

REMEDIATION STRATEGY & VERIFICATION PLAN
of a site at
LAND AT THE OLD FIRE STATION, WARMINSTER
for
A AND P PROPERTY SERVICES



**Contaminated
Land
Solutions**

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Revision	Issue date	Reason for Revision
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A	19/05/2023	Updated in line with the phase 2
B	07/07/2026	Revised to provide a minimum 600mm clean soil cover within landscaped areas
C	07/08/2026	Depth of made ground removal clarified
D	12/08/2026	Section 8.1 revised

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1 EXECUTIVE SUMMARY

The most recent site usage has been as a car park.

The proposed site usage is residential, comprising of flats with communal soft landscaped areas.

A phase 1 desktop study, phase 2 intrusive investigations and contamination tests have been undertaken by GO Contaminated Land Solutions Ltd.

Based on information from the previous reports the remedial actions required comprise:

- Removal from site of made ground to a depth of 600mm below finished level or to natural stratum in soft landscaped areas.
- An appropriate capping layer including fill and topsoil should be placed between any residual contamination and finished ground levels.
- Pavement construction shall be a minimum of 300mm.
- A protecta-line barrier water supply pipe should be installed, unless advised otherwise by the water supplier.

Prior to the removal of any spoil, the WAC testing results should be agreed with the facility to which the spoil is being transported, and if any additional testing is required, this should be completed. It is critical that the WAC results are representative of the material to be disposed of and therefore care must be taken to ensure that different materials are not mixed. Guidance can be obtained from Environment Agency document Waste Sampling and Testing for Disposal to Landfill.

Records will need to be retained and collated and a verification report prepared on completion of the remediation works.

It is considered that provided the recommendations of this report are implemented that the risk to sensitive receptors will be reduced to an acceptable level for the proposed development.

Risk Summary

Very Low	Low	Moderate / Low	Moderate	High
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		Receptors					
		Site Users	Ground Workers	Neighbours	Proposed Building	Aquifer	Watercourse
Sources	Past & current site use (Lead)						
	Naturally occurring contaminants						

2 BRIEF

Mr Alex Omirou of A and P Property Services requested GO Contaminated Land Solutions to develop a remediation strategy for a Land At The Old Fire Station, Warminster, BA12 9AL.

This report should be read in conjunction with the following GO Contaminated Land Solutions Reports:

- Phase 1 environmental report, ref: 2419-P1E-1, issued 7 November 2022,
- Phase 2 environmental investigation, ref: 2419-P2E-1-B, issued 7 August 2026

3 PRINCIPLES OF REMEDIATION

The principles of the strategy are to:

- Demonstrate that the level of any remaining contamination does not represent a significant risk to any on-site or off-site receptors.
- Provide a barrier in order to remove the pathway between any residual contamination and on-site or off-site receptors.
- Remove made ground from areas where soft landscaping and permeable areas are proposed to at least 600mm.
- Install appropriate water supply pipe.

4 PREVIOUS CONTAMINATION TESTING

The Phase 2 Environmental Investigation identified exceedances in lead within samples taken from boreholes positioned across the site. At these levels there is a potential risk to on-site and off-site receptors and appropriate remediation is required within the proposed area of communal soft landscaping

5 PROPOSED DEVELOPMENT

Plan details for the proposed redevelopment of the site are shown on the E-ten Architects drawing contained in appendix C.

The drawings shows the development split into two elements.

One element comprising a block of flats including parking facilities, cycle and bin storage, communal soft landscaping and the partial demolition of a listed wall to facilitate the proposed development.

In the area of the communal soft landscaping the site level has been reduced by approximately 1m.

The second element comprising residential dwellings is without private gardens or communal soft landscaping.

Access to the property is gained via a dedicated entrance from The Close.

6 REVISED CONCEPTUAL MODEL

The legislative framework for the regulation of contaminated land is embodied in Part IIA of the Environmental Protection Act 1990, implemented in the Contaminated Land (England) Regulations 2000. This legislation allows for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment. The approach adopted by UK contaminated land policy is that of “suitability for use” which implies that the land should be suitable for its current use and made suitable for any proposed future use.

In this revised contamination assessment the site has been modelled using the Source-Pathway-Receptor approach to produce a site specific conceptual model.

