off site disposal volume.

Figure 5 – Demolition Stockpile (prior to crushing).



Remediation Verification Report

Figure 6 – Made Ground Stockpile.



Figure 7 – Natural Soils Stockpile.



Remediation Verification Report

Figure 8 – Watching brief during groundworks.



Remediation Verification Report

Figure 9 – Watching brief during groundworks.



Remediation Verification Report

7.1.1. Installation of Drainage & Service Ducts

Excavated soils from the installation of attenuation tanks, manhole installations, storm / foul drainage runs and required service ducts were visually inspected and stockpiled in accordance with the requirements of the stockpile management plan and agreed MMP. All materials that visually appeared to be ashy in appearance was stockpiled accordingly. All natural soils / clays were stockpiled accordingly.

Figure 10 – Watching brief during drainage & service ducts.



Remediation Verification Report

8. Decommissioning of onsite Deep Boreholes

Prior to commencement of the enabling works Envirotreat undertook a site walkover to ascertain the location of historical boreholes. Where located boreholes were backfilled with bentonite pellets. A number of boreholes were not located either during the site walkover or during the subsequent enabling works.

The following boreholes were outside the perimeter fencing during the works and therefore not decommissioned

- DS123a & b
- DS122
- DS124
- DS121

The following may have been lost during the erection of the acoustic fencing by others (and therefore not found)

- DS109
- DS112

None of boreholes adjoining the northern fence could were located

- BH106
- DS113
- DS114
- DS115 and
- DS116

Envirotreat was on site during enabling works in this part of the site and the boreholes were not found. All made ground was removed in this part of the site down to the underlying clay and therefore all potential contamination source removed.

Figure 11 – Watching brief for redundant boreholes.



Remediation Verification Report

Based on approx. locations the following boreholes were located and decommissioned

- DS118
- DS120
- DS111 and
- DS110

Borehole DS108 and previously been concreted over (by others) and BH107 not found, however all made ground was removed in this part of the site down to the underlying clay and therefore all potential contamination source removed.

All the 2022 Envirotreat boreholes were decommissioned.

Figure 12 – Decommissioning boreholes.



Remediation Verification Report

Figure 13 – Decommissioning boreholes.



Remediation Verification Report

Figure 14 – Decommissioning boreholes.



Remediation Verification Report

Figure 15 – Decommissioning boreholes.



Remediation Verification Report

9. Supervision of Off-Site Disposal of Surplus Soil

Excavated soil from the various groundworks' activities were stockpiled (as set out in section 7 above) in accordance with the requirements of the agreed MMP.

Soils were transported off site as per the summary spreadsheet / waste transfer notes.

The soils were taken to

Four Dell Waste Facility Poles Lane Otterbourne Winchester Hampshire SO21 2DY Permit EPR/JP3890VC.

Under EWC 17.05.04 (non-hazardous soils and stones) – WM3 assessment by HWM.

10. Provision of a Discovery Strategy

Throughout the enabling works and subsequent groundworks no unexpected contamination was encountered. Below ground conditions in areas not previously investigated were observed to be consistent with the conditions recorded in the site investigation works.

11. Verification of Gas Membrane Installation

The ground gas risk assessment concluded the wider site should be classified as CS (characteristic situation) 2 and thus ground gas mitigation was required. The client commissioned Envirotreast to undertake a further assessment specific to the development area.

The subsequent works demonstrated that the gas risk for these units could be reclassified as CS1. See appended report.

A gas membrane was installed, however the installation was not verified.

12. Verification of Clean Service Corridor Installation / Barrier Pipe

The excavation of service duct corridors was carried out as per the requirements / recommendations of the Delta Simons Site Investigation report.

Clean imported materials were used around the services, see appendices for imported materials.

These works were validated by the Principal Contractor (ADI) as shown in figure 16.

At the time of writing there were no water pipe installations.

Remediation Verification Report

Figure 16 – Services Installation.



13. Verification of Clean Capping / Topsoil

The quality of imported clean capping material and topsoil was verified prior to import. See appended documentation.

These works were validated by the Principal Contractor (ADI)

Remediation Verification Report

D. CONCLUSIONS AND RECOMMENDATIONS

14. Conclusions

Envirotreast has completed the designated remediation works at the former Eastleigh Works, Eastleigh in accordance with the requirements of the agreed Delta Simon Remediation and Verification Strategy (dated January 2021).

The remediation works comprised a watching brief during earthworks / enabling works, verification of service ducts / corridors, barrier pipe, decommissioning of remaining deep boreholes within the development area and verification of clean capping. Verification of gas membrane installation was determined not required.

15. Recommendations

Based on the above assessment, the following actions are recommended:

- This report be submitted to Eastleigh Borough Council for their approval.