

Remedial Method Statement

At:

81/81a Whinbush Road,
Hitchin,
SG5 1PZ

For:

Viva Property Group Limited

Private and Confidential

Ref: 5551 24 01 15 Rpt 08 Rev A TI BB

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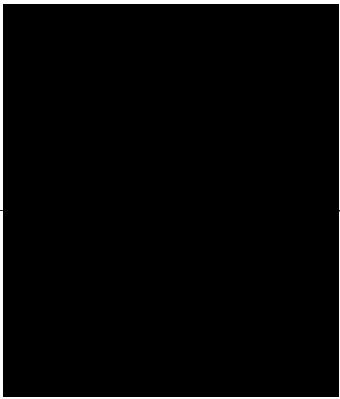


Sevenoaks
Environmental
Consultancy Ltd



Association of Geotechnical &
Geoenvironmental Specialists



This report has been produced in accordance with the Sevenoaks Environmental Consultancy Quality Assurance System			
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CONTENTS

1 Introduction	4
1.1 Reason for Report	4
1.2 Scope of Report	4
1.3 Site Description	5
2 Summary of Contamination Assessment	6
2.1 Introduction	6
2.2 Review of Previous Reports	6
3 Remedial Strategy	15
3.1.0 Specific Remediation Strategy Requirements	15
3.1.1 Site Work and Operational Matters	15
3.1.2 Site Clearance	15
3.1.3 Discovery Strategy	16
3.1.4 Decommissioning & Removal of Below Ground Fuel Storage Tank	16
3.1.5 Watching Brief During Preparatory Groundwork & Remedial Excavation	17
3.1.6 Areas of Proposed Gardens & Imported Material Requirements	18
3.1.7 Appropriate Disposal of Waste Arisings	18
3.1.8 Groundwater & The Control of Surface Water Runoff	20
3.1.9 Ground Gas Risk Management	21
3.1.10 Site Traffic	21
3.1.11 Water Supply Pipe	21
3.1.12 Health and Safety for Site Operatives	21
3.1.13 Variations	22
3.1.14 Verification Report	22
4 GENERAL LIMITATIONS AND EXCEPTIONS	23
Appendices	
Appendix A – Figures	
Figure 1 – Proposed Development Layout Plan	
Appendix B – Discovery Strategy	
Appendix C – Validation Sample Chemical Criteria	

Introduction

1.1 REASON FOR THE REPORT

Sevenoaks Environmental Consultancy Ltd (SEC) was appointed by the Viva Property Group Ltd to prepare a Remediation Strategy in support of proposed re-development of the site known as 81/81A Whinbush Road, Hitchin, SG5 1PZ.

The site was previously developed with a residential property in the northwest corner and a disused former vehicle repair garage with a single-story office / reception building along the northern boundary, a forecourt / yard area to the centre of the site and other single story car repair garage and storage buildings along the southern boundary. It is proposed to clear the and it is proposed to redevelop the site with residential properties and an extension to the existing house (see Appendix A Figure 1 for Proposed Development Layout Plan).

Previous reports have been produced for the site including;

- Geo-Environmental Desk Study Report (ref; 4996 22 10 10 Rpt 01 Rev 01 AK DA) dated October 2022;
- Preliminary Geo-Environmental Site Investigation Report (ref; 5445 23 08 04 Rpt 01 Rev A BD BB) dated August 2023;
- Ground Gas and Groundwater Addendum Letter Report (ref 5551 24 01 05 Ltr Rpt 07 TI BB) dated January 2024;
- WM3 Waste Classification Assessment (ref: 5457 24 01 18 Ltr Rpt 01 Rev A TI WS) dated January 2024; and
- Supplementary Geo-Environmental Site Investigation Report (ref; 5551 24 01 05 Ltr Rpt 07 Rev A TI BB); dated January 2024

The findings from these previous assessment reports are summarised in more detail in Section 2.0 and this Remedial Method Statement should be considered with these previous reports.

The previous reports and this Remedial Method Statement have been produced in support of Planning Condition 11(c)(i) associated with the proposed development of the site under Planning Permission 22/02953/FP. Additionally, this Remedial Method Statement aims to inform the redevelopment Contractor of the remedial strategy / processes to be employed during the proposed development such that potential contaminated land risks to receptors are managed appropriately during the site's redevelopment and that any remedial work undertaken is adequately validated and documented to the satisfaction of the LPA.

1.2 SCOPE OF REPORT

In order to help discharge contaminated land planning conditions, this report references and discusses earlier contaminated land assessment reports, which have been written previously to help determine the ground contamination status of the site. This report provides details on the strategy for inspecting and remediating ground contamination identified at the site as well as other site-specific operational details required to help mitigate potential

risks to receptors associated with the proposed development including construction workers, future site users, neighbouring site's and controlled waters.

1.3 SITE DESCRIPTION

The site was located on the northern side of Whinbush Road, Hitchin. Approximately on Ordnance Survey (OS) national grid reference of 518849, 229651. The site boundary forms an approximately square shaped plot accessible from Whinbush Road to the west. At the time of writing, the site comprised an unoccupied residential property to the northwest corner and a disused former vehicle repair garage with a single-story office and reception building along the northern boundary, a forecourt in the centre of the site laid to asphalt hardstanding and the former vehicle repair garage and store along the southern boundary. A below ground fuel storage tank was also located beneath the yard area adjacent to the site entrance off Whinbush Road.

The ground level across the site and locally to the site was noted to be generally flat.

The site was primarily situated within a residential setting with adjacent residential buildings to the northeast and south and a church and car repair garage to the west.

2 Summary of Contamination Assessment

2.1 INTRODUCTION

Previous contaminated land assessment reports for the site have been carried out by SEC. Whilst the following provides a brief summary of the geo-environmental findings recorded by the previous reports reference should be made to the aforementioned documents for a more comprehensive view of the results and their implications.

2.2 REVIEW OF PREVIOUS REPORTS

Geo-Environmental Desk Study Report by Sevenoaks Environmental Consultancy Ltd (Report Ref: 4996 22 10 10 RPT 01 REV A AK DA) dated October 2022:

The following provides a brief review of the previous Desk Study Report that was produced for the site in October 2022.

The Desk Study was written based upon the same proposed residential development as this Remedial Method Statement and also in support of the same proposed development.

The Desk Study identified that the site was in active use as a vehicle repair garage with an adjoining residential property. A central MOT forecourt / yard was noted to be laid to asphalt hardstanding with an existing a residential property in the north-west corner, a single-storey office and reception building along the northern site boundary and a garage building immediately adjacent to the southern boundary was used for vehicle repairs and included 7no. repair bays. The floor of the Garage building was laid to concrete hardstanding. 5no. of the bays to the western side of the building appeared to be used for vehicle servicing / repairs and the remaining bays were in use for storage of parts, oils and tools. Vehicle ramps were used and as such no inspection pit(s) were noted. Some areas of staining were noted across the yard and a number of vehicles were parked within this area. The south-western corner of the site was used to store a number of 199L oil drums (Fully Synthetic Low SAPS Engine Oil) and 5L oil bottles (Fully Synthetic Gear Oil) and the hardstanding in this area of the site was heavily oil stained.

