



Geotechnical &  
Environmental  
Consultants

Ivanda Nursery, Monks House Lane  
Spalding

**Remediation Strategy  
For  
Seagate Homes**



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<b>Client</b>	<b>Seagate Homes</b>
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>
<b>Introduction</b>	<p>GeoDyne Limited has been appointed by the Client, Seagate Homes, to prepare a Remediation Strategy relating to the site. GeoDyne has been informed by the Client that the Local Authority requires the production of a Remediation Strategy to accompany the desk study and ground investigation reports as part of any submission aimed at satisfying the requirements of the relevant planning conditions.</p> <p>This Remediation Strategy details the necessary remediation and validation measures required in the areas of the Above Ground Fuel Storage Tanks (ASTs) only. It represents a standalone report to act as a working document for use by the Client and the Contractor carrying out the remediation works and the Supervising Engineer in order to control / manage the remediation activities and the validation works relating to the tanks.</p> <p>The responsibilities of the Supervising Engineer (GeoDyne) are restricted to monitoring the works of the Contractor in terms of compliance with this Remediation Strategy, carrying out validation testing and reporting.</p> <p>The Supervising Engineer has no responsibility for the direct instruction of the Contractor, or measurement and administration of the contract. The Supervising Engineer will report to the Client who will issue all instructions to the Contractor.</p>
<b>Project Understanding</b>	<p>We understand that it is the intention of the Client to redevelop the site with low-rise residential properties, including gardens, with the remaining areas to comprise open space including an attenuation basin and an ecological corridor (as shown on the proposed Site Layout plan, referenced MHL-SH-PD-SL-1002 H dated 05.01.2023).</p> <p>Where the proposed site end-use is not consistent with our current understanding, it would be necessary to review our Remediation Strategy to ensure it continues to apply.</p>
<b>Previous Reports</b>	<p>The following reports have previously been prepared for the site:</p> <ul style="list-style-type: none"> <li>• Ground Engineering '<i>Report On A Phase 1 Desk Study – Ivanda Nursery, Monks House Lane, Spalding, Lincolnshire</i>', Report Reference C15847, dated January 2023.</li> <li>• Ground Engineering '<i>Report On A Ground Investigation – Ivanda Nursery, Monks House Lane, Spalding, Lincolnshire</i>', Report Reference C15847A, dated March 2023.</li> </ul> <p>In addition, the following report has previously been prepared by GeoDyne in relation to the site:</p> <ul style="list-style-type: none"> <li>• GeoDyne Limited report entitled '<i>Ivanda Nursery, Monks House Lane, Spalding – Supplementary Phase II Exploratory Investigation Report</i>' prepared for Seagate Homes, reference D44101, dated 5<sup>th</sup> March 2025.</li> </ul> <p>We would recommend the above reports are read in conjunction with this report.</p>
<b>Limitations</b>	<p>This report has been produced specifically to address remediation and validation issues relating to hydrocarbon impacted soils at the site. For details of the site history, geology and environmental setting, and recommendations relating to all other matters, reference should be made to the previous reports detailed above.</p> <p>The recommendations made in this report are limited to those that can be made based on the findings of the investigation works previously undertaken at the site. Where comments are made based on information obtained from third parties, GeoDyne Limited assumes that all third party information is true and correct. No independent action has been undertaken to validate the findings of third parties unless specifically stated.</p> <p>The Remediation Strategy has been prepared in accordance with our understanding of current good practice. However, new information or legislation, or changes to good practice may necessitate revision of the report after the date of its issue.</p> <p>GeoDyne Limited has prepared this report for the sole use and reliance of the Client, Seagate Homes, in accordance with our standard Conditions &amp; Limitations provided in Appendix IV. This report may not be used or relied upon by any unauthorised third party without the explicit written agreement of GeoDyne Limited. Reliance may not be placed on our report until all invoices associated with the project have been paid.</p>

