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REMEDiate



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REMEDIATION STATEMENT

**AT
188 DEIGHTON ROAD,
HUDDERSFIELD,
WEST YORKSHIRE,
HD2 1JJ**

**PREPARED FOR
JAMIE TULLY**

**REPORT NO. NE4118C
MAY 2023**

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**REMEDICATION STRATEGY REPORT FOR 188 DEIGHTON ROAD,
HUDDERSFIELD, WEST YORKSHIRE, HD2 1JJ**

CLIENT: JAMIE TULLY

ENGINEER: STUDIO KMA

1. INTRODUCTION

Our brief is to provide a Phase III Remediation Strategy Report in accordance with the Planning Application Ref.2022/62/93345/W, dated November 2022, for submission to the Local Planning Authority Kirklees Council.

We have prepared this Remediation Strategy Report following receipt of an email, dated 23rd March 2023, from the Engineer on behalf of the Client.

We have previously issued reports for the site, as follows:

- Phase I: Geological and Mining Appraisal Report, ref. NE4118 and dated November 2021.
- Phase II: Ground Investigation Report, ref. NE4118A and dated October 2022.

In addition Build Vision Ltd. has previously issued a report for the site, as follows:

- Phase I: Desk Study and Walkover Survey Report, ref. 1299 and dated August 2021.

The above reports should be read in conjunction with this report and summaries are given in Section 2.2 below.

The report has been prepared in general accordance with the Environment Agency's Land Contamination Risk Management (LCRM) guidance (October 2020) and also meets the criteria for a Remediation Statement, as defined in Section 78H of Part 2A of the Environmental Protection Act 1990.

1.1 Site Location and Description

The site is located at 188 Deighton Road, Huddersfield, West Yorkshire, HD2 1JJ, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is E415887m, N419405m.

As shown on Figure 2, the about 0.04 hectare roughly rectangular shaped site is bounded to the east by No. 178 Deighton Road, to the north by the grounds of No. 1 Oddfellows Buildings, to the west by No. 190 Deighton Road, and to the south by Deighton Road.

1.2 Proposed Development and Purpose of the Remediation Statement

We understand that it is proposed to construct a residential property and a detached workshop, as shown on Figure 3.

1.3 Contact Details of Involved Parties

TABLE 1 INVOLVED PARTIES

Developer	Agent
Jamie Tully 26 Leominster Drive Manchester M22 5DH	Studio KMA Clarence Arcade Stamford Street West Ashton-under-Lyne OL6 7PT Redacted

2. SITE ASSESSMENT

2.1 Current Status

The site is currently unoccupied and partially concrete, partially hardcore surfaced and containing the remains of demolished garages, with areas which are overgrown and tree stumps present in the south east. The site slopes gently down to the south. The walkover survey noted retaining walls retaining the site to the east and south and which were noted to be in poor condition.

2.2 Summary of Previous Reports

2.2.1 Phase I: Desk Study Report (ref. 1299)

The Phase I report was undertaken by Build Vision Ltd. in August 2021.

Site Reconnaissance

The Phase I report included a walkover survey in which photographs were obtained of the site. The Phase I report included the following site description:

“The site is an irregular shaped parcel of land occupying approximately 0.04 hectares. The site is unoccupied and is an overgrown former domestic garages site. The remains of the demolished garages are still present in piles on the site in the north west and south east corners and three tree stumps present in the south east corner. There are stone retaining walls retaining the site to the east and south boundaries and these are in poor condition with numerous cracks and leaning evident. The former garage panels remain present held in place by chains around tree stumps at the north boundary and there is a retaining wall to the west boundary behind the former garage panels retaining land to the west. The site generally slopes to the south west.

There is no evidence of any significant contamination on the site.

There did not appear to be any asbestos containing materials present on the site but garages were often constructed from or lined with asbestos containing materials and an asbestos specialist should be consulted to determine if there are any present and for their safe removal if required.

The site is surrounded by houses to the north, east, south, and west of the site.”

Desk Study

The historical appraisal starting from the earliest available survey in 1854 found the site progressed from being occupied by houses and outhouses to the houses being demolished by 1959 and three domestic garages being present in the east of the site. By 2000 the garages have been removed and one garage added in the north west corner of the site and trees have been added in the south east of the site. By August 2021 all buildings on site have been demolished and the trees have been cut down to stumps.

Due to the past houses and garages occupying the site Made Ground deposits were anticipated to be present beneath the site as general fill and demolition fill.

No drift deposits were anticipated to underly the site. The bedrock was indicated to be sandstone within the Pennine Lower Coal Measures Formation which was indicated to be a Secondary A aquifer. The vulnerability of groundwater to a pollutant was assessed as "High" by the Phase I report.

The conceptual site model identified potential sources of contamination from general fill and demolition fill associated with the construction and demolition of houses, outbuildings and domestic garages on the site and construction and demolition of houses, an inn and schools adjacent to the site. These potential sources result in potential pollutant linkages to site operatives, end users of the site, vegetation, controlled waters and adjacent properties.