Historically the site was identified to have been undeveloped until 1898 when buildings were built in the northeast corner of the site. At this time a pump was also identified on site. By 1923 the previous buildings and pump were removed, and a new building was developed along the northern boundary of the site. In the 1960's a building was developed along the southern boundary of the site.

Offsite historical development included a garages ~7m south of the site, a nursery ~20m north/north-west of the site since 1881, a Gas Works ~80m north-west of the site since 1881, a Smithy ~70m north of the site since 1898, an Electrical Power Station ~220m south-west of the site since 1923, 2 No. Depots ~140m and ~160m north of the site since 1964, an Electrical Substation ~30m north of the site since 1976, a Works ~30m west of the site since 1992; and a discharge consent ~145m southwest associated with the release of a Sewage overflow into the River Hiz.

The British Geological Survey (England and Wales Sheet 288 Solid and Drift Edition) indicated that the site was

underlain by bedrock geology comprising West Melbury Marly Chalk Formation (Chalk) with overlying superficial deposits comprising Glaciofluvial Deposits, Mid Pleistocene (Sand and Gravel), Lowestoft Formation (Diamicton). Nearby BGS borehole records recorded conditions consistent with geology identified by the Geological Map and they recorded that the base of the superficial deposits was unproven at 10m bgl.

The geology underling the site was identified to consist of a Secondary Undifferentiated Aquifer associated with the superficial deposits and a Principal Aquifer associated with the bedrock formation. The site was not located within a Source Protection Zone. Additionally, no groundwater abstractions were identified locally to the site, for potable water supply purposes.

The closest surface water feature to the site was the river Hiz located ~54m to the west. The groundwater gradient regionally was inferred to be towards the south / south-west, however locally the groundwater gradient was noted to possibly be influenced by the river Hiz (Hitchin) and flow may be towards the north.

The Desk Study identified potential on-site sources of contamination including;

- Made Ground associated with the previous phases of development on site since 1898; and
- Previous site use as a Builders Yard, lock up garages, car servicing / repairs garage with potential contaminative features including storage of vehicles, parts, oils, and fuel with evidence of leaked / spilt hydrocarbons given oil staining to the hardstanding.

Potential off site sources of contamination identified included;

- A number of vehicle repair garages (the closest was ~7m south of the site);
- A Nursery ~20m north/north-west of the site since 1881;
- A Gas Works ~80m north-west of the site since 1881;
- A Smithy ~70m north of the site since 1898;
- An Electrical Power Station ~220m south-west of the site since 1923;
- Depots ~140m and ~160m north of the site since 1964;
- An Electrical Substation ~30m north of the site since 1976;
- A Works ~30m west of the site since 1992; and
- A discharge consent of sewage ~145m southwest of the site into the River Hiz.

Further to the risk assessment undertaken the Desk Study recommended the following;

- That in advance of any intrusive investigation that a CCTV drainage survey be completed to determine the current layout and condition of the existing drainage system;
- That further intrusive site investigation be conducted including a ground gas risk assessment in accordance with CIRIA C665 and chemical characterisation of the soil and groundwater (if encountered) beneath the site, to help clarify the potential risks associated with the site's previous uses including a Vehicle Servicing Garage, Made Ground relating to the previous phases of development and the potentially contaminative off-site sources identified. Testing of samples collected as part of the Site Investigation should include for the potential contaminants of concern associated with these sources, including asbestos, metals, speciated PAHs, VOCs and hydrocarbons;

- That a waste classification assessment (including WAC Analysis and a WM3 Assessment in accordance with EA WM3 guidance) be conducted to help inform future waste disposal requirements, associated costs and ensure regulatory compliance.

Geo-Environmental Site Investigation Report by Sevenoaks Environmental Consultancy Ltd (Report Ref: 5445 23 08 04 Rpt 01 Rev A BD BB) dated August 2023:

Further to the recommendations of the Desk Study SEC conducted a Geo-Environmental Site Investigation in August 2023 to support the planning application Ref: 22/02953/FP for the proposed redevelopment of the site and to help address planning condition 13.

The site location layout and condition at the site of the site investigation was the same as that identified by the Desk Study.

The site investigation comprised the conduct of 5 No. mini boreholes (WS01 – WS05) and 1 No. hand dug inspection pit (HP01) across the site in positions located to target point sources (such as the storage of oil drums in the south eastern corner of the site), building footprints and to provide general coverage.

Made Ground was encountered in all exploratory holes ranging in depth up to between 0.20m bgl (WS03) and 1.20m bgl (HP01). Typically, the Made Ground appeared to be limited to shallow depth except for HP01 in the southeast corner of the site where the base of the Made Ground was unproven at 1.2m bgl. Hardstanding across the site both concrete and tarmacadum surfacing. Where encountered the concrete hardstanding was 0.1m thick except for WS04 where concrete was identified beneath tarmacadum surfacing which was 0.15m thick. Tarmacadum where encountered was 0.05m thick. Underlying the hardstanding, Made Ground was identified to vary between gravelly Clay, sandy Gravel, and gravelly Sand, with brick, concrete, flint and clinker (HP01) fragments.

Underlying the Made Ground natural deposits were relatively homogeneous across the site and comprised gravelly Clay proven up to 4.0m bgl. Some variable natural material sandwiched between the Made Ground and natural gravelly Clay was identified within WS01 which comprised a horizon of gravelly Sand to 1.30m bgl over Sand to 2.0m bgl.

Groundwater was not encountered during drilling within 5 No. Windowless Sampler boreholes.

A below ground fuel storage tank was identified during the site investigation fieldwork. The tank was located adjacent to WS05 towards the western side of the site. Observations locally from WS05 appear to suggest that major impact may not have occurred associated with the tank.