<b>Client</b>	<b>Seagate Homes</b>			
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>			
<b>Conceptual Site Model</b>	<p>The Conceptual Site Model (CSM) prepared for the site is detailed within Section 6 of the GeoDyne Supplementary Phase II Exploratory Investigation Report (referenced above).</p> <p>The findings of the previous ground investigation, soil contamination assessment and programme of ground gas monitoring identified a requirement for the remediation of hydrocarbon impacted soils in the vicinity of above ground fuel storage tanks (including around boreholes WS103 and WS113). In addition, gas protection measures should be incorporated within the proposed buildings across the site.</p>			
<b>Remediation Objectives</b>	<p>The remediation objectives detailed in this Remediation Strategy are required in order to break the significant contaminant linkages identified in the CSM.</p> <p><u>Hydrocarbon Impacted Soil</u></p> <p>The objective of the remediation of the hydrocarbon contaminated soil from within the vicinity of the above ground tanks will break the following plausible pollutant linkages:</p>			
Contaminant Source		Pathway		Receptor
Contaminated Soils	→	Direct contact, ingestion and/ or inhalation of fugitive dust & vapours. Plant uptake. Vertical and lateral migration. Plastic buildings products (i.e. water supply pipes).	→	End Users (Residents & Site Visitors) Neighbouring properties / land
Contaminated Soils	→	Leaching of Contaminants through unsaturated zone and/or vertical and lateral migration.	→	Controlled Waters
<b>Ground Gas Protection Measures</b>	<p>The Supplementary Phase II Exploratory Investigation works undertaken by GeoDyne revealed the ground gas regime at the site may be classified as CS2 in accordance with BS8485:2015+A1:2019. On this basis ground gas protection measures achieving a minimum point score of 3.5 points (based on BS8485) should be included within all proposed dwellings.</p> <p>It should be noted that subject to the findings of the tank removal and soil validation works in the area of the ASTs, there may be a requirement to locally include a hydrocarbon resistant membrane within the dwellings in the vicinity of the removed ASTs to mitigate against the ingress of any residual hydrocarbon odours in these areas. This should be confirmed following completion of the remediation and validation works in the area of the ASTs.</p> <p>Following finalisation of the ground gas protection measures for the proposed dwellings it will be necessary to prepare a Ground Gas Verification Plan (GGVP). The GGVP will summarise the ground gas protection measures and provide protocols to be followed during the validation of the gas protection measures.</p> <p>The remediation objective of the proposed gas protection measures to be installed within proposed new dwellings is to break the following plausible pollutant linkage:</p>			
Contaminant Source		Pathway		Receptor
Ground gases (including hydrocarbon odours / vapours)	→	Vertical and lateral migration	→	Site Users & Building Envelope

<b>Client</b>	<b>Seagate Homes</b>
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>
<b>Remediation Options</b>	<p>The main potentially applicable remediation options include:</p> <ul style="list-style-type: none"> <li>• Removal of the hydrocarbon impacted soil and disposal off-site to a suitably permitted landfill or soil treatment centre.</li> <li>• Treatment of the hydrocarbon impacted soil by one of the following options: <ul style="list-style-type: none"> <li>◦ Bioremediation – in situ or ex situ.</li> <li>◦ Chemical treatment – in situ or ex situ.</li> </ul> </li> </ul> <p>Seagate Homes propose to excavate and dispose of the hydrocarbon contaminated soils off-site at a suitably permitted waste management facility.</p>
<b>Pre-Start Meeting</b>	It is recommended that a pre-start meeting is arranged between the Site Manager and GeoDyne (as a minimum), to ensure that all parties are aware of the remedial requirements in the areas of the ASTs.
<b>Fuel Storage Tanks</b>	<p>Prior to their removal, all tanks and associated pipework should be emptied of their contents utilising an appropriate tanker (if not already empty) and where necessary decommissioned and degassed in accordance with the appropriate legislation and guidelines, in consultation with the Petroleum Officer (where required).</p> <p>Once the tanks have been emptied of their contents, decommissioned and degassed, the following remedial works are recommended.</p>
<b>Proposed Methodology for Removal / Validation of ASTs &amp; Any Associated Grossly Hydrocarbon Contaminated Soils (where present)</b>	<p>The following removal and assessment protocol is considered appropriate at this stage:</p> <ul style="list-style-type: none"> <li>• The existing ASTs and their associated pumps and pipework, together with the disused boiler house equipment, should be inspected and decommissioned (as appropriate) to remove any residual fuel, prior to removal. Appropriate care should be taken to ensure that spillage of fuel does not occur during decommissioning works. The tanks, pipework, pumps and equipment should be removed by a suitably qualified contractor.</li> <li>• Following removal of the ASTs, associated pipework, pumps and equipment, the surface hard standing beneath the tanks and disused boiler house should be broken out and where impacted by hydrocarbons, these should be removed off-site (to an appropriately permitted waste management facility). The underlying soils should be inspected by a suitably qualified Environmental Engineer.</li> <li>• Where significant / gross visual or olfactory evidence of hydrocarbon impaction is observed in the soils beneath or in the immediate vicinity of the ASTs (and the disused boiler house, if present), the soils should be removed under the supervision of a suitably qualified Environmental Engineer.</li> <li>• The hydrocarbon impacted soils should be excavated and loaded directly (where possible) into waiting road lorries or suitably lined skips for disposal at a suitably permitted waste management facility. The Contractor shall take all necessary measures during excavation and loading into lorries or skips to prevent cross contamination from any spillages or leakages of contaminants onto the adjacent uncontaminated Made Ground and Natural Strata.</li> <li>• It may be necessary to temporarily stockpile contaminated soils prior to removal from site due to possible access restrictions. If this is required, contaminated soils shall be placed onto suitable polythene sheeting to prevent cross contamination from occurring.</li> <li>• Based on the findings of the previous delineation works, the approximate lateral extent of the hydrocarbon impacted soils to be remediated are indicated on Figure Nos. D44101/06 and D44101/07 in Appendix I. The hydrocarbon impacted soils requiring removal should be chased out both laterally and vertically, as appropriate and as far as practically possible.</li> <li>• Groundwater (including perched) is likely to be encountered within the resultant excavation, which may require pumping and removal to facilitate excavation and removal of the hydrocarbon impacted soils.</li> </ul>