Source - substances or potential contaminants which may cause harm

Pathway - a linkage or route between a source and receptor

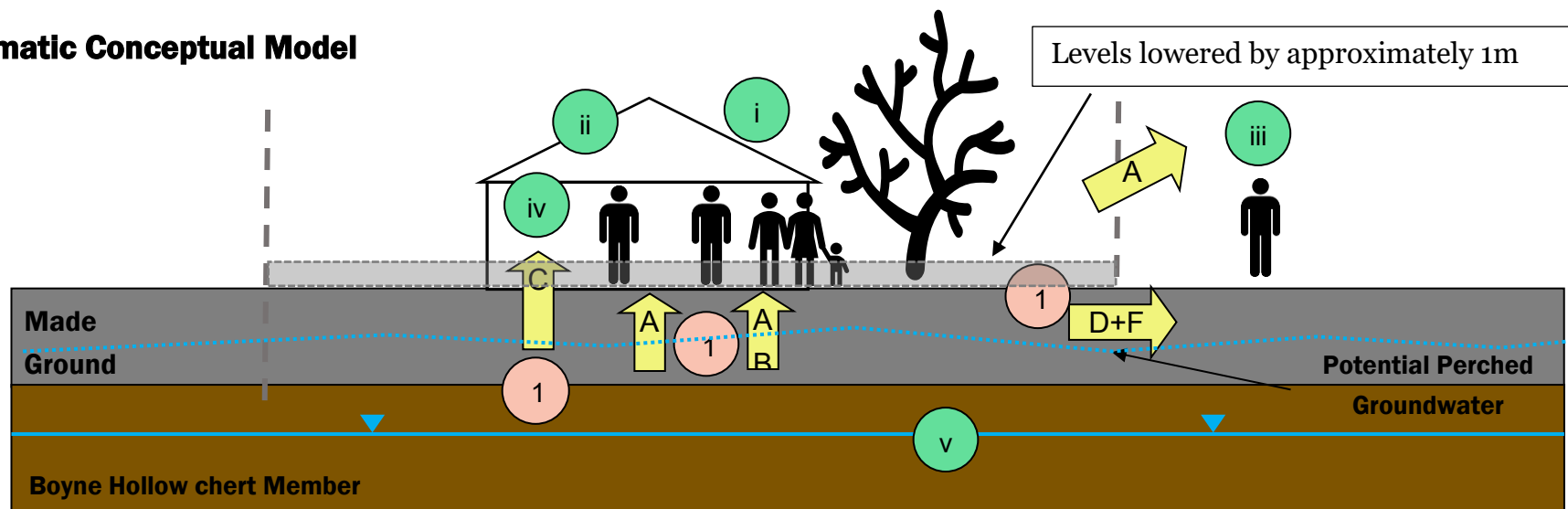
Receptor - humans, plant life, groundwater etc., which could be harmed by a contaminant

Geological records indicate that the site is underlain by an aquifer in the superficial stratum and therefore there is a potential for contaminants to be transported both to and from site in the groundwater.

From the information available at present a revised conceptual model has been considered.

		POTENTIAL PATHWAYS											COMMENTS ON DISCOUNTED PATHWAYS	
		Inhalation of contaminated vapour	Inhalation of contaminated dust	Direct Soil Ingestion	Direct dermal contact	Inhalation of asbestos	Drinking contaminated water supply	Direct contact of soil with building materials	Surface water run-off	Surface water percolation to groundwater	Migration via groundwater	Build-up of ground gas - methane		
RECEPTORS	Site Users	Y	Y	Y	Y	N	Y					N	Asbestos not identified in samples	No potentially significant sources of ground gas or soil organic matter identified.
	Ground Workers	Y	Y	Y	Y	N						N		
	Neighbours	Y	Y			N			Y		Y	N		
	Proposed Building							Y				N		
	Watercourse								N		N		No major watercourse identified nearby.	
	Aquifer									N			Leachate testing determined that there is no risk to the aquifer. The aquifer is therefore not considered to be receptor	

Schematic Conceptual Model



Sources	Pathways	Receptors
1 Past & current site use (Lead)	A Inhalation, ingestion, dermal contact, vapours B Drinking contaminated water supply C Direct contact of soil with building materials D Surface water run-off E Surface water percolation to groundwater F Migration via groundwater	i Site Users ii Ground Workers iii Neighbours iv Proposed Building v Groundwater

7 REVISED RISK ASSESSMENT

The level of information provided by the previous reports, together with the other information within the report is considered suitable to provide the data for a satisfactory risk assessment for the site. While there will always be uncertainties due to known or unknown gaps in information it is considered that sufficient information is available to reduce those uncertainties to within acceptable limits for the nature of the site under review.

An asbestos survey of existing structures and infrastructure (as defined under Section 5(a) of the Control of Asbestos Regulations 2012) was beyond the brief of this report. The risk assessment has been undertaken on the basis that should asbestos be identified within buildings or infrastructure, these materials will be removed appropriately by licensed contractors and asbestos materials disposed of in accordance with legal requirements prior to demolition or other works in order to avoid contaminating soils at the site.

The phase 1 desktop study identified a potential risk to the sub-structure of the new buildings should any alkaline ground conditions, or elevated sulphate levels be present on the site, however this was beyond the brief of this report. As the protection of concrete is normally resolved in the building design process, the designer of the foundations should undertake appropriate geotechnical investigation and take into account the existing ground conditions.

Only contaminants identified to exceed the environmental screening level have been included in the Risk Assessment.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Current use as a car park (On-Site)	Lead	Site Users	Dermal contact	Medium	Likely	Moderate risk	Remediation is required
			Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/Low risk	
			Soil Ingestion	Medium	Likely	Moderate risk	
			Inhalation of contaminated dust	Medium	Likely	Moderate risk	
			Drinking of water from supply impacted by contaminated soil	Mild	Unlikely	Very low risk	A barrier water supply pipe may be required by water supply company. It is recommended that this report is provided to the water supplier with a request for the testing, if any, that they require.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Current use as a car park (On-Site)	Lead	Ground workers	Dermal contact	Mild	Likely	Moderate/Low risk	Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction.
			Inhalation of vapours, indoors and outdoors	Mild	Low likelihood	Low risk	
			Soil Ingestion	Mild	Low likelihood	Low risk	
			Inhalation of contaminated dust	Mild	Likely	Moderate/Low risk	

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Current use as a car park (On-site)	Lead	Neighbours	Inhalation of vapours, indoors and outdoors	Mild	Unlikely	Very low risk	No action required.
			Inhalation of contaminated dust (during construction)	Mild	Likely	Moderate/Low risk	Appropriate dust control measures during construction.
			Inhalation of contaminated dust (after construction)	Mild	Low likelihood	Low risk	No action required.
			Surface water run-off	Mild	Low likelihood	Low risk	
			Lateral migration of groundwater transporting contaminants	Mild	Low likelihood	Low risk	

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Naturally occurring contaminants	Sulphates pH	Proposed Building	Direct contact of soil with building materials	Medium	Low likelihood	Moderate/low Risk	As the protection of concrete is normally resolved in the building design process, the designer of the foundations should determine the requirement to undertake any investigation.