The report recommend that:

- A detailed Coal Mining Risk Assessment should be carried out.
- An intrusive ground investigation should be carried out to assess the ground conditions and obtain samples for geotechnical testing in accordance with BS5930 Code of practice for site investigations and BS1377 Methods of test for soils for civil engineering purposes. The ground investigation should include an analyses of the risk to the site from ground gasses and contaminants including asbestos, heavy metals, polyaromatic hydrocarbons (PAH's) and Total Petroleum Hydrocarbons (TPH's).

2.2.2 Phase I: Geological and Mining Appraisal Report (ref. NE4118)

The Geological and Mining Appraisal Report was carried out by Sub Surface Consultants Ltd. in November 2021.

The geological survey indicated the site was underlain by Lower Coal Measures strata composed of interbedded mudstones, siltstones, subordinate sandstones and occasionally economically important seams of coal, as well as an unnamed sandstone strata in the north west corner of the site.

The geological survey showed the site to be within a fault bounded block with bedded strata lying sub horizontally.

The survey did not have enough information to accurately determine the depth of coal seams underlying the site however it was assessed that the Shertcliffe (Black Band) coal measures may underly the site at a shallow depth.

In addition the Coal Authority indicated they believed there to be coal at or close to the surface which may have been worked at some time in the past, for which they have no record.

It was therefore recommended that rotary boreholes were carried out to assess the geology underlying the site and the possible presence of worked coal seams.

2.2.3 Phase II: Interpretive Ground Investigation Report (ref. NE4118A)

The Phase II Ground Investigation was undertaken by Sub Surface North East Ltd. in October 2022. The investigation comprised 6 mini boreholes taken down to depths of between 1.45 and 4.45 metres, 3 rotary boreholes taken down to depths of between 12.00 and 30.00 metres, and 4 hand dug trial pits excavated to depths of between 0.10 and 0.30 metres. The positions of the exploratory holes are given on Figure 4.

Made Ground was encountered at the surface of the mini boreholes M1, M2, M2A, M3, M3A, and M4 to depths of 1.00, 1.00, 0.80, >1.45, 2.35, and 3.50 metres respectively. Made Ground in M1 and M2A comprised dark grey and dark brown slightly clayey to clayey silty fine to coarse sand and fine to coarse gravel sized fragments of stone brick, concrete and wood with occasional roots and some cobble sized fragments of stone and brick to depths of 0.90 and 0.80 metres respectively. Made Ground in M2, M3, M3A, and M4 comprised dark brown and dark greyish brown sandy to very sandy slightly clayey to clayey silty fine to coarse gravel sized fragments of sandstone, concrete, brick, wood and coal with occasional rootlets and some cobble sized fragments of sandstone to depths of 0.25, 1.00, 2.35, and 3.50 metres respectively.

Underlying the initial layer of Made Ground in M1 and M2, Made Ground comprised very soft dark greyish brown and orangish brown slightly gravelly to gravelly slightly sandy to sandy silty clay with occasional rootlets. Gravel sized fragments in this layer of Made Ground were fine to coarse stone and concrete with occasional cobble sized fragments of stone. Underlying the initial layer of Made Ground in M3, Made Ground comprised light brown silty fine to coarse sand and fine to coarse gravel sized fragments of sandstone.

Made Ground was encountered at the surface of the rotary boreholes R1, R2, and R3 to depths of 2.80, 2.40, and 2.10 metres respectively. Made Ground in the rotary boreholes comprised compact dark brown soil with orange sandstone rubble and brick earth and occasional cobble sized fragments of sandstone blocks to a depth of 0.80 metres, overlying dense orange brown sandstone gravel and cobbles to depths of between 1.10 and 1.90 metres, overlying very dense orange brown sandstone and siltstone gravel and cobbles to depths of between 2.10 and 2.80 metres.

Made Ground was encountered at the surface of the hand dug trial pits HD1, HD2, HD3, and HD4 to depths of >0.30, >0.20, >0.30, and >0.10 metres respectively. Made Ground in the trial pits comprised dark brown clayey silty fine to coarse sand and fine to coarse gravel sized fragments and cobble sized fragments of stone, brick, concrete and suspected cement bound asbestos.

Cohesive deposits were observed underlying the Made Ground in M1, M2, and M2A at depths of 1.00, 1.00, and 0.80 metres respectively to depths of 1.70, >1.45, and 1.40 metres respectively. These comprised in M1 soft low strength becoming firm orangish brown and brownish grey mottled silty clay, in M2 stiff high strength yellowish brown and occasional brownish grey mottled slightly gravelly silty clay with occasional thin bands of mudstone, and in M2A soft orangish brown and brownish grey mottled silty clay to a depth of 1.00 metres overlying, firm to stiff high strength orangish brown and brownish grey mottled slightly gravelly slightly sandy silty clay. The clay is likely to be completely weathered bedrock. Gravel within the cohesive deposits was subangular to subrounded fine to coarse sandstone, ironstone and mudstone.

In addition in R3 at 2.10 metres depth soft greyish brown clay was found overlying strong mudstone.

Bedrock was encountered underlying the cohesive deposits in M1, M2A, and R3 at depths of between 1.40 and 2.10 metres, and the Made Ground in M3A, M4, R1, and R2 at depths of between 2.35 and 3.50 metres.

Bedrock in the mini boreholes comprised extremely weak thinly bedded greyish brown and brownish grey highly to completely weathered mudstone.