<b>Client</b>	<b>Seagate Homes</b>
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>
<b>Proposed Methodology for Removal / Validation of ASTs &amp; Any Associated Grossly Hydrocarbon Contaminated Soils (where present) (continued)</b>	<p>Validation sampling and analysis will be undertaken adopting the following procedure:</p> <ul style="list-style-type: none"> <li>Following removal of hydrocarbon contaminated soils, a minimum of one sample will be obtained from the base and from each side of the excavation (resulting in a minimum of 5 No. validation samples). The results of the previous laboratory testing of soil samples obtained during the delineation works of the areas containing hydrocarbon impacted soils are also proposed to be utilised as part of the validation exercise (where appropriate), in conjunction with the additional 5 No. validation samples.</li> <li>The samples will be commissioned for speciated total petroleum hydrocarbon analysis (i.e. TPH by CWG method in the same manner as during the previous site investigation works).</li> <li>The individual sample concentrations will be compared to the Clean Up Goals (CUGs) provided in Table 1 presented within Appendix II.</li> <li>If the results of the validation analysis indicate that the concentrations of the determinands are less than the respective CUGs, the lateral or vertical extent of the excavation (as appropriate) shall be deemed acceptable.</li> <li>Where any exceedances of the CUGs are recorded during the validation testing, then further removal of hydrocarbon impacted soils would be necessary followed by subsequent validation sampling and analysis until successful removal of the hydrocarbon impacted soils is achieved (where possible / practical in relation to site boundaries).</li> <li>Photographic records of the source removal and validation works will be obtained by GeoDyne for inclusion within the validation report.</li> </ul> <p>Ideally, the excavations should remain open for the duration of the validation testing, however, should it become necessary to infill the excavations for health and safety reasons, please be aware that there is a risk that the infill materials may become cross contaminated by any residual contamination in the base / sides of the excavation and these soils may need removal off-site subject to the results of the validation testing.</p> <p>We would note that if circumstances arise where the disused boiler house equipment is removed and soils displaying no visual or olfactory evidence of impaction are revealed, removal of soils from beneath the area of the former boiler house equipment is not deemed to be necessary. However, for surety, we would recommend that 3 No. validation samples of the near surface soils beneath the boiler house equipment should be obtained and subjected to speciated TPH analysis (with the results compared to the CUGs within Appendix II), to confirm the absence of hydrocarbon impaction and demonstrate that source removal works are not required.</p>
<b>Proposed Clean Up Goals</b>	Table I (Appendix II) details the Clean Up Goals (CUGs) which are derived from generic assessment criteria (GAC) for human health taking account of the development proposals, against which the laboratory results from the validation samples should be initially compared to.
<b>Off-site Disposal</b>	<p>The chemical testing regime for off-site disposal is different to the chemical testing required to assess the suitability of soils for retention on site and the risks to human health. Therefore, a separate contamination assessment may be required to include bespoke leachate analysis (i.e. Waste Acceptance Criteria [WAC] testing) to classify the soils for off-site disposal with testing criteria to assess whether the soil is hazardous, non-hazardous or inert waste. However, the existing chemical test data will assist this process.</p> <p>The receiving landfill may require additional specialist laboratory testing to further characterise the material proposed for disposal purposes. We would recommend early consultation between the Contractor and the receiving landfill to determine any specific laboratory testing requirements.</p> <p>Individuals / companies removing soils from the site are bound by a <b>duty of care</b>; as such this should only be undertaken by an <b>authorised person</b>. All waste movements should be accompanied by a <b>waste transfer note</b> and <b>Environment Agency waste consignment notes</b>.</p>