Any visual or olfactory evidence of contamination noted during works should be investigated by a suitably qualified person and their recommendations implemented.

8 SITE WORKS

8.1 Sequence

1. Clear 600mm of contaminated soil from the entire site
2. Replace the removed made ground with 600mm of certified sub and topsoil or other suitable fill in hard landscaped areas
3. Contamination verification to be carried out once the new material laid

8.2 Excavation Arisings

Spoil removed from the site should be taken to an appropriate land fill facility.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported. It is critical that the WAC results are representative of the material to be disposed of and therefore care must be taken to ensure that different materials are not mixed. Guidance can be obtained from Environment Agency document *Waste Sampling and Testing for Disposal to Landfill*.

8.3 Soft Landscaping

In terms of human health for residents provision of a simple cover system comprising a layer of clean topsoil in soft landscaped areas should be sufficient to provide a reduction of the hazard to human health and to provide a suitable medium for plant growth.

A barrier should be placed between site users and any remaining made ground, in the form of 600mm of clean soil.

Clean soil free from invasive plants and complying with the relevant criteria, refer to appendix E, shall be used to replace excavated material and bring the soft landscaping up to finished level. Assessment levels used should be for residential

Care should be taken when importing soils and aggregates as asbestos is a common contaminant, even in certified materials.

8.4 External Permeable Hardstanding

The pavement construct shall be a minimum of 300mm in order to provide a suitably robust barrier between any remaining potentially contaminated made ground and site users.

8.5 External Impermeable Hardstanding

Underlying made ground can remain on the site. The pavement construct shall be a minimum of 300mm in order to provide a suitably robust barrier between any remaining potentially contaminated made ground and site users.

8.6 Site Boundaries

Around the site perimeter where it is not practicable to remove soil to a depth of 600mm due to risk of instability of neighbouring structures, walls or fences, the ground should be excavated down to level with the underside of the foundation and then battered at a slope of one in three down to 600mm below proposed finished level (refer to appendix H). In the case of shallow fence posts additional temporary support should be provided to permit excavation to reach the specified depth.

8.7 Water Supply

Appropriate water supply pipe should be installed in accordance with the requirements of the water supplier. Unless confirmation is received from the water supplier that a standard pipe is suitable protecta-line barrier pipe should be used.

8.8 Watching Brief

Soil contamination sampling and testing as well as waste acceptance criteria testing was undertaken across the site, sufficient to ensure an acceptable level of certainty of the nature of the made ground.

A watching brief is to be maintained by a suitably experience person during ground works with instructions to advise GO Contaminated Land Solutions Ltd should any made ground appear to vary significantly from the soil sampled and tested, refer to appendix F.

If any potential contamination is identified works must be stopped and GO Contaminated Land Solutions Ltd advised. Works must not recommence until further investigation has been completed and if required a revised remediation strategy has been produced to remediate the impacted area.

9 VERIFICATION PLAN

On completion of remediation a verification report must be prepared and submitted to the local authority for approval. The report must include the information detailed below.

To demonstrate that the made ground within the soft landscape area has been removed to a depth of 600mm, photographs will be taken of the proposed soft landscaped areas following removal of made ground. Examples of how to take photographs showing depth and locations are contained in appendix I. A plan showing the locations of the photographs will be prepared.

Test certification for any proposed fill, demonstrating compliance with the requirements of section 8.2, is to be obtained prior to importation, the list of determinands is provided in appendix E. Documentation such as purchase records to confirm the volume of imported material is also to be provided.

After placing of the topsoil verification samples will be taken and tested. The clean fill for gardens and landscaped areas should comply with the requirements set out in appendix E. Verification samples will be taken in accordance with the plan in appendix B.

Verification pits will be excavated to a minimum depth of 600mm to confirm the thickness of the capping layer.

Documentation to be provided to demonstrate that the correct grade of water supply pipe has been installed.

Full details must be provided of any unforeseen contamination encountered and the remedial actions taken and communications with the local authority.

An indicative plan of the proposed sample locations and verification pits is contained in appendix B. The actual locations will be determined during the verification visit.

10 DUTY OF CARE DOCUMENTATION

A full record of “Duty of Care” documentation must be retained and a copy provided to GO Contaminated Land Solutions. This will include Waste Transfer Notes (WTN) and for hazardous waste, a Consignment Note, also tickets from the landfill confirming receipt at their facility.

Documentation must be provided to demonstrate compliance of imported fill with the criteria in appendix E.

The above documentation must be provided for inclusion in the Verification Report.

11 CONCLUSIONS

11.1 The site is currently used as a car park. Elevated levels of lead were identified across the site, therefore remediation is required.

11.2 The following remedial measures will reduce the potential risk to an acceptable level for the proposed residential end use.

- Provide a barrier comprising 600mm of clean soil in soft landscaped areas.
- Pavement construction shall be a minimum of 300mm.
- Install appropriate water supply pipe.