Bedrock in the rotary boreholes comprised strong greyish brown mudstone to depths of between 8.10 and 8.70 metres, overlying a 0.40 to 0.50 metre thick band of strong black brown coal to depths of between 8.60 and 9.10 metres, overlying strong dark grey mudstone to depths of between 10.90 and 11.00 metres, overlying strong grey to light grey mudstone to a depths of 16.50 metres in R1 and R2 becoming very strong in R2 below 15.00 metres whilst R3 is completed in this strata at 12.00 metres. At 16.50 metres depth in R1 bedrock comprised very strong light grey mudstone to a depth of 17.10 metres. At 17.10 metres in R1 and 16.50 metres in R2 bedrock comprised strong grey and light grey mudstone with occasional very thin lenses of coal to the end of the rotary boreholes at 30.00 metres. No voids, broken ground or loss of flush was recorded in the rotary boreholes.

Contamination Assessment

Five soil samples taken from the mini boreholes and hand dug trial pits were analysed for a suite of determinants comprising a range of common contaminants. The results of the soil sample chemical analyses were compared with published guideline values for a standard land use of residential with plant uptake (with homegrown produce).

Contamination levels that exceeded the guideline values are shown in Table 2:

TABLE 2 CONTAMINANTS IN SOIL

Determinant	Expl. Hole No.	Depth (m)	Recorded Level (mg/kg)	Published Guideline Value (mg/kg)
arsenic	M1	0.05 to 0.30	45	37
	HD1	0.00 to 0.30	54	37
	HD4	0.00 to 0.40	40	37
lead	M1	0.05 to 0.30	400	200
	M4	1.00 to 2.00	300	200
	HD1	0.00 to 0.30	440	200
	HD4	0.00 to 0.40	310	200

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Guideline values for the assessment can be supplied directly to the Regulator, if requested.

An asbestos screen was undertaken on one soil sample and three cement samples and asbestos was detected within the three cement samples. Analyses determined that white (chrysotile) asbestos was present.

Remedial action was recommended in the form of a cover system of 450mm of clean topsoil/ subsoil in proposed garden and landscaped areas, increased to 600mm in gardens where there is a potential for fruit and/ or vegetables to be grown. In addition the removal of the cement bound asbestos on the surface of the site to a licenced tip.

Site personnel involved in earthworks and excavations should be made aware of the hazards of working with the contaminated materials on site and protective equipment should be provided.

2.3 Environmental Setting

2.3.1 Topography

The area of investigation and the immediate surroundings are generally sloping gently down from the north to the south. The topography of the wider area slopes down from west to east.

2.3.2 Potentially Contaminative Land Use

The Phase I Desk Study report identified that within 250 metres of the site there are nine potentially contaminative industrial land uses including Tenter's 100 metres to the north, south and east, dye works 230 metres to the east and 250 metres to the south west, a spoil heap 100 metres to the east, a mill pond 200 metres to the east, and a woollen mills (later a laundry) 230 metres to the west.

2.3.3 Geology & Aquifer Designation

The likely geology beneath the site has been determined using the British Geological Survey (BGS) Geology of Britain Viewer accessed on 24th May 2023.

No superficial deposits were anticipated to be present beneath the site excepting the possibility for a thin layer of weathered rockhead to be present.

The bedrock beneath the site is anticipated to comprise mudstones, siltstone and sandstones within the Pennine Lower Coal Measures formation, and has been designated as a Secondary A Aquifer comprising permeable layers capable of supporting water supplies at a local scale and in some cases forming an important source of base flow to rivers.

2.3.4 Abstractions

According to data provided by the Environment Agency there are no surface water abstraction licences, one groundwater abstraction licences and no potable water abstraction licences within 500 metres of the site boundary.

The site is not in a Source Protection Zone according to the environmental data report.

2.3.5 Surface Water

The nearest sensitive surface watercourse is a tributary watercourse situated 337 metres north of the site.

2.4 **Source Pathway Receptor Linkages**

Potential sources of contamination identified in the desk study and confirmed by the Phase II investigation are:

2.4.1 Sources

Potential sources of contamination identified in the desk study and confirmed by the Phase II investigation are:

1. Operation of construction plant, machinery and vehicles during the construction process.
2. Lead and arsenic contamination in the Made Ground.
3. Cement bound asbestos fragments on the site surface.

2.4.2 Pathways

Potential pathways between sources and receptors for the proposed development are:

1. Direct contact with and ingestion of contaminated soil
2. Inhalation of dust
3. Lateral migration of contaminants offsite
4. Vertical migration of contaminants to the underlying aquifer
5. Environmental deposition of airborne pollutants
6. Consumption of contaminated fruit and vegetables
7. Inhalation of asbestos due to fragments of cement bound asbestos on site.

2.4.3 Receptors

Potential receptors for the proposed development are:

Construction Phase

1. Site workers during any demolition and construction phases
2. Adjacent properties and local residents

Post Development Phase

1. The residents who will be the end users of the site with young children being the most sensitive.
2. Adjacent properties and local residents.
3. The building structures and buried services including water supply pipes.
4. Controlled waters including the underlying Secondary A Aquifer.
5. Fruit and vegetables grown in the garden for consumption.
6. Vegetation, bushes and trees planted as part of the development of the site.