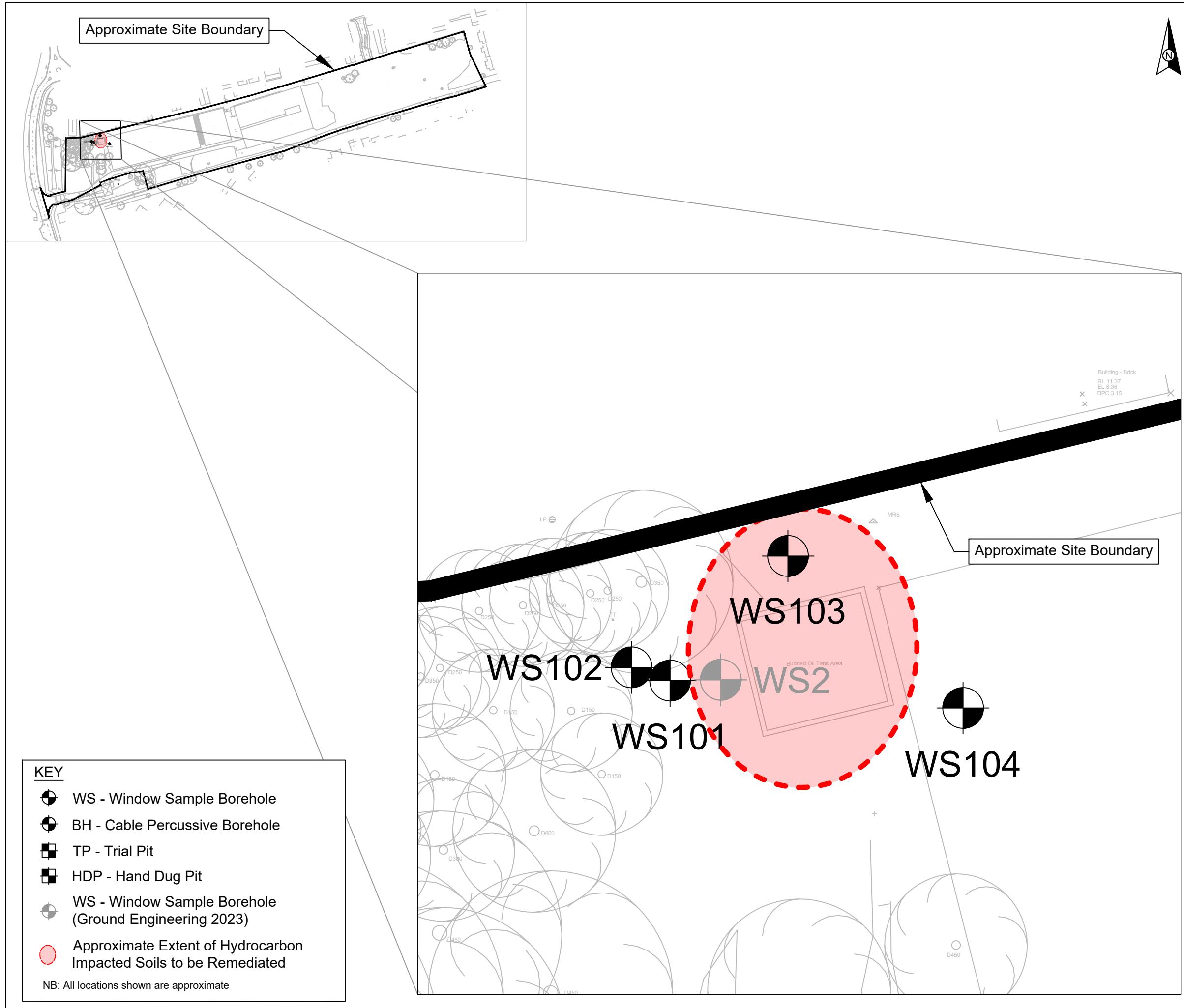
<b>Client</b>	<b>Seagate Homes</b>
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>
<b>Void Infill</b>	<p><u>Void Infill Materials</u></p> <p>Following removal of hydrocarbon contaminated soils to the satisfaction of the Supervising Engineer, the resultant excavation will require backfilling with chemically and geotechnically suitable soils / materials. On the basis of the contamination testing undertaken at the site, these soils may comprise site-won Natural Strata. Should there be a requirement for the importation of soils to the site (including for void infill) the methodology detailed below should be adopted.</p> <p><u>Compaction of Void Infill Materials</u></p> <p>The materials used to infill the voids should be placed and compacted to a suitable engineered specification (where necessary), with due regard to the proposed use of the study areas of the site. The Contractor should ensure that the materials proposed for use as void infill are geotechnically suitable. Geotechnical validation of the compacted fill material is outside the scope of GeoDyne's involvement and we assume that this will be undertaken by others, where appropriate.</p>
<b>Pre-Importation Testing Methodology</b>	<p>It should be noted that although a formal capping layer is not required in proposed gardens and soft landscaped areas, it is considered that the principles of the following documents should be adhered to in relation to the importation of any soils to be used at the site, including for void infill and topsoil / subsoils (where any importation is necessary):</p> <ul style="list-style-type: none"> <li>• Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): '<i>Verification Requirements for Cover Systems – Technical Guidance for Developers, Landowners and Consultants</i>', Version 4.1 – June 2021.</li> <li>• National Contaminated Land Officers Group (NCLOG): '<i>A Regulator's Guide to Cover Systems and their Verification</i>' dated 2024.</li> </ul> <p>In accordance with the requirements of the YALPAG document for a greenfield source, it is recommended that the donor soils (including topsoil / subsoil) are sampled and analysed prior to importation at a minimum density of 1 No. sample per 250m<sup>3</sup> or 3 No. samples per source site / stockpile (whichever is the greater) to ensure that the results are representative and provide sufficient confidence that the soils will be acceptable in the proposed residential context.</p> <p>If soils are proposed to be imported from an unknown or potentially contaminated source, then an increased testing frequency of a minimum of 1 No. sample per 50m<sup>3</sup> or 100m<sup>3</sup> (depending upon the source) and a minimum of 6 No. samples per source (whichever is the greater) would be necessary, along with laboratory analysis for additional determinants to those contained in Table 2 within Appendix III (depending upon the source).</p> <p>In the first instance, the results of the testing will be compared directly to the SAC in Table 2 (Appendix III). If the individual values are less than the SAC, the source shall be considered suitable for use at the site.</p> <p>If the individual values are greater than the SAC, the supervising Engineer may elect to calculate the 95th percentile Upper Confidence Level (UCL) Mean Value of the soil samples, which would then be compared to the appropriate SAC to determine whether the soil is 'clean' and suitable for use at the site. Similarly, it may be appropriate to adjust the Tier 1 SAC to account for the Soil Organic Matter (SOM) before reviewing results.</p> <p>Should the UCL Mean Value of the soil samples be in excess of the SAC, further samples may be obtained to enlarge the dataset prior to reassessment and a final decision being reached. Alternatively, the Client may elect to reject the donor site and select an alternative donor site.</p>
<b>Site Acceptance Criteria</b>	<p>It will be necessary for the Local Authority Environmental Protection Officer to review the proposed Site Acceptance Criteria (SAC) detailed in Table 2 (Appendix III), which would be used when assessing the suitability of any materials proposed for importation.</p> <p>The SAC in Table 2 (Appendix III) have been derived for a residential end-use with home grown produce (i.e. private gardens).</p> <p>Donor soil samples should be tested in accordance with the Pre-Importation Testing Methodology set out above.</p>
<b>Validation Report</b>	Upon completion of the tank removal and validation works, a validation report will be prepared to demonstrate compliance with this Remediation Strategy.