Based upon the risk assessment undertaken as part of the previous Geo-Environmental Site Investigation, the following was recommended:

- That groundwater and ground gas monitoring be completed, and the findings be presented in an Addendum Report to supplement the findings of this assessment to date. Analysis of any groundwater encountered should include contaminants of concern including hydrocarbons, VOCs and BTEX. It is also therefore

recommended that the existing monitoring boreholes be retained and afforded protection until the LPA have approved the contaminated land assessment for the site;

- That further investigation be conducted in the front garden of the existing residential property in the northwestern corner of the site which could either be completed during the period of remaining environmental monitoring and reported within the Addendum Report or be conducted later as a separate phase of investigation. Additionally further validity investigation and analysis is recommended beneath the below ground fuel tank following its decommissioning and removal from site;
- That Petroleum Officer's Records be obtained to establish any further information that may be available for the below ground fuel storage tank that has been identified on site;
- That a Watching Brief be maintained by an Environmental Consultant during the removal of the existing hardstanding covering the site following demolition of the existing buildings to be removed and during the preparatory redevelopment groundwork. Confirmatory chemical laboratory analysis of representative samples should be undertaken for any suspect material identified for the contaminants of concern to help confirm an absence of potentially unidentified contamination;
- That the below ground fuel storage tank be appropriately decommissioned, a degassing certificate be obtained and the tank be removed from site by a tank decommissioning specialist under the supervision of an Environmental Consultant, in accordance with an LPA approved Remedial Method Statement. The tank and any contents e.g fuel, tank bottoms or foam should be appropriately disposed of to a suitably licensed waste management facility in accordance with current Environment Agency WM3 Guidance before the tank is removed / disturbed to help prevent unauthorised releases during removal / decommissioning;
- That areas of proposed soft landscaping / gardens be provided with a certified "clean" cover system, comprising a minimum thickness of 300mm imported topsoil laid over a hi-visibility marker layer (permeable geotextile or similar). The recommended cover system thickness should be re-evaluated in light of any further ground investigation data that becomes available. Subject to existing and proposed site levels existing Made Ground may require excavation and appropriate disposal from site to afford room for the provision of a cover system in garden / landscaped areas. Prior to the importation of topsoil, the supplier's chemical batch data should be provided to an Environmental Consultant for approval in relation to human health and following provision of imported topsoil on site the cover system should be certified including representative chemical analysis to corroborate the initial supplier batch data and that the minimum thickness has been provided over a hi-visibility marker layer. The "clean" cover system should provide in accordance with an LPA approved Remedial Method Statement and documented within a Verification Report for Regulatory approval;
- That a Discovery Strategy should be implemented on site during the redevelopment works which should include for the immediate reporting of any potential indicators of ground or water contamination (e.g. cement bonded asbestos sheeting fragments, ash/clinker or hydrocarbon odours) for additional separate assessment by an Environmental Consultant;

- That groundworkers should wear appropriate PPE and employing high standard of personal hygiene (i.e. washing hands, working in well-ventilated areas, avoid confined spaces, avoiding contact with the soil and not smoking) during all excavation work;
- That all waste material generated during the site's redevelopment should be disposed of from site to suitably licenced waste management facilities in accordance with current Environment Agency WM3 Guidance. Any waste arisings to be disposed of to landfill will also require chemical WAC testing to inform the correct classification for any receiving facility. The recommended Watching Brief by an Environmental Consultant during preparatory groundwork should help to ensure waste arisings are correctly segregated according to waste streams and waste disposal classification. All waste disposal tickets should be retained for duty of care auditing purposes. If waste arisings are to be considered for re-use on site then it should be noted that this would require implementation of the CL:AIRE CoP or an approved EA waste exemption permit;
- That the water supplier be contacted to determine their requirements with respect to the type of water supply pipe included within the design of the new properties. Subject to their requirements it may be necessary to install chemically resistant barrier water supply pipe. It is recommended therefore that correspondence be obtained from the water supplier which confirms standard water supply pipe is suitable or alternatively chemically resistant water supply pipe should be afforded to the new properties; and
- That prior to the commencement of any remedial work a Remedial Method Statement should be approved by the Local Planning Authority. In addition, any remedial work undertaken should be documented within a Validation Report

WM3 Waste Soil Disposal Assessment (5457 24 01 18 Ltr Rpt 01 Rev A TI WS) dated January 2024 by SEC

A WM3 Waste Soil Disposal Assessment was produced by SEC, to help inform appropriate Waste Classification for the disposal of arisings anticipated in relation to the redevelopment of the site.

The predominant material types that are likely to be generated for off site waste disposal were identified to include;

- 2 no. Stockpiles of Made Ground (consisting of MOT 1 and gravelly Clay arisings respectively).
- 3 Types of hardstanding (tarmac, concrete (both unimpacted by hydrocarbons and impacted by hydrocarbons)).
- 2 types of Made Ground (gravelly Clay and sandy Gravel).
- 2 type of Natural Strata (gravelly Sand and gravelly Clay).

The HazWasteTM Waste Classification Assessment classified the these material types with the following waste codes.

- 2 no. Stockpiles of Made Ground (consisting of MOT 1 and gravelly Clay arisings respectively) = both stockpiles as Non-Hazardous waste under code 17 05 04

- 3 Types of hardstanding (tarmac, concrete (both concrete hardstanding that is unimpacted by hydrocarbons and impacted by hydrocarbons) = tarmac 17 03 02 and concrete unimpacted by hydrocarbons under code 17 01 01 however the hydrocarbon impacted concrete was classified as Hazardous Waste under waste code 17 01 06*.
- 2 types of Made Ground (gravelly Clay and sandy Gravel) = Non-Hazardous waste under waste code 17 05 04 except for the Made Ground in the south western corner of the site locally to WS01 and HP103 where the Made Ground was classified as Hazardous waste under waste code 17 05 03 given elevated concentrations of zinc
- 2 type of Natural Strata (gravelly Sand and gravelly Clay) = Non-Hazardous waste under waste code 17 05 04 except for the natural material in the south western corner of the site locally to WS01 and HP103 where natural material was classified as Hazardous waste under waste code 17 05 03 given elevated concentrations of zinc (similarly to the overlying Made Ground).

WAC analysis was also undertaken for some of the waste types to help facilitate disposal to landfill. The Made Ground (gravelly Clay) was identified to require disposal to a landfill licensed to receive Non-Hazardous Waste whereas the WAC test for the other Made Ground type (sandy Gravel) indicated that it was suitable for disposal to an inert landfill. The WAC analysis on natural material indicated that the gravelly Clay required disposal to a landfill licensed to receive Non-Hazardous waste whereas the sandy Clay material was suitable for disposal to an inert landfill.

Given the different waste classifications waste arisings generated during remediation and redevelopment of the site it was recommended that arisings be segregated to facilitate appropriate off site disposal to suitably licensed waste disposal facilities in accordance with current WM3 guidance.

Ground Gas Risk Assessment Addendum Letter Report (Ref: 4551 22 07 11 Ltr Rpt 01 Rev A AS SP) dated December 2022 by SEC

A Ground Gas Risk Assessment Addendum Report was produced to provide comment on the environmental ground gas and groundwater monitoring results recorded for the site.

6 No. rounds of ground gas and groundwater monitoring were conducted including monitoring at periods of low / falling atmospheric pressure. Maximum concentrations of methane did not exceed 0%, carbon dioxide was recorded up to 0.65 and oxygen was recorded to be slightly depleted down to 12.1%. Typically VOCs were not recorded to be elevated more than 10ppm however during a single round of monitoring concentrations were recorded up to 288.8ppm within WS01. Flow rates were negligible and did not exceed 0l/hr.