2.4.4 Potential Pollutant Linkages

Construction Phase

- Direct contact with and ingestion of contaminated soil and inhalation of dust by site workers during construction.
- Inhalation by local residents of dust generated during construction.
- Handling of asbestos containing materials during their removal to a licenced waste site.

Post Development Phase

- Inhalation by local residents of airborne dust arising from exposed soil in any soft landscaping.
- Direct contact with and ingestion of contaminated soil and inhalation of dust arising from exposed soil in any soft landscaping by the residents who will be the end users of the site.
- Consumption of homegrown produce grown in any soft landscaping by the residents who will be the end users of the site.

2.5 Updated Conceptual Ground Model

The conceptual ground model of a site has been updated with regards to contamination sources, pathways and receptors, following the ground investigation, as follows:

TABLE 4 CONCEPTUAL GROUND MODEL

Potential Source	Nature of Hazard	Contaminants Associated with the Source	Pathway	Receptor	Mitigation Action
Made Ground	Contaminants in Made Ground	<u>General Contaminants</u> Arsenic Lead pH	Ingestion of soil	Site Operatives	Limit contact with soil by wearing adequate clothing and PPE.
			Ingestion of dust		
			Ingestion of contaminated vegetable produce		
			Dermal contact	End Users	Provide clean blanket of topsoil/ subsoil.
			Inhalation of dust		
			Inhalation of vapours		
Uptake via contaminated groundwater	Vegetation	Provide clean blanket of topsoil/ subsoil.			
Vertical and lateral movement of mobile contaminants to surface water and groundwater	Controlled Waters	Limit infiltration of leachable contaminants to underlying aquifer. Groundwater should be discharged to a sewer or a licensed discharge point.			
Direct contact	Structures and Services	Provide buried concrete in line with classification.			
Asbestos on/ in ground	Asbestos fibres	Asbestos fibres	Inhalation of fibres	Site Operatives End Users	Limit contact with asbestos bearing material by wearing adequate PPE. Remove visible asbestos bearing material.

3. OPTIONS APPRAISAL

After careful consideration of the risks and benefits, timeframes, costs and sustainability of the available remedial options the Client has decided to adopt the following remedial measures:

- Removal of cement bound asbestos material from the surface of the site to a licenced tip.
- Topsoil Cover System

4. SOIL CONTAMINATION REMEDIATION & VERIFICATION STRATEGY

4.1 Remediation Objectives

Elevated concentrations of lead and arsenic have been determined in the made ground and remedial measures are therefore required to break the source-receptor pathways where the impacted soil is not covered by buildings or permanent hard surfacing.

The aims of the remediation strategy are:

- To provide a remediated site that is safe and suitable for the proposed end use residential with plant uptake (with homegrown produce).
- To ensure the remediation is undertaken in a sustainable manner in compliance with current guidelines and with a suitably robust verification plan.
- To satisfy the requirements of the Local Planning Authority (Kirklees Council).

4.2 Preparatory Works

Preparations for remedial works need to address issues of health and safety, pollution and nuisance in relation to site operatives, visitors to the site and associated plant, surrounding residents and the general public who may be affected by on-site works.

The site area should be made secure to prevent unauthorised access during site remediation works when contaminated materials are to be exposed. Access to site should be regulated by the site manager with records kept of on-site personnel and visitors, lorry movements, materials imported and exported from the site etc. This information should be made available for the Phase IV Validation Report.

4.3 Soil Contamination Remediation: Removal of Cement Bound Asbestos

4.3.1 Cement Bound Asbestos Removal Methodology

No asbestos was detected in the soil sample however three cement samples were tested and white (chrysotile) asbestos was detected. The contaminated material should be removed to a licensed waste disposal facility.

Following removal of all asbestos bearing material on site, the surface soil should be sampled and further contamination analysis undertaken to confirm that the asbestos has been removed. If any asbestos is identified in the soil samples the area should be excavated, the contaminated soil removed to a waste disposal facility and the underlying layer tested to confirm all contaminated material has been removed. The excavated area can then be filled with clean topsoil/ subsoil as appropriate.

4.3.2 Cement Bound Asbestos Removal Verification Plan

An appropriately qualified and experienced person should have a “watching brief” during the remediation and the observations of this person should be made available for the Phase IV Validation Report.

In order to demonstrate that the imported material used in the cover system is suitable for the intended use chemical analyses should be undertaken.

The sides and base of the excavated area should be sampled and further contamination analysis undertaken to confirm that the contaminated material has been removed. If asbestos contamination remains the above should be repeated. The excavated area can then be filled with clean topsoil/ subsoil as appropriate.

The analyses should be carried out after materials have been imported to site, though it would be advisable to undertake some screening prior to import in order to reduce the risk of the imported material being rejected.

A number of soil samples should be tested for a range of common contaminants and include hydrocarbons and asbestos and the testing should be carried out at an MCERTS and UKAS accredited laboratory. The testing results should be assessed against up to date generic assessment criteria for a residential development without plant uptake.

The sampling frequency should be set as a minimum of six samples or one per 100m³ (whichever is greater) for a brownfield source, or a minimum of three samples or one sample per 250m³ (whichever is greater) for a greenfield source, in line with the guidance given in the Yorkshire and Lincolnshire Pollution Advisory Group guidance document 'Technical Guidance for Developers, Landowners and Consultants' Version 4.1 (2021).