<b>Client</b>	<b>Seagate Homes</b>		
<b>Site Name</b>	<b>Ivanda Nursery, Monks House Lane, Spalding</b>		
<b>Segregation of Materials</b>	<p>It is imperative that any 'clean' materials (i.e. any imported chemically suitable materials, e.g. for void infill) are kept separate from 'contaminated' arisings generated at the site.</p> <p>Any cross contamination may result in the necessity to remove all affected materials from the site. Appropriate measures should therefore be adopted by the chosen Contractor.</p> <p>These measures should include the following:</p> <ul style="list-style-type: none"> <li>• The Contractor shall take all necessary measures during excavation and loading into lorries or skips to prevent any spillages of contaminants onto the adjacent ground during the removal of contaminated soils, in order to prevent the cross contamination of the surrounding soils.</li> <li>• All vehicles are to be appropriately sheeted and 'clean', prior to leaving site. The Contractor shall take all reasonable and applicable measures to prevent the escape of material during transportation.</li> <li>• It may be necessary to temporarily stockpile contaminated soils prior to removal from site. If circumstances arise where temporarily stockpiling is required, contaminated soils should be placed onto suitable polythene sheeting to prevent cross contamination from occurring.</li> </ul>		
<b>Licences, Permits, Registrations, Plans &amp; Approvals</b>	<p>The Contractor / Developer is responsible for, and must ensure that, all necessary licenses, permits, plans, registrations and approvals are in place prior to commencing with the earthworks at the site.</p> <p>These will include any Materials Management Plans (MMPs), Site Waste Management Plans (SWMPs) and / or Environmental Permits / Exemptions as necessary to enable the completion of the proposed works. Any MMP should be accompanied by a Qualified Person Declaration (QPD) and will require verification in due course.</p>		
<b>Unforeseen Circumstances</b>	<p>Should any areas of potentially contaminated soil be encountered during site construction works we would recommend consultation with GeoDyne to ensure that our recommendations continue to apply. Any potentially contaminated soils should be left in-situ and subjected to further assessment, to potentially include further chemical testing and risk assessment.</p> <p>The following procedure should be adhered to if any areas of previously unidentified suspected contamination are encountered during the development of the site:</p> <ol style="list-style-type: none"> <li>i. Suspected contaminated material will remain in-situ.</li> <li>ii. GeoDyne to be notified. We will then undertake a visual assessment of the possible contamination, followed by appropriate sampling/testing (as necessary).</li> <li>iii. If necessary, contamination will then be treated or removed from site. All necessary remediation works should be validated by testing in accordance with an approved strategy, with the relevant Regulators informed accordingly.</li> </ol>		
<b>Statutory Consultation</b>	<p>We would recommend that a copy of this Remediation Strategy is issued to the Local Authority Environmental Protection Officer for review / comment and approval, at the earliest opportunity, prior to commencing with any remedial activity.</p> <p>Where the proposed dwellings are to benefit from a buildmark warranty (i.e. Premier Guarantee / NHBC, or similar) the warranty provider may require written approval of the Remediation Strategy from the Local Authority in order to satisfy their Land Quality Conditions.</p>		
<b>Appendices</b>			
Appendix I	Hydrocarbon Remediation Plans		
Appendix II	Clean Up Goals		
Appendix III	Site Acceptance Criteria		
Appendix IV	Conditions and Limitations		