11.3 A water supply pipe should be installed in accordance with the requirements of the water supplier. Unless confirmation is received from the water supplier that a standard pipe is suitable protecta-line barrier pipe should be used.

11.4 If any potentially contaminated material is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

11.5 It is recommended that appropriate dust control measures are implemented during construction. To assist in establishing what would be appropriate reference should be made to the Institute of Air Quality Management report entitled: *Guidance on the assessment of dust from demolition and construction*, version 1.1.

11.6 If any unexpected contamination encountered during development (eg discoloured soil or odours or buried waste), then all works should be stopped and be investigated by a suitably qualified person and their recommendations implemented. Council should be notified and any additional remediation requirements agreed in writing before any works recommence.

11.7 Therefore if the strategy recommended herein is adopted the risk to site users and potential off-site receptors will be reduced to an acceptable level for the proposed residential end use.

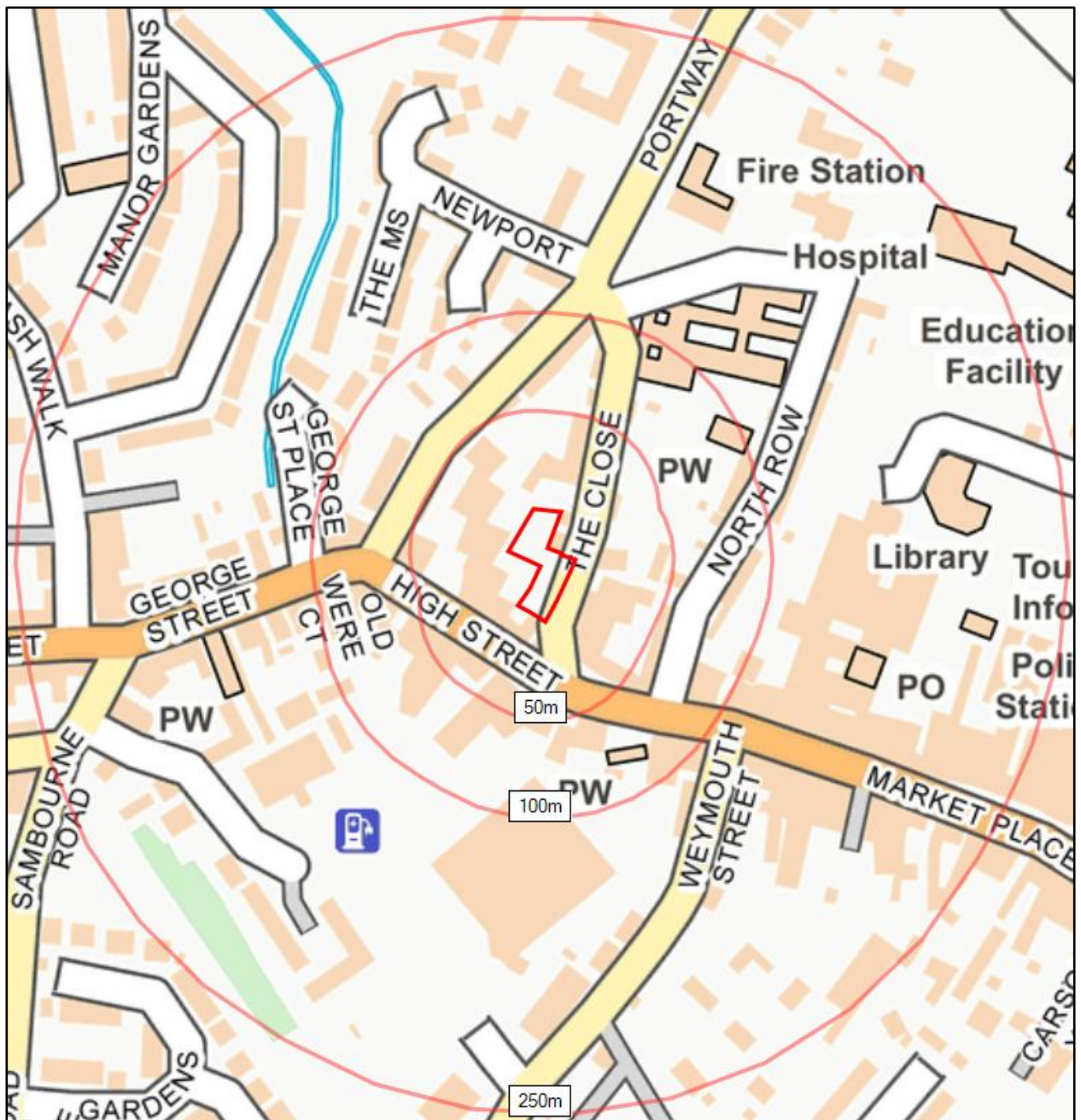
11.8 If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

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Appendix A – Site Location Plan



**2419-P3E-1-D: Land at Old Fire Station, Warminster
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Appendix B – Indicative Verification Sampling Plan