The testing suite should include the following contaminants as a minimum:

Arsenic	Nickel
Asbestos	pH
Boron	Phenols
Cadmium	Polynuclear Aromatic Hydrocarbons (16 EPA PAH)
Chromium	Selenium
Copper	Sulphide
Cyanide	Sulphate
Lead	Total Petroleum Hydrocarbons (3-BAND SPECIATION)
Mercury	Zinc

An appropriately qualified and experienced person should assess the results of the contamination analysis which should be compared with up to date UK based generic assessment criteria (GACs) for a residential with homegrown produce end use, to determine whether it is suitable for use in the cover system.

We recommended that the imported clean material is stockpiled and protected/ covered until the analyses is received and assessed.

Transfer documentation for each load of imported clean topsoil/ subsoil should be made available for the Phase IV Validation Report.

The site will be visited by a suitably qualified person to inspect the cover system. The thickness of clean cover system will be checked either by comparison of before and after topographical surveys or by taking out an appropriate number of hand dug trial pits. A photographic record will be made during placement of the cover system or during the trial pitting. The above information will form part of the Phase IV Verification Report.

4.4 Soil Contamination Remediation: Engineered Cover System

4.4.1 Cover System Methodology

In order to break the pathway from the contaminated soils (source) to the end users of the development (receptors) the following measures are to be adopted:

- A 450mm blanket of clean topsoil or topsoil and subsoil will be placed in all soft landscaping and a 600mm blanket of clean topsoil or topsoil and subsoil will be placed in gardens/ areas where there is a potential for fruit and/or vegetables to be grown.
- Deeper rooted bushes and trees should be pit planted on and in clean topsoil/ subsoil.

The above depths have been determined on the basis that in the landscaped areas the soil is unlikely to be dug to a depth greater than one spade depth (approximately 450mm). The proposed depth also allow for some degree of bioturbation, which normally occurs in the upper 300mm, and exceeds the minimum requirement of BRE Report BR465 'Cover Systems for Land Regeneration' which recommends a minimum cover depth of 300mm for imported clean soil based on the maximum concentrations of contaminants found on site.

4.4.2 Verification Plan

An appropriately qualified and experienced person should have a "watching brief" during the remediation and the observations of this person should be made available for the Phase IV Validation Report.

In order to demonstrate that the imported material used in the cover system is suitable for the intended use chemical analyses should be undertaken. The analyses should be carried out after materials have been imported to site, though it would be advisable to undertake some screening prior to import in order to reduce the risk of the imported material being rejected.

A number of soil samples should be tested for a range of common contaminants and include hydrocarbons and asbestos and the testing should be carried out at an MCERTS and UKAS accredited laboratory. The testing results should be assessed against up to date generic assessment criteria for a residential development without plant uptake.

The sampling frequency should be set as a minimum of six samples or one per 100m³ (whichever is greater) for a brownfield source, or a minimum of three samples or one sample per 250m³ (whichever is greater) for a greenfield source, in line with the guidance given in the Yorkshire and Lincolnshire Pollution Advisory Group guidance document 'Technical Guidance for Developers, Landowners and Consultants' Version 4.1 (2021).

The testing suite should include the following contaminants as a minimum:

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Chromium	Selenium
Copper	Sulphide
Cyanide	Sulphate
Lead	Total Petroleum Hydrocarbons (3-BAND SPECIATION)
Mercury	Zinc

An appropriately qualified and experienced person should assess the results of the contamination analysis which should be compared with up to date UK based generic assessment criteria (GACs) for a residential with homegrown produce end use, to determine whether it is suitable for use in the cover system.

We recommended that the imported clean material is stockpiled and protected/covered until the analyses is received and assessed.

Transfer documentation for each load of imported clean topsoil/ subsoil should be made available for the Phase IV Validation Report.

The site will be visited by a suitably qualified person to inspect the cover system. The thickness of clean cover system will be checked either by comparison of before and after topographical surveys or by taking out an appropriate number of hand dug trial pits. A photographic record will be made during placement of the cover system or during the trial pitting. The above information will form part of the Phase IV Verification Report.

5. RISKS TO SITE OPERATIVES

Site personnel involved in earthworks and excavations should be made aware of the hazards of working with contaminated materials found on site. Strict personal hygiene should be observed and gloves, overalls and boots should be worn. Washing and messing facilities should be made available on site and smoking should be prohibited. In addition asbestos grade dust masks should be available to workers on site.

6. ENVIRONMENTAL MITIGATION MEASURES & WASTE MANAGEMENT

6.1 Earthworks

Earthworks undertaken during dry weather might generate dust and in this instance dust should be damped down and dust masks made available to site operatives. In addition stockpiled materials should be sheeted over to prevent excessive airborne dust being formed which could potentially migrate off site.

If groundwater is to be pumped out of excavations, then contamination analyses should be undertaken for groundwater to be disposed of, and the results submitted to the appropriate authority or a waste disposal operator to determine the most cost effective method of disposal. Groundwater should not be discharged to a sewer without firstly obtaining a discharge consent from the appropriate authority.

6.2 Controlled Waters

Given the relatively low exceedances of contaminants within the soil samples, and the distance to the nearest sensitive watercourse (337 metres), the risks to controlled waters including groundwater were determined to be “Low”.