<b>Project No: D44101</b>		<b>Date: 12<sup>th</sup> March 2025</b>	
Issue/revision	Prepared by	Checked By	Approved By
	Clare Houghton BSc (Hons) MSc FGS Principal Engineer 	Daniel Brunt BSc (Hons) MSc CGeol FGS Associate 	Paul Kershaw BSc (Hons) PGDip CGeol FGS Director 
Comments			

## APPENDIX I

### **Hydrocarbon Remediation Plans (Figure No. D44101/06 & D44101/07)**



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- Drawing based on Topographical Survey by MFM Land Surveys & Engineering Services Ltd Drawing No. 16170503-SEA-MONK -3D-TOP0 Rev B Dated: 27/11/2022. Used, edited and reproduced with permission of the Client.

Project No. D44101

Client Seagate Homes

Project Ivanda Nursery,  
Monks House Lane,  
Spalding

**Title**      **Bunded Above Ground Fuel  
Storage Tanks Area - Approximate  
Extent of Hydrocarbon Impacted  
Soils to be Remediated**

Drawn By \_\_\_\_\_ S \_\_\_\_\_

Checked By DB

Approved By PK

Scale NTS

Date Drawn 27/02/2025

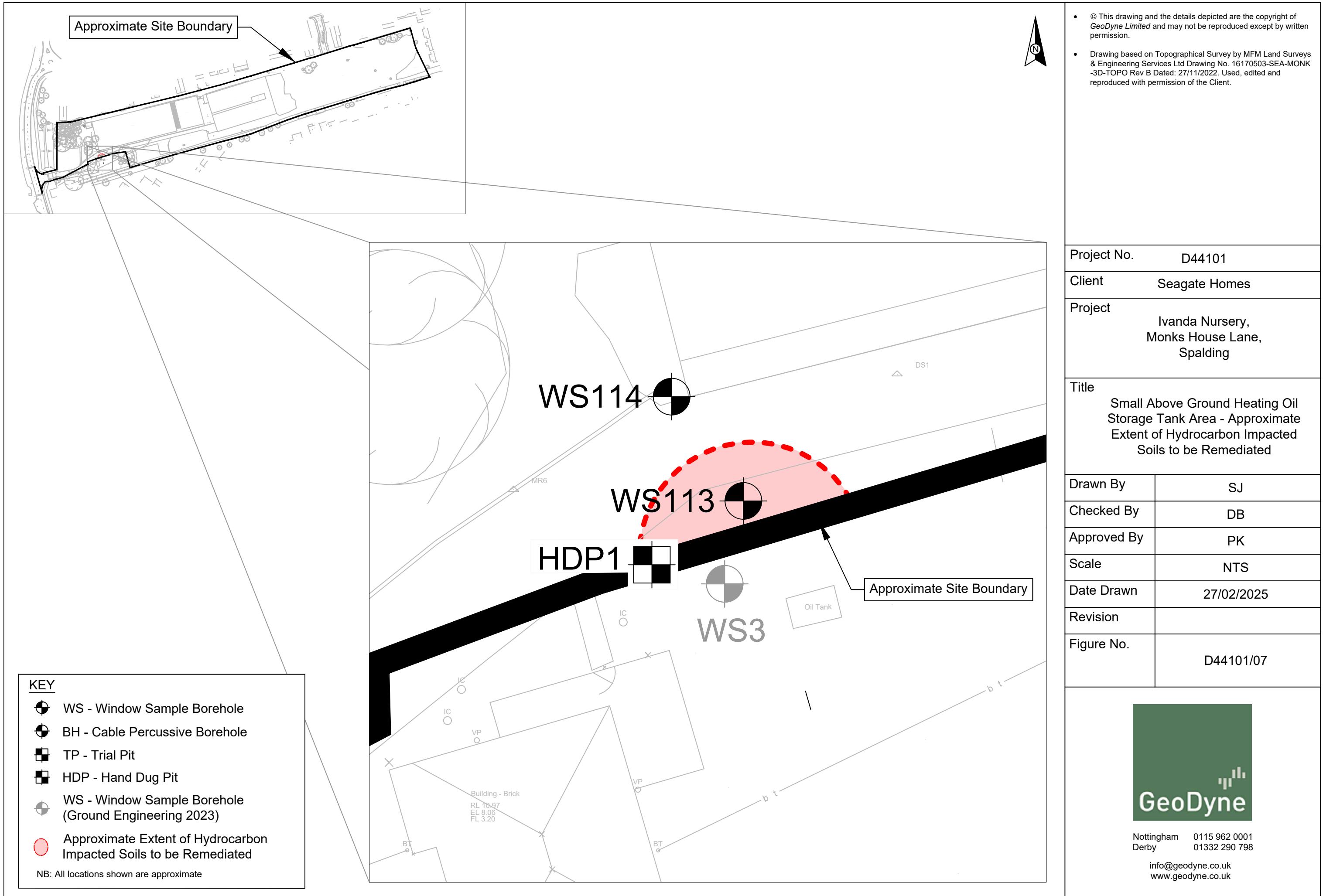
## Revision

Figure No. D44101/06



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## **APPENDIX II**

### **Clean Up Goals**

## APPENDIX II – Clean Up Goals

Table 1 details the Clean Up Goals which are derived from generic assessment criteria (GAC) for human health taking account of the development proposals. The laboratory test results for the validation samples should be initially compared to the CUG concentrations in Table 1.

Depending upon the findings of the validation testing (and recommended further works) there may be a requirement to derive site-specific remedial targets / CUGs as part of the further assessment works carried out at the site, including from a Controlled Water protection perspective.

<b>TABLE 1 – CLEAN UP GOALS</b> <b>TPH &amp; BTEX</b> <b>RESIDENTIAL WITH PLANT UPTAKE END USE</b>	
<b>Determinand</b>	<b>Tier 1 GAC (mg/kg)</b>
<b>Speciated TPH &amp; BTEX</b>	
Aliphatic C5-C6	42 S4UL
Aliphatic C6-C8	100 S4UL
Aliphatic C8-C10	27 S4UL
Aliphatic C10-C12	130 S4UL
Aliphatic C12-C16	1100 S4UL
Aliphatic C16-C35	65000 S4UL
Aromatic C5-C7	70 S4UL