Groundwater levels were recorded between 1.25m bgl and 3.95m bgl and analysis of the groundwater recorded slightly elevated concentrations of ammonia up to 942ug/l (WS02) and TPH up to 36ug/l (WS02).

It was subsequently recommended that whilst ground gas risks appeared to be low that residual risks associated with potential vapour ingress should be mitigated by the inclusion of a passively ventilated sub-floor void beneath suspended floor slabs in the design of the proposed development, to help ventilate any vapours that may accumulate. No further action was recommended in relation to the groundwater beneath the site given that the

potential sources of the ammonia (existing drainage system) and hydrocarbons (below ground fuel tank and former site use as a garage) on site would be removed by the redevelopment and that the slightly elevated concentrations of these contaminants would naturally attenuate.

Supplementary Geo-Environmental Site Investigation Report (Ref: 5551 24 01 05 Ltr Rpt 07 Rev A TI BM) dated January 2024 by SEC

Further to the findings of the Preliminary Geo-Environmental Site Investigation Report a supplementary investigation was conducted to help satisfy the LPA's requirements in order to facilitate some additional investigation of areas of the site within the footprint of proposed gardens, additional testing of the ground in areas of former above ground fuel storage for VOCs and hydrocarbons (eg southeast corner of the site where oil drums had been kept) and beneath existing building footprints. The scope of Supplementary Site Investigation was specified within a Proposed Geo-Environmental Site Investigation Scheme (ref: 5551 23 10 18 Ltr 01 Rev A TI BB) dated November 2023 which was approved by the LPA and essentially comprised a series of hand dug inspection pits. In addition the report included a search of the Petroleum Officer's records which confirmed that a 50 gallon petrol tank with a former fuel pump had been located to the southern side of the site. It is noted that the fuel pump had been removed but the tank remained beneath the site.

Analysis of soil samples recovered from the additional exploratory holes conducted identified further elevated concentrations of metals within HP103 which was located in the south western corner of the site close by to the previous WS01 position. Elevated metals within the Made Ground at HP103 included lead, mercury and zinc as well as elevated PAHs which exceeded generic human health guideline values (except zinc which was elevated with respect to plants rather than human health) based upon guidance values for the proposed residential end use with home grown produce.

The concrete ground slab across the footprint of the garage building located to the southern end of the site was identified to be impacted with elevated concentrations of hydrocarbons. Similarly the Made Ground beneath the hardstanding within HP101, HP102 and HP103 exhibited elevated concentrations of hydrocarbons which were considered to suggest that leaked / spilt fuels and oils used and stored in the southern area of the site had penetrated beneath the existing ground slab. However, analysis of the natural soils beneath the Made Ground did not identify elevated hydrocarbon concentrations and as such the impact does not appear to have migrated deeper than the near surface soils up to ~1.0m bgl.

Potential risks considered in relation to the near surface soils contamination identified were noted to primarily relate to groundworkers involved in the preparatory groundwork required to build the proposed development and in relation to future site occupants in the proposed garden / landscaped areas. Potential risks to site neighbours and controlled waters were considered to be low.

Previous recommendations made within the earlier site investigation report were indicated to be remain applicable in order to mitigate potential risks to the receptors associated with the proposed development. The recommendations from the first phase of site investigation were updated and included;

- That the below ground fuel storage tank be appropriately decommissioned, a degassing certificate be obtained and the tank be removed from site by a tank decommissioning specialist under the supervision of

an Environmental Consultant, in accordance with an LPA approved Remedial Method Statement. The tank and any contents e.g fuel, tank bottoms or foam should be appropriately disposed of to a suitably licensed waste management facility in accordance with current Environment Agency WM3 Guidance before the tank is removed / disturbed to help prevent unauthorised releases during removal / decommissioning. Additionally validation samples should be recovered from beneath the tank:

- That a Watching Brief be maintained by an Environmental Consultant during the removal of the existing hardstanding covering the site and during the preparatory redevelopment groundwork, to facilitate segregation of hydrocarbon contaminated concrete, tarmac and unimpacted concrete for appropriate off site disposal to a suitably licensed waste management facility. In addition near surface remedial excavation is required to remove Made Ground that is impacted with elevated concentrations of hydrocarbons, meals and PAHs from the southern end of the site in the vicinity of HP101, HP103 and WS01 up to 1.0m bgl (or natural material whichever is shallowest). Remedial excavations should be certified by basal soil validation sample analysis for the contaminants of concern and confirmatory chemical laboratory analysis of representative samples should be undertaken for any suspect material identified elsewhere across the site during the removal of hardstanding and preparatory groundwork, to help confirm an absence of impact;
- That areas of proposed soft landscaping / gardens be provided with a certified “clean” cover system, comprising a minimum thickness of 300mm imported topsoil laid over a hi-visibility marker layer (permeable geotextile or similar) although a thicker cover system should be provided to 600mm thickness in the gardens proposed within the south western corner of the site where deeper impacted soils were identified. Subject to existing and proposed site levels existing Made Ground may require excavation and appropriate disposal from site to afford room for the provision of a cover system in garden / landscaped areas. Prior to the importation of topsoil, the supplier’s chemical batch data should be provided to an Environmental Consultant for approval in relation to human health and following provision of imported topsoil on site the cover system should be certified including representative chemical analysis to corroborate the initial supplier batch data and that the minimum thickness has been provided over the a hi-visibility marker layer. The “clean” cover system should provide in accordance with an LPA approved Remedial Method Statement and documented within a Verification Report for Regulatory approval;
- That a Discovery Strategy should be incorporated into the site induction for all operatives during the redevelopment works and should include for the immediate reporting of any potential indicators of ground or water contamination (e.g. cement bonded asbestos sheeting fragments, ash/clinker or hydrocarbon odours) for additional separate assessment by an Environmental Consultant;
- That groundworkers should wear appropriate PPE and employing high standard of personal hygiene (i.e. washing hands, working in well-ventilated areas, avoid confined spaces, avoiding contact with the soil and not smoking) during all excavation work;
- That all waste material generated during the site’s redevelopment should be disposed of from site to suitably licenced waste management facilities in accordance with current Environment Agency WM3 Guidance. Any waste arisings to be disposed of to landfill will also require chemical WAC testing to inform the correct classification for any receiving facility. The recommended Watching Brief by an Environmental Consultant during preparatory groundwork should help to ensure waste arisings are correctly segregated according to waste streams and waste disposal classification. All waste disposal tickets should be retained

for duty of care auditing purposes. If waste arisings are to be considered for re-use on site then it should be noted that this would require implementation of the CL:AIRE CoP or an approved EA waste exemption permit;

- That chemically resistant water supply pipe (also known as barrier pipe) included within the design of the new properties to help mitigate potential residual risks associated with ground contamination impacted the new water supply pipework to be provided on site; and
- That a Remedial Method Statement be submitted for approval by the Local Planning Authority prior to for the conduct of the recommended remedial work. In addition any remedial work undertaken should be documented within a Validation Report.