2419-P3E-1-D: Land at Old Fire Station, Warminster
A and P Property Services



Appendix C – Existing and Proposed Site Plan



2419-P3E-1-D: Land at Old Fire Station, Warminster
A and P Property Services



2419-P3E-1-D: Land at Old Fire Station, Warminster
A and P Property Services



Appendix D – Previous Contamination Testing

RESIDENTIAL WITHOUT HOMEGROWN PRODUCE (R _{wo} HP) - SOM 1%									
Determinand	Unit	GAC	Source	Concentration				Number of Tests	Number of Exceedences
				BH1	BH2	BH3	BH4		
Metals									
Arsenic	mg/kg	39.9	DEFRA C4SL	10.5	12.6	14.9	10.6	4	0
Cadmium	mg/kg	149.0	DEFRA C4SL	< 0.5	< 0.5	< 0.5	< 0.5	4	0
Chromium (III)	mg/kg	16700.0	ATRISK SSV	18.6	22.2	17.1	18.1	4	0
Copper	mg/kg	9060.0	ATRISK SSV	77.6	111	79.8	78.0	4	0
Lead	mg/kg	313.0	DEFRA C4SL	366	823	558	426	4	4
Mercury (Inorganic)	mg/kg	244.0	ATRISK SSV	2.3	1.7	1.6	1.0	4	0
Nickel	mg/kg	188.0	ATRISK SSV	20.2	24.6	19.0	16.8	4	0
Selenium	mg/kg	595.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
Zinc	mg/kg	47000.0	ATRISK SSV	130.0	182.0	122.0	122.0	4	0
Inorganics									
Free Cyanide	mg/kg	34.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
Hexavalent Chromium	mg/kg	21.0	DEFRA C4SL	< 0.8	< 0.8	< 0.8	< 0.8	4	0
Miscellaneous									
Moisture Content	%	-	-	13.5	9.9	15.1	12.9	4	-
pH	pH units	-	-	8.5	8.4	8.5	8.3	4	-
Soil Organic Matter	%	-	-	4.6	6.0	5.1	4.6	4	-
Stones Content	%	-	-	<9.6	<5.0	<7.2	6.2	4	-
Phenols									
Total Monohydric Phenols	mg/kg	750.0	LQM/CIEH	<5	<5	<5	<5	4	0
Polyaromatic hydrocarbons									
Naphthalene	mg/kg	0.85	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Acenaphthylene	mg/kg	2900.0	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Acenaphthene	mg/kg	2680.0	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Fluorene	mg/kg	3260.0	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Phenanthrene	mg/kg	1300.0	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Anthracene	mg/kg	34300.0	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Fluoranthene	mg/kg	4880.0	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Pyrene	mg/kg	3650.0	ATRISK SSV	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Benzo(a)anthracene	mg/kg	11	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Chrysene	mg/kg	30	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Benzo(b)fluoranthene	mg/kg	3.9	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Benzo(k)fluoranthene	mg/kg	110	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Benzo(a)pyrene	mg/kg	5.3	DEFRA C4SL	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Indeno (1,2,3-cd) pyrene	mg/kg	45	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Dibenzo(a,h)anthracene	mg/kg	0.31	LQM/CIEH	< 0.1	< 0.1	< 0.1	< 0.1	4	0
Benzo(g,h,i)perylene	mg/kg	360	LQM/CIEH	<0.1	<0.1	<0.1	<0.1	4	0
TPH CWG									
>C ₅ -C ₆ Aliphatic	mg/kg	42.9	ATRISK SSV	< 0.01	< 0.01	< 0.01	< 0.01	4	0
>C ₆ -C ₈ Aliphatic	mg/kg	99.6	ATRISK SSV	< 0.01	< 0.01	< 0.01	< 0.01	4	0
>C ₈ -C ₁₀ Aliphatic	mg/kg	13.9	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₀ -C ₁₂ Aliphatic	mg/kg	81.8	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₂ -C ₁₆ Aliphatic	mg/kg	385.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₆ -C ₃₅ Aliphatic	mg/kg	212000.0	ATRISK SSV	<2.0	<2.0	<2.0	<2.0	4	0
>C ₃₅ -C ₄₀ Aliphatic	mg/kg	65000.0	LQM/CIEH	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₅ -C ₇ Aromatic (benzene)	mg/kg	0.3	ATRISK SSV	< 0.01	< 0.01	< 0.01	< 0.01	4	0
>C ₇ -C ₈ Aromatic (toluene)	mg/kg	312.0	ATRISK SSV	< 0.01	< 0.01	< 0.01	< 0.01	4	0
>C ₈ -C ₁₀ Aromatic	mg/kg	22.7	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₀ -C ₁₂ Aromatic	mg/kg	139.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₂ -C ₁₆ Aromatic	mg/kg	703.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₁₆ -C ₂₁ Aromatic	mg/kg	1930.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₂₁ -C ₃₅ Aromatic	mg/kg	1930.0	ATRISK SSV	< 1.0	< 1.0	< 1.0	< 1.0	4	0
>C ₃₅ -C ₄₄ Aromatic	mg/kg	1900.0	LQM/CIEH	<1.0	<1.0	<1.0	<1.0	4	0



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-44803

Issue: 1

Date of Issue: 23/11/2022

Contact: Peter George

Customer Details: GO Contaminated Land Solutions Ltd
4 De Frene Road
Sydenham
London
SE26 4AB

Quotation No: Q22-02616

Order No: Not Supplied

Customer Reference: 2419

Date Received: 18/11/2022

Date Approved: 23/11/2022

Details: Land at Old Fire Station, Warminster

Approved by: 

Tim Reeve, Quality Officer

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Sample Summary

Report No.: 22-44803, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
302289	BH1 1.20 - 1.35	16/11/2022	18/11/2022	Sandy silty loam	
302290	BH2 1.20 - 1.40	16/11/2022	18/11/2022	Sandy silty loam	
302291	BH3 1.00 - 1.20	16/11/2022	18/11/2022	Sandy silty loam	
302292	BH4 1.00 - 1.20	16/11/2022	18/11/2022	Silty loam	