Aromatic C7-C8	130 S4UL
Aromatic C8-C10	34 S4UL
Aromatic C10-C12	74 S4UL
Aromatic C12-C16	140 S4UL
Aromatic C16-C21	260 S4UL
Aromatic C21-C35	1100 S4UL
Benzene	0.087 S4UL
Toluene	130 S4UL
Ethyl Benzene	47 S4UL
m / p Xylene	56 S4UL
o Xylene	60 S4UL
MTBE	49 EIC
<b>Water Supply Pipe Threshold Values</b>	
Total BTEX + MTBE	0.1 AW
Aliphatic & Aromatic Hydrocarbons EC5-EC10	2 AW
Aliphatic & Aromatic Hydrocarbons EC10-EC16	10 AW
Aliphatic & Aromatic Hydrocarbons EC16-EC40	500 AW

**Key**

S4UL – LQM/CIEH S4ULs for Human Health Risk Assessment, 2015 (based on a SOM content of 1%). Copyright Land Quality Management Limited reproduced with permission; publication number S4UL3026.

Assessment criteria values derived from S4UL values assume 1% SOM in the first instance (where appropriate, S4UL values for 2.5% or 6% SOM may be considered for the assessment of soils).

EIC – Generic Assessment Criteria derived by EIC/AGS/CL:AIRE ‘Soil Generic Assessment Criteria for Human Health Risk Assessment’ dated December 2009, ISBN 978-1-905046-20-1 (based on a SOM content of 1%)

AW – Values taken from Pipe Selection Table within Anglian Water guidance document ‘Information for developers about contaminated land and ground condition assessment’ dated November 2023, which is reproduced from UKWIR publication ‘Guidance for the selection of water supply pipes to be used in Brownfield sites’ (2010).

**APPENDIX III****Site Acceptance Criteria**

### APPENDIX III – Site Acceptance Criteria

Table 2 details the proposed Site Acceptance Criteria (SAC) to be used to assess the laboratory chemical test results to determine the suitability of any materials proposed for importation (including topsoil and subsoil, together with soils to be used to raise site levels / excavation infill etc., as appropriate).

The SAC are derived from generic assessment criteria (GAC) for a residential end-use with home grown produce (i.e. private gardens) taking account of the development proposals. It will be necessary for the Local Authority Environmental Protection Officer to review the proposed SAC prior to implementation for the site.

