

REMEDIATION STRATEGY REPORT

Site Address:	Land Adjacent To Lane End House, Shinfield Road, Shinfield, RG2 9BP
Report Date:	February 2025
Project No.:	19241
Prepared for:	Westway Construction Ltd
Planning Application	Wokingham Council.



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GENERAL NOTES

This report has been prepared based on the findings of investigations into the site conditions using current available data which has been recovered from Envirocheck to provide environmental data in relation to the site and surrounding area. Where possible, local sources have been researched to gain a better understanding of the site conditions. As part of this review, research has been undertaken with the Local Authority and the Environment Agency as to the site condition.

We can confirm that this report has been prepared based on the information gained and that this information is not exhaustive, and that subsequent research may reveal additional facts that may influence the reporting. Where possible, this information has been researched.

All geological information has been researched using the British Geological Society website, (the geology viewer). The disclaimer associated with this portal confirms 'The British Geological Society accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from Non-BGS sources and may not represent current interpretation.

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The accuracy of map extracts cannot be guaranteed, and it should be recognized that different conditions on site may have existed between subsequent to the various map surveys.

We can confirm that within the assessment of the site, various websites have been visited and as such, we cannot confirm the validity of these sites and as such, this information is accepted de facto and without prejudice. Anyone relying on these sources does so at their own risk, however, Herts & Essex Site Investigations does undertake all reasonable care to ensure this data is relevant and correct.

It should be confirmed that the extent of review of this report has undertaken a broad review of on site features which would promote a contamination ground risk, however, this does not include ecological features and in particular Japanese Knotweed which should be reviewed under separate cover.

A review of the site will be made to confirm the extent of obvious Asbestos product or sheet materials either on the surface of the site soils or evident above ground, however, does not constitute a full Asbestos Survey by any means. This should be sought under separate cover.

DOCUMENT INFORMATION AND CONTROL SHEET

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Document Status and Approval Schedule

<i>Issue No</i>	<i>Status</i>	<i>Date</i>	<i>Prepared by: Rebecca Chamberlain Signature / Date</i>	<i>Technical review by: Chris Gray Signature / Date</i>
1	Final	February 2025		

REVIEW OF HISTORIC REPORTS

Client	Westway Construction Ltd		
Site Location	Land Adjacent To Lane End House, Shinfield Road, Shinfield, RG2 9BB		
Existing Development	Open Field		
Proposed Development	Development of residential houses, landscaping and access roads and pathways.		
Site Settings and Previous Uses	The site is identified as a field from the earliest map record until present day with Lane End House recorded in place from 1909. Surrounding the site, the house is generally undeveloped from the earliest map record. Some infrastructure is in place between 1872 and 1972, although, some distance away from the site. In 1972, a tank is in place 10 meters to the east with poultry houses 75 meters to the south. Some infrastructure extends away from the site. No other changes are recorded surrounding the site		
Geological and Hydrological Profile	Geology		Aquifer Designation
	Made Ground	Medium dense/compact, brown, slightly silty, slightly sandy TOPSOIL - MADE GROUND	Not Classified
	London Clay	Stiff becoming very stiff, brown, slightly silty, moderately sandy CLAY / with rare gravel	Unproductive Stratum
Nearest Surface Water Feature	There are three (3no) records within 250m for inland rivers (non-tidally influenced), located 75m and 113m northwest, and 167m southwest.		
Groundwater Abstractions	There are no records within 1000m		
Source Protection Zone	There are no records within 250m.		
Potential Sources of Contamination	Features On Site		Features Off Site
	Unspecified Buildings.	- Cuttings, Unspecified Pit, - Smithy, - Research Institute, - Farm, - Radioactive Substances, - Pollution Incident, - Waste / Waste Exemptions.	
Investigation Scheme	Initial Investigation – October 2024 6 No Competitor Rig Windowless Sampler borehole sunk to a maximum depth of 3.00 meters - Date of Works – October 2024. - Chemical Sampling and Testing recovered from samples and sent to analytical chemist, (report date 23/10/2024).		
Contamination Identified	SOILS (human health and workforce)	The site has identified made ground and potentially contaminated ground. These risks form the following layers and associated contamination: - FILL: - Isolated risk from PAHs in WS1 within the made ground only to a shallow depth, (0.30m). Based on the above, remedial measures will likely be required areas where pathways to receptors are in place. Appropriate PPE should be worn and the soil contamination risk should be noted within any site inductions.	
	LAND GASES	Land Gas risk is low.	
	VAPOURS	Chemical testing of the soils show that low risks are in place. Vapour risk is not in place.	
	GROUNDWATER	Risks to groundwater is considered low , although if groundwater is in place within the standpipe, testing for the elevated risks within the site is recommended.	
	CONSTRUCTION MATERIALS	Water main pipework has been considered and with no risk. Any water main pipework should be laid in clean corridors.	