2683



Results Summary

Report No.: 22-44803, issue number 1

				ELAB Reference	302289	302290	302291	302292
				Customer Reference				
				Sample ID				
				Sample Type	SOIL	SOIL	SOIL	SOIL
				Sample Location	BH1	BH2	BH3	BH4
				Sample Depth (m)	1.20 - 1.35	1.20 - 1.40	1.00 - 1.20	1.00 - 1.20
				Sampling Date	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Determinand	Codes	Units	LOD					
Soil sample preparation parameters								
Moisture Content	N	%	0.1	13.5	9.9	15.1	12.9	
Stones Content	N	%	0.1	9.6	5.0	7.2	6.2	
Material removed	N	%	0.1	9.6	5.0	7.2	6.2	
Description of Inert material removed	N		0	Stones	Stones/Clinker	Stones/Clinker	Stones	
Metals								
Arsenic	M	mg/kg	1	10.5	12.6	14.9	10.6	
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chromium	M	mg/kg	5	18.6	22.2	17.1	18.1	
Copper	M	mg/kg	5	77.6	111	79.8	78.0	
Lead	M	mg/kg	5	366	823	558	426	
Mercury	M	mg/kg	0.5	2.3	1.7	1.6	1.0	
Nickel	M	mg/kg	5	20.2	24.6	19.0	16.8	
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc	M	mg/kg	5	130	182	122	122	
Inorganics								
Free Cyanide	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	
Miscellaneous								
pH	M	pH units	0.1	8.5	8.4	8.5	8.3	
Soil Organic Matter	U	%	0.1	4.6	6.0	5.1	4.6	
Phenols								
Total Monohydric Phenols	N	mg/kg	5	< 5	< 5	< 5	< 5	



Results Summary

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ELAB Reference				302289	302290	302291	302292
Customer Reference							
Sample ID							
Sample Type				SOIL	SOIL	SOIL	SOIL
Sample Location				BH1	BH2	BH3	BH4
Sample Depth (m)				1.20 - 1.35	1.20 - 1.40	1.00 - 1.20	1.00 - 1.20
Sampling Date				16/11/2022	16/11/2022	16/11/2022	16/11/2022
Determinand	Codes	Units	LOD				
Polyaromatic hydrocarbons							
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	< 0.4	< 0.4
TPH CWG							
>C5-C6 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Total aliphatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Total aromatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Total petroleum hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_Total)	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0



2683

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Results Summary

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Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
302289	1.20 - 1.35	BH1	Grey sandy soil, stones, concrete, clinker	No asbestos detected	n/t	n/t	n/t	n/t
302290	1.20 - 1.40	BH2	Grey sandy soil, stones, concrete, brick, clinker, organics	No asbestos detected	n/t	n/t	n/t	n/t
302291	1.00 - 1.20	BH3	Grey sandy soil, stones, concrete, clinker, glass, organics	No asbestos detected	n/t	n/t	n/t	n/t
302292	1.00 - 1.20	BH4	Grey sandy soil, stones, concrete, brick, clinker	No asbestos detected	n/t	n/t	n/t	n/t



Method Summary

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Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Free cyanide	N	As submitted sample	21/11/2022	107	Colorimetry
Hexavalent chromium	N	As submitted sample	21/11/2022	110	Colorimetry
pH	M	Air dried sample	22/11/2022	113	Electromeric
Aqua regia extractable metals	M	Air dried sample	22/11/2022	300	ICPMS
Phenols in solids	N	As submitted sample	21/11/2022	121	HPLC
PAH (GC-FID)	M	As submitted sample	21/11/2022	133	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	22/11/2022	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	22/11/2022	181	GC-MS
TPH CWG soil by gc-gc	M	As submitted sample	18/11/2022	271	
Asbestos identification	U	Air dried sample	22/11/2022	280	Microscopy
Soil organic matter	U	Air dried sample	22/11/2022	BS1377:P3	Titrimetry

Tests marked N are not UKAS accredited



Report Information

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Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
 All water samples will be retained for 7 days following the date of the test report
 Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



Appendix E – Imported Material

Any imported material should be tested for the following parameters, and compared against the current environmental screening levels to ensure that the fill material meets the criteria for the proposed end use.

Care should be taken when importing soils and aggregates as asbestos is a common contaminant, even in certified materials.

Determinand	
Arsenic	
Cadmium	
Chromium	
Lead	
Mercury	
Nickel	
Copper	
Zinc	
Selenium	
Hexavalent Chromium	
pH Value	
Free Cyanide	
Naphthalene	
Acenaphthylene	
Acenaphthene	
Fluorene	
Phenanthrene	
Anthracene	
Fluoranthene	
Pyrene	
Benz(a)anthracene	
Chrysene	
Benzo(b)fluoranthene	
Benzo(k)fluoranthene	
Benzo(a)pyrene	
Indeno(123-cd)pyrene	
Dibenz(ah)anthracene	
Benzo(ghi)perylene	
TOTAL PAH	
Aromatic Hydrocarbons	>C ₅ -C ₇
	>C ₇ -C ₈
	>C ₈ -C ₁₀
	>C ₁₀ -C ₁₂
	>C ₁₂ -C ₁₆
	>C ₁₆ -C ₂₁
	>C ₂₁ -C ₃₅
Aliphatic Hydrocarbons	>C ₅ -C ₆
	>C ₆ -C ₈
	>C ₈ -C ₁₀
	>C ₁₀ -C ₁₂
	>C ₁₂ -C ₁₆
	>C ₁₆ -C ₃₅
TOTAL TPH	
Asbestos	



Appendix F – Watching Brief and Discovery Strategy

Watching Brief and Discovery Strategy

DISPLAY AND AWARENESS

The Discovery Strategy must be placed on the Health & Safety Notice Board and displayed in a prominent area where all site staff are able to consult the document at any time.

Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the discovery strategy.

HOW TO IDENTIFY POTENTIAL CONTAMINATED MATERIAL

- Looks oily and has an oily odour.
- Solvent type of odour.
- Man-made materials in fill such as paint cans, car parts, glass fragments.
- Contains fragments of white asbestos sheeting, coal or coke clinker.
- Sand bags or subsurface concrete structures.
- Unusual colour.
- Asbestos cement or lagging.

(This list is not exhaustive. If in any doubt, please contact GO Contaminated Land Solutions)

PROCEDURE

If unexpected evidence of contamination is found the following procedures shall be adhered, including:

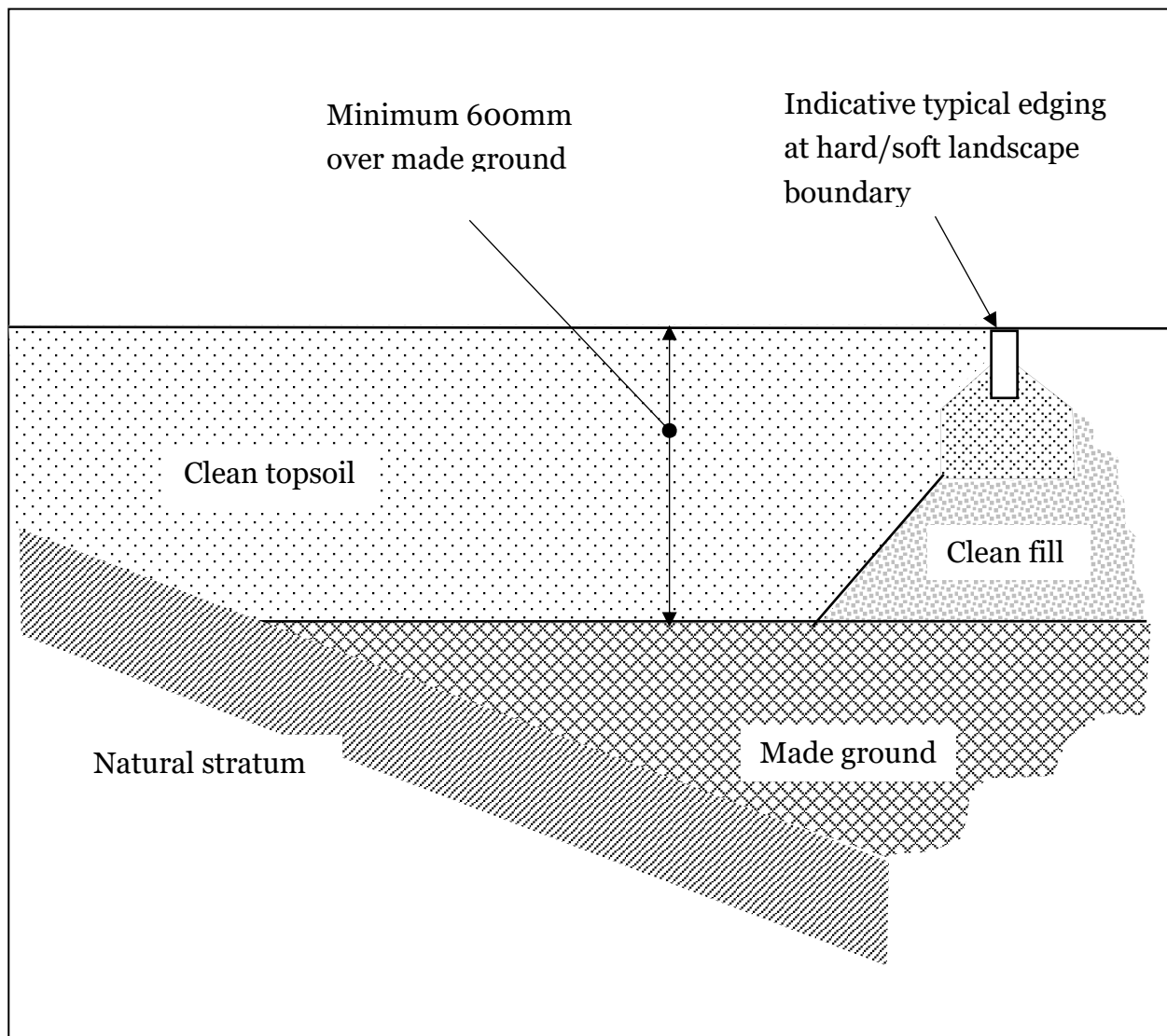
1. All site works at the position of the suspected contamination should stop.
2. Site Personnel to inform the Site Manager or Agent.
3. Visual and olfactory observations of the condition of the ground and the extent of contamination should be made and notification shall be given to Go Contaminated Land Solutions (GO CLS) Consultants as soon as practicable. GO CLS will then inform the Local Authority as soon as practicable. Should the contamination be likely to affect controlled waters the Environment Agency shall also be informed.
4. In the presence of a suitably qualified Environmental Consultant from GO CLS, investigation works shall commence to recover samples for testing and, using visual and olfactory observations of the condition of the ground, delineate the area over which contaminated materials are present.