3 Remedial Strategy

3.1.0 SPECIFIC REMEDIATION STRATEGY REQUIREMENTS

This section provides further details to specific issues or areas of the proposed development where the remediation strategy should be applied. It is designed to be used as an aid to understanding the remediation specifics for the proposed development and should not be considered in isolation.

3.1.1 SITE WORKS AND OPERATIONAL MATTERS

During the proposed remedial works the site will be well managed, kept secure from public access and the contractor should ensure as a minimum that all works are conducted in accordance with the following;

- Environmental Protection Act, 1990 Part 111 Sections 79-85;
- Environmental Permitting Regulations 2016
- Control of Substances Hazardous to Health Regulations 2002 (COSHH);
- Control of Pollution Act 1974;
- Waste Regulations and Controlled Waste Regulations (WM3 2021);
- Clean Air Act 1993;
- Health and Safety at Work Act 1974;
- The Control of Asbestos in the Air Regulations (SI 556) 1990;
- Control of Asbestos Regulations 2012;
- Construction Design Management Regulations 2015;

The contractor shall achieve compliance with the above by means of the following (which is not intended to be an exhaustive list but rather for indicative purposes):

- Regular damping down / dust suppression especially during warm and sunny weather;
- Deployment of dust screens adjacent to sensitive areas as necessary;
- Conduct of dust monitoring;
- Use of plant exhaust ventilation with filters;
- Employment of odour control measures as necessary;
- Limit vehicle speeds and employ road sweepers as necessary (no dry sweeping);
- Wheel washing prior to vehicles leaving site;
- Sheeting of vehicles carrying waste material away from site;

3.1.2 SITE CLEARANCE

Prior to the completion of demolition of existing structures on site all general waste should be removed and appropriately disposed of from site to suitably licensed waste management facilities. Any associated waste disposal tickets should be retained.

Although current ground gas monitoring and the ground gas risk assessment has been concluded, all existing borehole monitoring installations should be afforded careful protection until the Remedial Strategy is approved. Lost

or damaged monitoring installations will need to be replaced.

3.1.3 DISCOVERY STRATEGY

In order to provide a protocol to follow in the event that previously unidentified contamination is encountered on site during the proposed remedial work and preparatory groundwork ahead of construction, a Discovery Strategy should be implemented throughout the work, such as that provided in Appendix B. This should include for the immediate reporting of any suspected contaminated material based on visual and olfactory observations, to an Environmental Consultant for additional separate assessment. Additionally, the Regulators should be informed of any such discoveries as works progress.

3.1.4 DECOMMISSION & REMOVAL OF THE BELOW GROUND FUEL STORAGE TANK

The Petroleum Officer Records confirmed the presence of a 500 gallon petrol storage tank located beneath the western side of the site adjacent to the site entrance. Prior to the conduct of general preparatory groundwork on site the tank should be decommissioned and removed. A specialist contractor should be engaged to undertake this work which should include an inspection of the tank before it is disturbed to establish if it contains any residual fuel and in order to degass the tank. A degassing certificate should be obtained and any residual fuel should be removed and disposed of to a suitably licensed waste management facility.

The tank should then be broken out and removed from site under the supervision of an Environmental Consultant. The ground that will become exposed around the tank should be inspected and soil validation samples should be collected from beneath the tank (and of any material suspected of being impacted by hydrocarbons). A PID should be used during the inspection of the ground surrounding the tank to help identify soils potentially impacted by hydrocarbons. Records in the form of a notes, diagrams and photos should also be recorded by the Supervising Environmental Consultant, which should be retained for presentation in the future Verification Report for the site.

The tank should be disposed of from site to a suitably licensed waste management facility and the waste disposal ticket for the tank should be retained.

Soil validation samples recovered from the ground beneath the tank should be analysed for hydrocarbons and the results should be compliant with the guidance values based upon a residential end use with homegrown produce, adopted from the LQM/CIEH (Land Quality Management / Chartered Institution of Environmental Health) Suitable Use Levels (S4ULs) for Human Health Risk Assessment 2015 (see Appendix C For Validation Sample Chemical Criteria). Any sample results that identify concentrations of hydrocarbons in excess of the guidance values will require further remedial excavation to remove the impacted material from site and additional validation sample analysis.

All waste disposal should be to suitably licensed waste management facilities and all duty of care documentation should be retained for presentation within a future Verification Report.

The resulting void following the removal of the tank should be reinstated with imported certified "clean" engineered fill which is compacted in layers, to the Structural Engineer's requirements. Chemical validation samples of the imported backfill material should be analysed for a general range of common contaminants including asbestos, metals, hydrocarbons, speciated PAHs and phenols to certify it's chemical suitability for use on site. The Validation

sample results should be compliant with the human health guidance values referenced above based on the proposed end use comprising residential with homegrown produce.

3.1.5 WATCHING BRIEF DURING PREPARATORY GROUNDWORK & REMEDIAL EXCAVATION

A Watching Brief is to be maintained by an Environmental Consultant during the removal of the existing hardstanding from across the site and during preparatory groundworks (eg reduction of site levels or foundation trenches). The purpose of the Watching Brief is to facilitate the following;

- 1) Segregation of tarmac, hydrocarbon impacted concrete and unimpacted concrete to support appropriate off site disposal given the varying waste classification codes for the existing hardstanding materials across the site;
- 2) To oversee the remedial excavation of the contaminated Made Ground identified in the south western corner of the site within the vicinity of HP103 and WS01;
- 3) To inspect and sample for laboratory analysis soils exposed during preparation of the site for construction, in order to confirm an absence of previously unidentified contamination; and
- 4) To support the segregation of waste material arisings in order to facilitate appropriate disposal of the various waste streams from site.

The Environmental Consultant maintaining the watching brief should keep records of the work observed including Daily Record Sheets, diagrams / sketches, photos, PID test records and sample location plan details. This information will need to be included within the final Verification Report to certify the work undertaken on site.

Waste material arisings should be segregated based upon the various waste streams identified by the WM3 Waste Classification Assessment. Each waste stream should be disposed of separately to appropriately licensed waste disposal facilities. Specific waste disposal details are provided below.

The area of contaminated ground in the south western corner of the site should be delineated by the Environmental Consultant and remedial excavation should be conducted down to 0.6m below the existing ground level. This should remove all of the impacted Made Ground and some of the underlying natural material (which contains elevated zinc concentrations). Remedial excavation to this depth should result in the removal of the near surface metals, TPH and PAH impacted Made Ground and provide room to import the certified "clean" cover system where the proposed garden areas intercept this area of the site. Subject to the position of the proposed buildings, if the remedial excavation to remove the impacted material extends beneath the proposed building footprint, then the remedial excavation could be shallower to 0.3m bgl (subject to the depth of the Made Ground) given that the natural material containing elevated zinc concentrations would be suitable to remain beneath the building.