**TABLE 2 – PROPOSED SITE ACCEPTANCE CRITERIA  
(RESIDENTIAL END-USE WITH PLANT UPTAKE)**

Determinand	Tier 1 SAC (mg/kg)
<b>Metals</b>	
Arsenic	37 S4UL
Cadmium	11 S4UL
Chromium III	910 S4UL
Chromium VI	6 S4UL
Lead	200 C4SL
Inorganic Mercury	40 S4UL
Selenium	250 S4UL
Nickel	130 S4UL
Copper	2400 S4UL
Zinc	3700 S4UL
<b>PAHs</b>	
Acenaphthene	210 S4UL
Acenaphthylene	170 S4UL
Anthracene	2400 S4UL
Benz(a)anthracene	7.2 S4UL
Benzo(a)pyrene	2.2 S4UL
Benzo(b)fluoranthene	2.6 S4UL
Benzo(ghi)perylene	320 S4UL
Benzo(k)fluoranthene	77 S4UL
Chrysene	15 S4UL
Dibenzo(ah)anthracene	0.24 S4UL
Fluoranthene	280 S4UL
Fluorene	170 S4UL
Indeno(123-cd)pyrene	27 S4UL
Naphthalene	2.3 S4UL
Phenanthrene	95 S4UL
Pyrene	620 S4UL
<b>Asbestos</b>	
Asbestos	Absence

**Key**

S4UL – CIEH/LQM Suitable 4 Use Levels (2015). Copyright Land Quality Management Limited. All rights reserved.

C4SL - value for Lead taken from DEFRA publication SP1010.

**Note**

SAC values for metals derived from S4UL values assume 6% Soil Organic Matter.

SAC values for PAHs derived from S4UL values assume 1% SOM in the first instance (where appropriate, S4UL values for 2.5% or 6% SOM may be considered for the assessment of donor soils).

Donor soil samples should be tested at the donor site for the metals, PAHs and asbestos detailed in the above table (this may be undertaken by a Consultant under instruction from the Client or directly by the Supplier). Please note that where donor materials are sourced from an unknown or potentially contaminated source (i.e. 'brownfield' sites) it may also be necessary to test the materials for additional determinants (i.e. speciated Total Petroleum Hydrocarbons, pesticides etc.), as well having the appropriate permits in place to allow transport of the material.

## APPENDIX IV

### Conditions & Limitations

## Conditions & Limitations

### Phase I Desk Studies

1. Works undertaken to provide the basis of the Phase I Desk Study report comprise a review of information available from a number of sources/parties (potentially also including the Client) together with a walk over of the site (where applicable and included within the quotation). The opinions given in the Phase I Desk Study are based on the information available from third parties/sources that has been obtained within the available timeframe. GeoDyne Limited assumes all third party information to be true and correct and therefore cannot accept liability for the accuracy of such information supplied.
2. Should additional information become available that may affect the comments and opinions made within the Phase I Desk Study, GeoDyne Limited reserves the right to review such information and make modifications to comments/opinions as appropriate.
3. It should be borne in mind that a Phase I Desk Study collates available information to generate a conceptual model of the site. The actual geotechnical and environmental considerations can only be fully quantified by intrusive investigation works to confirm the accuracy of the conceptual site model.

### Phase II Intrusive Investigations

1. Our quotation assumes that access to the site will be arranged by others at no cost to ourselves.
2. We have assumed that free access is available throughout to the entire site and that works can be undertaken during a single mobilisation. Where restricted access is encountered, or where additional unscheduled mobilisations are required, additional costs may be incurred to the client.
3. We have assumed that all available information relating to buried services will be supplied by the Client at no cost to ourselves. No responsibility will be accepted for damage to underground services that have not been brought to our prior attention by the Client.
4. All excavations/boreholes will be backfilled with compacted arisings upon completion, with any excess arisings left proud of ground levels. Excess arisings will not be removed from the site unless specifically requested by the Client. Where we are requested to remove excess arisings, all associated costs will be passed to the Client.
5. We will attempt to leave the site in a clean and tidy state, however, it must be understood that some disturbance of the site is unavoidable during intrusive works.
6. Exploratory holes are positioned approximately on site by GeoDyne Limited. Should the client require precise locations of all exploratory points, additional fees will be incurred. It must be borne in mind that backfilled trial pits can create 'soft spots', therefore, should the Client wish to designate 'no dig' zones, for example under the footprint of proposed structures, these must be brought to our attention prior to commencement of works.
7. Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions or seasonal variation.
8. Trial pits and boreholes examine only a small proportion of the total site area. No liability can be accepted for conditions not revealed in exploratory holes, particularly between positions. All extrapolations of available data are given in good faith.

### Payment

- 1 Payment terms are strictly 28 days from the invoice date. GeoDyne reserve the right to charge interest on any late payments.
- 2 Prior to commencement of works, we require receipt of formal written instruction from the party accepting full financial responsibility for the work. In the absence of such an instruction, we would expect the instructing Consulting Engineers/Architects to accept full financial responsibility for the works.
- 3 Receipt of instruction to commence work shall be taken as acceptance and compliance of the foregoing conditions.
- 4 GeoDyne reserve the right to charge for abortive costs for any site works cancelled by the client within 5 working days before mobilisation to site.

### Liability

1. GeoDyne Limited offer £5,000,000.00 Professional Indemnity Insurance (in aggregate over the year). This shall be the limit of our liability for works undertaken. No individual liability shall be implied to, or accepted by, any employee for works undertaken for and on the behalf of GeoDyne Limited.



Geotechnical & Environmental Consultants