5. Should GO CLS deem it appropriate, the affected material may be excavated and placed in a stockpile on a suitable impermeable surface. This should be suitably quarantined with no addition to, or removal of, the stockpile while chemical analysis is being undertaken. Alternatively, the material should remain in situ until laboratory test results have been obtained.
6. A photographic record should also be made of relevant observations.
7. GO CLS will determine an appropriate testing suite based on visual and olfactory observations.
8. Test results will be compared against current assessment criteria suitable for the future use of the area of the site affected.
9. If after testing the ground is found to be contaminated, the Local Authority Environmental Team shall be informed. After consultation with the Local Authority and if necessary, the Environment Agency, materials should either be removed for disposal to a licensed waste management facility or remediated to agreed clean-up criteria.
10. If the potential for contamination is severe or may lead to pollution of either groundwater or water courses, the Environment Agency shall be informed immediately as a potential environmental incident (see EA website).



**Contaminated
Land
Solutions**

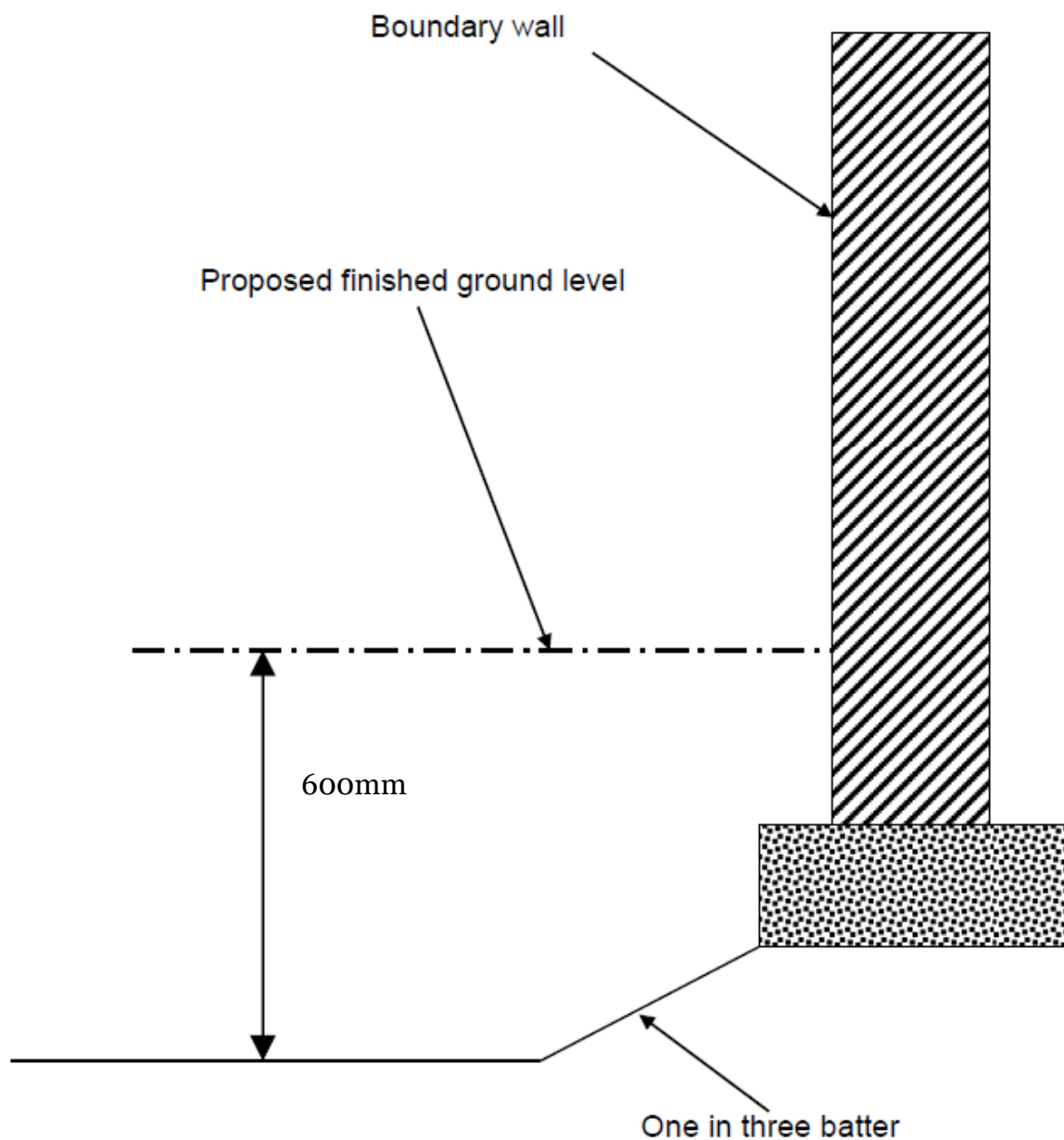
Appendix G – Indicative Capping Layer



Indicative Cross-section



Appendix H – Indicative Boundary Wall Remediation



Indicative Schematic

If the boundary wall is acting as a retaining wall or appears to be unsound or there are any concerns regarding stability advice should be obtained from a civil, structural or geotechnical engineer.



Appendix I – Example Record Photographs

Example A: Close up, showing the depth clearly.



Example A: Showing the location of the close up



Example B: Close up, showing the depth clearly



Example B: Showing the location of the close up