Representative soil validation samples should be recovered from the sides and base of the remedial excavation for laboratory analysis for the contaminants of concern including lead, zinc, TPH and speciated PAHs. Subject to the size of the remedial excavation at least 5 validation samples will be required including the sides of the excavation and the base. Validation sample results should be compliant with the Validation Sample Criteria previously referenced and provided in Appendix C

Any imported material to backfill the remedial excavation (eg Engineered fill beneath hardstanding or topsoil in garden areas) should be certified “clean” and suitable for use. The supplier’s chemical batch data should be provided to the Environmental Consultant prior to import of material to site for approval and then following provision to site the imported materials should be subject to representative soil validation sample analysis, to corroborate the supplier’s batch data and confirm chemical suitability in relation to human health. More specific details are provided below in Section 3.1.6 in relation to the validation of imported materials and garden areas.

The watching brief during the preparatory groundworks including excavation of foundations or reducing ground levels should include inspection of exposed soils to identify any potentially contaminated material that has not previously been identified. Suspect material should be sampled for laboratory analysis and care should be taken not to cross contaminated suspect materials with “clean” soils.

3.1.6 AREAS OF PROPOSED GARDENS AND IMPORTED MATERIAL REQUIREMENTS

Areas of proposed gardens are to be provided with a “clean” cover system comprising the provision of a minimum thickness of 300mm imported topsoil laid over a high visibility geotextile marker layer. It is noted however that the gardens in the south western corner of the site should be provided with a thicker cover system consisting of 600mm imported “clean” material laid over a high visibility marker layer. In these garden areas the cover system could comprise 300mm of imported “clean” subsoil and 300mm imported “clean” topsoil to provide the 600mm thickness, alternatively the 600mm could be topsoil.

Imported topsoil and subsoil that is provided to site should be certified chemically “clean”. As such the supplier’s chemical batch data should be provided to an Environmental Consultant for approval prior to delivery of material to site and the cover system should be validated by an Environmental Consultant by means of trial pits to confirm the thickness of imported topsoil and subsoil provided is to the required minimum thicknesses, that a hi-visibility marker layer has been provided and that laboratory analysis of representative validation samples is undertaken to corroborate the initial batch supplier data. Soil validation samples should be analysed at a frequency of at least 1 sample per material type per source per landscaped / garden area as a minimum. Validation samples should be recovered for laboratory analysis for a suite of determinands including asbestos, metals, speciated PAHs, organic matter, TPH, phenols and pH. The validation sample results should be compared to the LQM/CIEH Suitable 4 Use Levels (S4ULs) 2015 based upon a residential end use with homegrown produce (see Appendix C Validation Sample Chemical Criteria). All imported material delivery tickets should be retained.

SEC is unaware of general material import requirements for the purposes for the redevelopment however any imported material should be chemically certified as suitable for use on site in the same way as imported topsoil / subsoil.

3.1.7 APPROPRIATE DISPOSAL OF WASTE ARISING

It is not proposed to re-use any arisings on site and as such no work has been conducted to facilitate re-use of waste arisings on site. All arisings generated during remedial work and to facilitate the proposed development are to be disposed of from site to suitably licensed waste disposal facilities.

All waste arisings generated during the construction of the proposed development are to be disposed of from site in compliance with the Environment Agency's Technical Guidance WM3 Version 1.1 dated 2018 titled 'Guidance on the classification and assessment of waste' describes wastes in the List of Wastes Directive (LoWD 2014/955/EU).

Specialist waste classification software (HazWasteTM) has been used to help determine waste classification codes for the materials encountered on site. Details of the waste classification for the Made Ground and Natural material encountered on site are provided in the Waste Classification Report (Ref: 4551 24 01 22 Rpt 04 Rev A TI BB). However, a brief summary of the assessment has been provided below:

- 2 no. Stockpiles of Made Ground (MOT 1 and gravelly Clay arisings).
- 3 Types of hardstanding (tarmac, unimpacted concrete and hydrocarbon impacted concrete).
- 3 Types of Made Ground (gravelly Clay both impacted with contaminants and unimpacted and sandy Gravel).
- 2 Type of Natural Strata (gravelly Sand and gravelly Clay).

Hardstanding has been classified as tarmac 17 03 02 and concrete unimpacted by hydrocarbons under code 17 01 01 however the hydrocarbon impacted concrete was classified as Hazardous Waste under waste code 17 01 06*. Made Ground on site has been classified under two separate waste codes 17 05 04 (Non-Hazardous) and 17 03 01* (Hazardous) subject to the concentrations of contaminants within the Made Ground. Similarly natural material was also classified as both Non-Hazardous waste under code 17 05 04 and Hazardous was under code 17 03 01*.

Waste arisings should be segregated and disposed of in accordance with the waste classification table provided below. The Watching Brief by an Environmental Consultant during remedial and preparatory groundwork should help support the appropriate segregation and disposal of impacted waste arisings correctly. Should previously unidentified waste types be encountered then chemical characterisation (including WAC testing) should be carried out prior to disposal to ensure that materials are correctly classified and disposed of appropriately.

Material Type for Reference	Depth Range (bgl)	Landfill Acceptance (WAC Classification)	Waste Classification	Waste Code
Stockpile of MOT Type 1 gravel	-	-TBC	Non-Hazardous	17 05 04
Stockpile of Made Ground (gravelly Clay)	-	TBC	Non-Hazardous	17 05 04
Bituminous (tarmac) Surfacing	GL – 0.20	-	Hazardous	17 03 02
Concrete Hardstanding impacted by hydrocarbons	GL – 0.25	-	Hazardous	17 01 06*
Concrete Hardstanding unimpacted by hydrocarbons	GL - 0.25	-	Non-Hazardous	17 01 01

Made Ground (gravelly Clay impacted with metals and hydrocarbons WS01 and HP103)	0.00--0.30m	Non-Hazardous	Hazardous	17 05 03*
Made Ground (gravelly Clay unimpacted by contaminants)	0.00 - ~1.20m	TBC	Non-Hazardous	17 05 04
Made Ground (sandy Gravel)	0 – 1.20m bgl	Inert	Non-Hazardous	17 05 04
Natural Material (gravelly Sand impacted with elevated concentrations of zinc WS01)	0.2 - 1.20m bgl	TBC	Hazardous	17 05 03*
Natural Material (gravelly Sand unimpacted by zinc)	0.15 - 2.0m bgl	TBC	Non-Hazardous	17 05 04
Natural Material (gravelly Clay)	1.00 - 4.45m bgl	Non-Hazardous	Non-Hazardous	17 05 04

All waste disposal documentation should be retained for inclusion within a future Verification Report to help demonstrate compliance with waste management requirements and duty of care.