The proposed remedial measures will not significantly alter the groundwater regime on site and in our opinion the risks to controlled waters do not warrant any further consideration.

6.3 Waste Soil Management

If it is necessary to reduce levels to accommodate the proposed remediation scheme, then classification of the waste soil arisings should be undertaken prior to removing it to a licensed waste disposal facility.

All vehicles carrying contaminated material should be securely sheeted and the wheels and undercarriages cleaned before leaving site to ensure that hazardous materials are not dropped onto public roads.

Transfer documentation for each load of contaminated material exported from the site will be obtained and made available for the Phase IV Validation Report.

7. CAVEATS, ASSUMPTIONS AND CONTINGENCY PLAN

It should be appreciated that only a small proportion of the area to be developed has been sampled and consequently the recommendations made and opinions expressed in our reports can only be applied to such conditions as were encountered in the exploratory holes.

The exploratory holes indicate a nature and degree of similarity to the extent that we consider them likely to be representative of the natural ground conditions. However, no guarantee can be given. For the purposes of this remediation strategy it is assumed that the findings of the Phase I and Phase II investigations are representative of the site conditions, however with any site it is possible that unrecorded potentially contaminative activities may have taken place, or that zones of contamination exist which have not been encountered by the intrusive investigation.

We recommend that a contingency plan is put in place to deal with unforeseen contaminated ground being found. In this regard a “watching brief” should be employed during earthworks and the following procedure followed if unforeseen ground conditions are encountered:

- Cease earthworks.
- Liaise with the Client and/ or Regulator.
- Agree revised course of action with the Client and/ or Regulator.
- Revise Remediation Statement, if necessary.

8. VERIFICATION REPORT

On completion of the remedial works a Phase IV Verification Report should be produced by the independent suitably qualified person. The report should include records of on-site observations together with contamination analysis certificates, transfer notes, discharge consents, specifications etc.

9. GENERAL

This Remediation Statement should be submitted to the Regulator, for approval in writing, prior to commencement. On completion of the actions set out in the Phase III Remediation Statement and receipt of an instruction, we would be happy to validate the remedial works and prepare a Phase IV Validation Report.

Should the proposed development of the site be undertaken in stages, we would be happy to provide a Phase IV Validation Report at each stage of the development.

We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or Mr David Simpson at our Ossett office.