3.1.8 GROUNDWATER AND THE CONTROL OF SURFACE WATER RUN OFF

Based on the available data the groundwater beneath the site has been identified to vary in depth between 1.16m bgl and 3.85m bgl. Given that the groundwater may be encountered at shallow depth consideration of dewatering may be necessary subject to the depth of foundation excavations. No groundwater remediation was considered necessary however.

Any dewatering (including surface water management) required should either be discharged to foul sewer under an approved Discharge Consent or to a suitably licensed disposal facility by lorry tanker (disposal documentation to be retained). Chemical testing of water to be removed from site will be required to facilitate a permitted discharge consent or off site disposal. If it is proposed to recirculate the groundwater back into the ground consideration of Environment Agency requirements will be necessary.

During the proposed development no unauthorised releases from site are to occur. Therefore effective surface water management should be maintained especially during any heavy rainfall events. To help prevent unauthorised releases from site, surface water runoff management considerations should include;

- Provision of temporary bunds as may be necessary to help prevent runoff from site;
- Use of drip trays / spill kits associated with plant to prevent contamination of surface water;
- Sheeting over and under stockpiles of any impacted material; and
- Appropriate off site disposal of any ponded surface water via either foul sewer under an approved discharge consent or by lorry tanker to suitably licensed waste management facilities.

Should soakaways be proposed as part of the drainage solution for the proposed development then they should be appropriately consented by the Environment Agency.

3.1.9 GROUND GAS RISK MITIGATION

Whilst the ground gas screening value calculated using the results of the available ground gas monitoring data indicated a low potential risk associated with ground gases, elevated concentrations of VOCs were recorded. Therefore given consideration of the former site use and the potential for organic contamination to be degrading within the ground beneath the site associated with this use and given the VOCs recorded, the design of the proposed development should include passively ventilated sub-floor voids beneath suspended floor slabs. The design of the floor slab construction should therefore be provided to an Environmental Consultant for approval and inclusion within the Verification Report for the site.

3.1.10 SITE TRAFFIC

Consideration of wheel cleaning facilities should be given throughout the duration of the redevelopment work to prevent debris / mud being tracked off site onto local roads. It may also be necessary to dampen down site soils to prevent dust generation by vehicles accessing the site subject to weather conditions. All wheelwash runoff should be appropriately managed such that unauthorised releases do not occur. Should conditions necessitate, a road sweeper will be employed to supplement the jet washing of vehicles wheels in order to keep the local roads free from mud debris. No dry sweeping is permitted.

Any contaminated water produced as a consequence of these operations will be disposed of in accordance with current best practice and statutory guidance either to foul sewer under a discharge consent and following pre-treatment via a silt buster or via a licensed suction tanker to an approved disposal facility (any waste water disposal tickets should be retained for inclusion within the Validation Report).

3.1.11 WATER SUPPLY PIPE

Potential risks to the potable water supply provided to the new development should be mitigated by the provision of chemically resistant water supply pipe (also known as barrier pipe) within the design of the proposed development. Prior to the installation of chemically resistant water supply pipe on site, the specification for the proposed pipework should be provided to an Environmental Consultant for approval. The installation of the chemically resistant water supply pipework should be documented by an Environmental Consultant and detailed within the future Verification Report.

3.1.12 HEALTH AND SAFETY FOR SITE OPERATIVES

The groundworks contractor will prepare site specific risk assessment and method statements (RAMS) for approval prior to the commencement of earth works. All site operatives are to be briefed as to the details of the Discovery Strategy as part of their site induction.

All site operatives will be required to wear appropriate PPE including a hard hat, reflective vests, gloves and hard toe footwear as a minimum. Additionally, workers should employ high standards of personal hygiene (including washing hands before eating) and avoid direct contact with soils (and waters if encountered). Workers should work in well ventilated areas and avoid confined spaces.

Suitable welfare facilities should be provided on site for the duration of the redevelopment work.

3.1.13 VARIATIONS

As work progresses on site, subject to findings or conditions the remedial strategy may have to adapt to manage unforeseen issues (e.g. in the event that buried infrastructure is encountered which may give rise to previously unidentified contamination and /or previously unidentified contamination is identified). Any such findings should be assessed in accordance with the Discovery Strategy and any subsequent variations to the remedial strategy should be documented within a Technical Addendum produced by an Environmental Consultant for Regulatory approval.

3.1.14 VERIFICATION REPORT

All remedial measures and remedial work implemented on site during the site's redevelopment should be adequately documented within a Verification Report for the site written by an Environmental Consultant, to demonstrate compliance with the remedial strategy for Regulatory approval.

The Validation Report should include information such as a commentary of the works conducted, photographic record of work undertaken, validation sample analysis data, details of materials imported to and disposed of from site, and plans indicating remedial work undertaken. Following completion, the Verification Report should be submitted to the Local Authority for approval and discharge of contaminated land conditions.

4.0 General Limitations and Exceptions

1. The advice given in this report with respect to contaminated land / pollution is based on the guidelines available at the time of writing.
2. The Client is advised that the conditions observed on site by SEC at the time of the investigation or assessment are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance or investigation and they may subsequently have become observable.
3. Comments made relating to land gas or groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. The normal rate of conduct of an exploratory hole does not usually permit the recording of an equilibrium groundwater level for any one strike. Land gas and / or groundwater conditions may vary as a result of seasonal or other effects.
4. Ground contamination often exists as small discrete areas of contamination and there can be no certainty that any or all such areas have been located, sampled and / or identified.
5. The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between or beyond borehole positions, these are only for guidance only and no liability can be accepted for their accuracy.
6. Whilst commonly regarded as one of the most reliable drilling techniques, cable percussive drilling may result in a certain amount of soil mixing.
7. This assessment may be subject to amendment in light of additional information becoming available.
8. The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from 1) previous site investigations and 2) chemical testing laboratories, and which SEC has assumed are correct. Nevertheless, SEC cannot and does not guarantee the authenticity or reliability of the information it has relied upon. SEC can accept no responsibility for inaccuracies within the data supplied by other parties.
9. This report is written in the context of an agreed scope of work between SEC and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the assessment or report in whole or part may be necessary after its original submission.
10. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.
11. SEC believes that providing information about limitations is essential to help the Client identify and thereby manage risks.
12. The copyright of written materials supplied shall remain the property of SEC but with a royalty free perpetual licence, granted to the Client on payment in full of any outstanding monies.
13. SEC does not provide legal advice and the advice of the Clients legal advisors may also be required.
14. SEC notes that this assessment is subject to regulatory review and approval.

15. This report represents a stage in an iterative process of investigation and assessment and as such it is possible that further work may be recommended.
16. The use of data generated by this site investigation for the design of foundations or geo-technical assessment was outside the scope of this report.
17. An arboricultural survey, an ecological survey, an asbestos survey, a geotechnical assessment, a topographical survey, and a flood risk assessment for the site were beyond the scope of this report.
18. This report is subject to the limitations of the original investigations, as reported in the references above.



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SITE: 81/81A Whinbush Road, Hitchin, SG5 1PZ

SCALE: NTS

JOB NO: 5551

FIGURE TITLE: Proposed Exploratory Hole Layout Plan

REV: 01

FIGURE NO: 1



DISCOVERY STRATEGY CONTAMINATED MATERIALS

SITE: 81/81A Whinbush Road, Hitchen, SG5 1PZ

INTRODUCTION

It is proposed to re-development the site with new residential properties at 81/81A Whinbush Road. The site will be undergoing ground contamination remedial work associated with Made Ground containing elevated concentrations of hydrocarbons and metals as discussed within the Remediation Method Statement. A Discovery Strategy is to be implemented on site to provide a protocol to follow in the event that previously unidentified potential ground contamination is encountered during redevelopment of the site.

Its purpose is to define the process to be undertaken on site in the event that previously unidentified ground or water contamination or suspicious objects (e.g. cement bonded asbestos sheeting fragments) are discovered during the redevelopment of the site. Should suspected evidence of contamination be identified then work should cease until additional separate assessment has been conducted by an Environmental Consultant. It is intended to be understood and followed by all on-site workers and for all new site workers to be made aware of the procedure.

HOW TO IDENTIFY POTENTIALLY CONTAMINATED MATERIAL

- Looks / colours – e.g black, purple, pink, grey oily or has an iridescent sheen
- Odours / smells – e.g. has an oil, fuel or solvent type of odour
- Man made fragments – e.g. paint or oil tins, cans or drums, car parts, bottles, glass, metal, rubber or rubbish fragments
- Ground contains foreign fragments of cement bonded (potential asbestos) sheeting, coal/coke, clinker, ash
- Subsurface structures / vessels, concrete or metal e.g. oil or asbestos filled pits or tanks, walls, metal pipes and sandbags

(N.B. These are examples only – This list is not exhaustive. If in any doubt then ask)

PROCEDURE

If during the redevelopment work, any visibly contaminated or odourous material is found to be present at the site, it must be investigated further, the Local Planning Authority must be informed of the nature and degree of contamination present and a method statement detailing how the unsuspected contamination shall be dealt with must be prepared and submitted to the Local Planning Authority for approval in writing before being implemented.

On the discovery of any suspicious material or buried structures during the redevelopment of the site, the following procedure should be followed:

- Site Personnel to immediately inform Client / Site Manager. Do not investigate it yourself.

- Client / Site Manager to inspect and confirm the observations of potentially contaminated material and inform Sevenoaks Environmental Consultancy Ltd. The area will be cordoned off and work will cease in the vicinity.
- Sevenoaks Environmental Consultancy Limited will attend site to inspect and sample the material in question for laboratory testing to evaluate if the material in question has been reported on previously and will attempt to quantify the extent and volume of any potential contamination if not.
- The Environmental Health Officer at the Council will then be notified if the material has not been reported on previously that potentially contaminated material has been discovered and will be forwarded the relevant laboratory data and a remedial strategy for their approval in the event that the material is to be classified as contaminated.

CONTACT DETAILS

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Client

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DECLARATION

[illegible]

Remedial Target Values for Remedial Excavation Validation & Imported Materials based upon a Residential End Use with Home Grown Produce (including consideration of phytotoxic contaminants in areas of proposed planting in addition to Human Health)

Chemical	Guidance Value in mg/kg	Guidance Criteria
Metals		
Arsenic	37	LQM / CIEH S4UL
Barium	-	-
W/S Boron	-	-
Boron	290	LQM / CIEH S4UL
Cadmium	11	LQM / CIEH S4UL
Chromium	910	LQM / CIEH S4UL
Chromium VI	6	LQM / CIEH S4UL
Copper (Human Health)	2400	LQM / CIEH S4UL
Copper (Phytotoxic - to be considered in areas of planting as well as Human Health Threshold)	130	Inhouse
Mercury	1.2	LQM / CIEH S4UL - Trigger for consideration of further elemental / inorganic / methylmercury analysis
Nickel (Human Health)	180	LQM / CIEH S4UL
Nickel (Phytotoxic - to be considered in areas of planting as well as Human Health Threshold)	70	Inhouse
Selenium	250	LQM / CIEH S4UL
Lead	190	C4SL
Zinc (Human Health)	3700	LQM / CIEH S4UL
Zinc (Phytotoxic - to be considered in areas of planting as well as Human Health Threshold)	300	Inhouse
Poly Aromatic Hydrocarbons (PAHs) (based on 1% SOM)		
Naphthalene	2.3	LQM / CIEH S4UL
Acenaphthylene	170	LQM / CIEH S4UL
Acenaphthene	210	LQM / CIEH S4UL
Fluorene	170	LQM / CIEH S4UL
Phenanthrene	95	LQM / CIEH S4UL
Anthracene	2400	LQM / CIEH S4UL
Fluoranthene	280	LQM / CIEH S4UL
Pyrene	620	LQM / CIEH S4UL
Benzo(a)anthracene	7.2	LQM / CIEH S4UL
Chrysene	15	LQM / CIEH S4UL
Benzo(b)fluoranthene	2.6	LQM / CIEH S4UL
Benzo(k)fluoranthene	77	LQM / CIEH S4UL
Benzo(a)pyrene	2.2	LQM / CIEH S4UL
Indeno(1,2,3-cd)pyrene	27	LQM / CIEH S4UL
Dibenz(a,h)anthracene	0.24	LQM / CIEH S4UL
Benzo(ghi)perylene	320	LQM / CIEH S4UL
Aromatic Hydrocarbons (based on 1% SOM)		
EC5-7	70	LQM / CIEH S4UL
EC>7-8	130	LQM / CIEH S4UL
EC>8-10	34	LQM / CIEH S4UL
EC>10-12	74	LQM / CIEH S4UL
EC>12-16	140	LQM / CIEH S4UL
EC>16-21	260	LQM / CIEH S4UL
EC>21-35	1100	LQM / CIEH S4UL
EC>35-44	1100	LQM / CIEH S4UL
Aliphatic Hydrocarbons (based on 1% SOM)		
EC5-6	42	LQM / CIEH S4UL
EC>6-8	100	LQM / CIEH S4UL
EC>8-10	27	LQM / CIEH S4UL
EC>10-12	130	LQM / CIEH S4UL
EC>12-16	1100	LQM / CIEH S4UL
EC>21-35	65000	LQM / CIEH S4UL
EC>35-44	65000	LQM / CIEH S4UL
Phenol (based on 1% SOM)		
Phenol	280	LQM / CIEH S4UL
Asbestos		
Asbestos Presence / Absence	Absence	-