SUB SURFACE CONSULTANTS LIMITED
REPORT No. NE4118C
MAY 2023

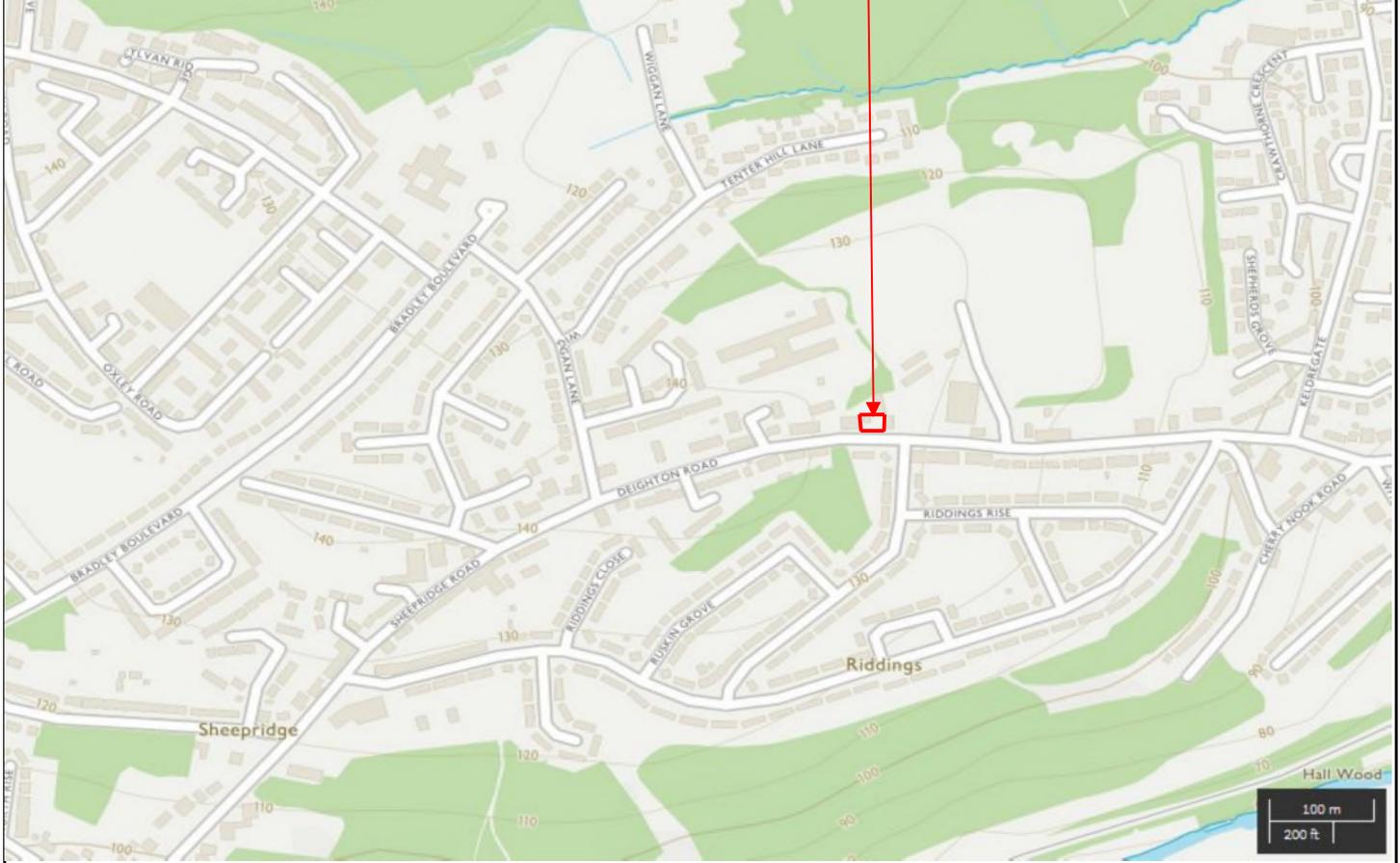
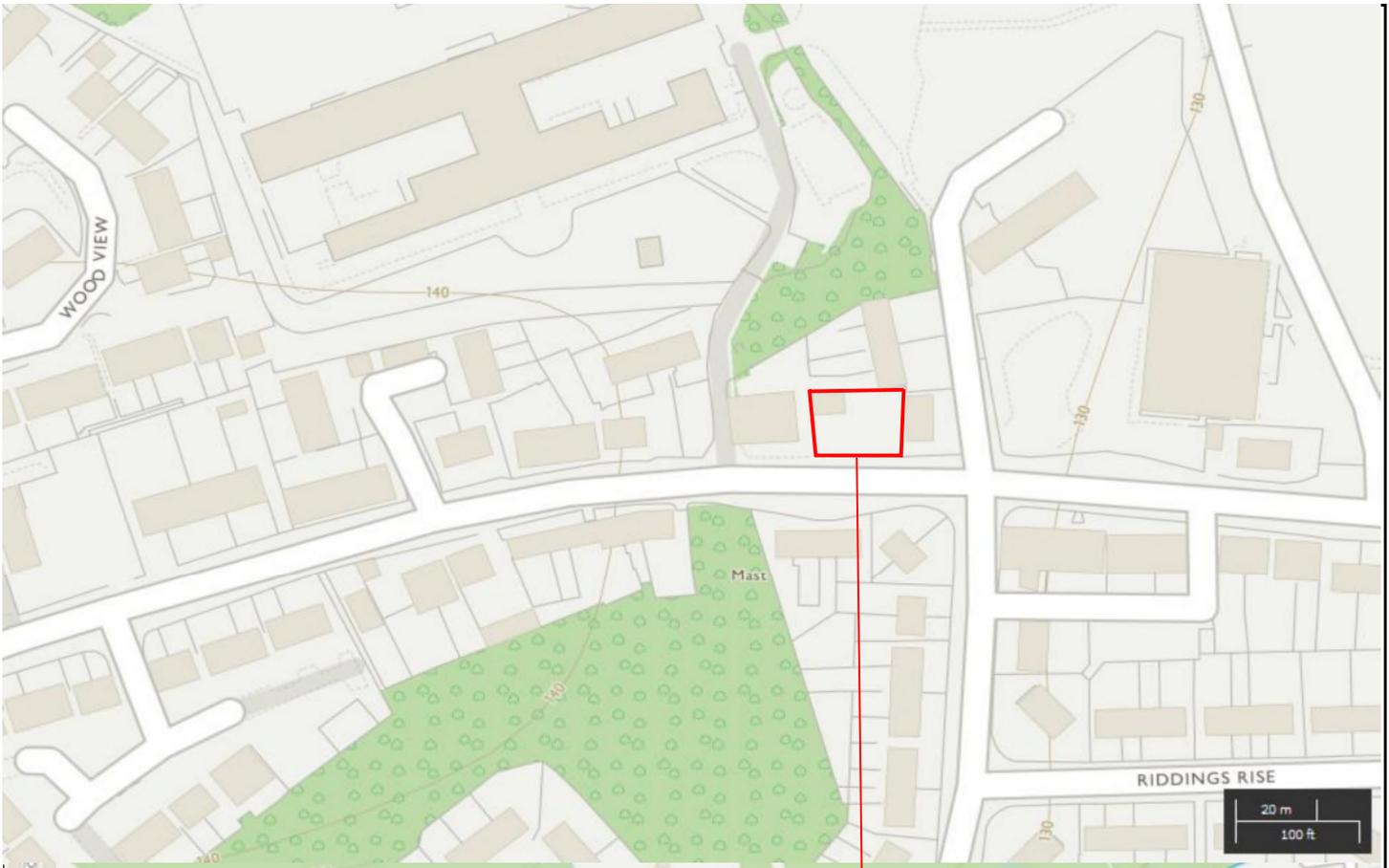
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L. A. W. McCall B.Sc.(Hons.).
Geotechnical Engineer
For and on behalf of
Sub Surface Consultants Limited

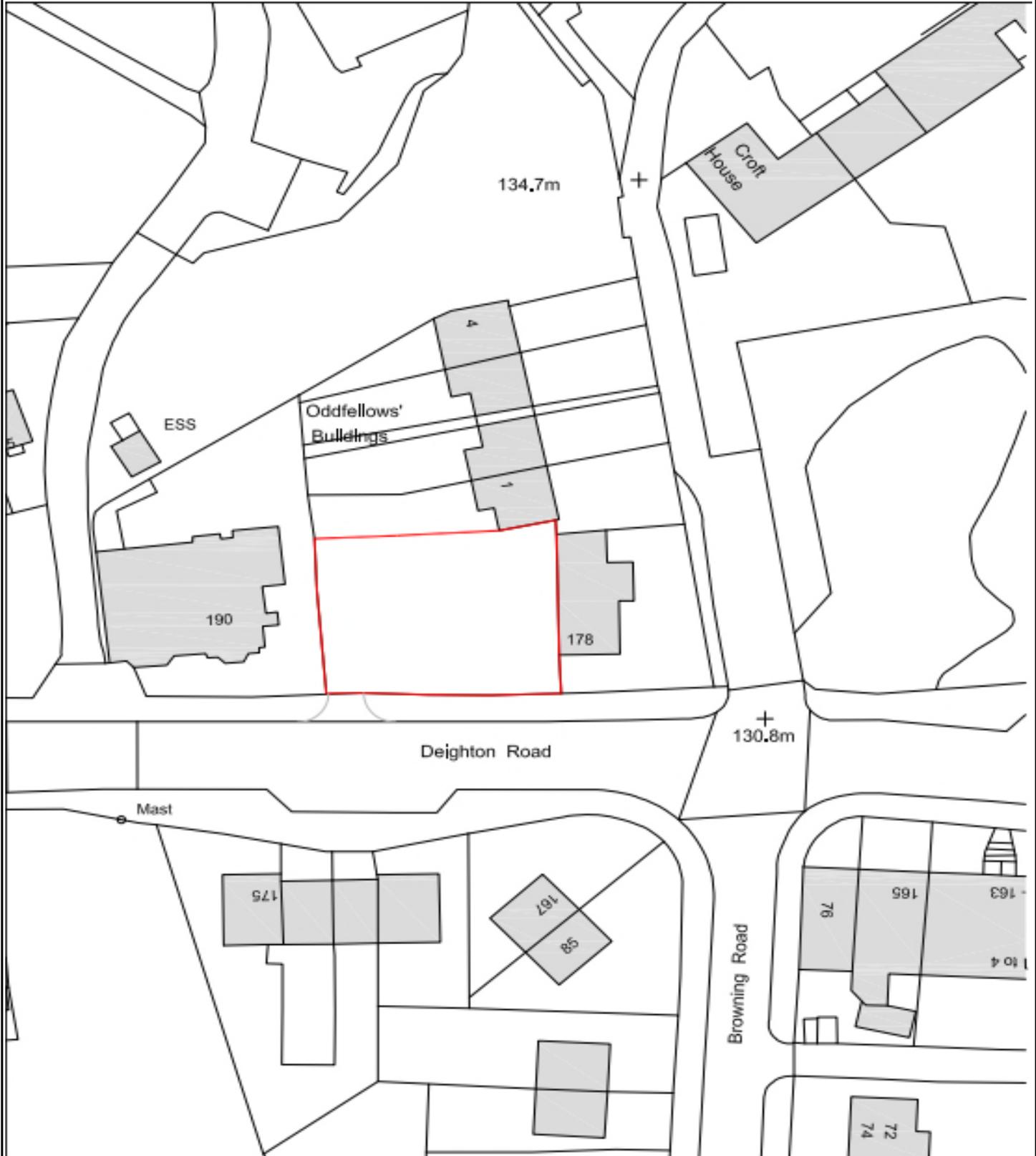
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C. A. Marsden B.Sc.(Hons.), C.Eng., M.I.C.E.
Director
For and on behalf of
Sub Surface Consultants Limited.

FIGURES



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	General Site Location			
	Site 188 DEIGHTON ROAD, HUDDERSFIELD, WEST YORKSHIRE, HD2 1JJ	Date Drawn 25-May-23	Date Checked	Orientation 
Client JAMIE TULLY	Drawn By LMB	Checked By	Scale -	Figure No. 1



Location Plan (1:500 @ A3)

 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Site Location			
	Date Drawn 25-May-23	Date Checked	Orientation 	Job No. NE4118C
Site 188 DEIGHTON ROAD, HUDDERSFIELD, WEST YORKSHIRE, HD2 1JJ	Drawn By LMB	Checked By	Scale -	Figure No. 2
Client JAMIE TULLY				



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development Plan			
	Date Drawn 25-May-23	Date Checked	Orientation 	Job No. NE4118C
Site 188 DEIGHTON ROAD, HUDDERSFIELD, WEST YORKSHIRE, HD2 1JJ	Drawn By LMB	Checked By	Scale -	Figure No. 3
Client JAMIE TULLY				



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Exploratory Hole Location Plan			
	Site 188 DEIGHTON ROAD, HUDDERSFIELD, WEST YORKSHIRE, HD2 1JJ	Date Drawn 25-May-23	Date Checked	Orientation 
Client JAMIE TULLY	Drawn By LMB	Checked By	Scale -	Figure No. 4