REMEDIATION STRATEGY REPORT - PHASE 3

1 Context and Objectives of this report

1.1 Introduction

At the request of Westway Construction Ltd, Herts & Essex Site Investigations have been asked to further assess and consider the site for the preparation of this Site Remediation Strategy Report to define, where appropriate, a strategy for the remediation and validation of the site to enable a fit for use classification upon completion of the development and hand over for sale.

The principal aim of this report is to provide a source document for regulatory authorities and other interested parties to review, in particular the Environment Agency, Planning and Country and the client. Agreement from regulatory authorities will be required in order to satisfy planning conditions and to ensure that the site does not present a significant risk to potentially vulnerable receptors including future site users, controlled waters and the environment.

The main objectives of this Remediation Method Statement are as follows:

- To comply with the requirements of the Regulatory Authority requirements.
- To provide a summary of the remedial works, and specific methodology for removal of elevated PAHs in the location of WS1.
- To provide details of good working practices during site remediation works, in accordance with current legislation and guidance.

This document is based on the findings of, and should be read in conjunction with, the Phase 1 Desktop Study by Your Environment Ltd dated July 2021 and Environmental Report by Herts & Essex Site Investigations dated November 2024.

1.2 Current Planning Status

This report has been prepared with following application with the Wokingham Council in mind.

Application Number: 222304

Proposal: Full application for the proposed Erection of 6 dwellings with associated landscaping and access:

1.3 Remediation Requirements

The preparation of this remediation strategy and any future verification plan is to ensure the site is suitable for future use when completed and habitable. The proposals laid out in this report have been proposed based on the plans provided to us by the client and submitted to the council and are in place to mitigate against future risk being in place.

The remediation strategy and verification plan have been developed for the site in accordance with guidance documents :-

- National Planning Policy Framework.
- BS 10175:2011+A2:2017, (Investigation of potentially contaminated sites. Code of practice - Code of practice).
- Land contamination risk management (LCRM).

- DEFRA: Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, (April 2012).
- Environment Agency, (2010) GPLC1 Guidance Principles for Land Contamination.

2 Site Details

The site is located within a residential area of Shinfield, Wokingham, the details of which are summarised in Table 1 with the location plan of the site shown in Appendix 1, Sheet 1.

Table 1 *Site Detail*

Site Address:	Land Adjacent to Lane End House, Shinfield Road, Shinfield, RG2 9BB
Site assessed under	Site Owners Request - Aid as part of planning and warranties.
Current use of land:	Open land
Previous use of site, (if known)	As above
Grid Reference	NGR 473027 168707
Site Area	0.33 Hectares
Local Authority	Wokingham Council – No current Applications
Gradient of the site	The site forms a general level area of land which is laid to wild grasses. The site is entirely laid to soft landscaping.
Proximity of Controlled Waters, (if known)	There are three (3no) records within 250m for inland rivers (non-tidally influenced), located 75m and 113m northwest, and 167m southwest.

3 Remedial Strategy

3.1 Source Pathway Receptor Risk

The conceptual site model developed for the site confirms that Source-Pathway-Receptor links are in place within the site which may require mitigation or remediation works in order to develop a suitable development. The methods of control or reducing the unacceptable risks are defined as follows :-

- Remove or treat the contamination at source to remove the risk.
- Remove the pathway in which contamination can impact on a receptor.
- Remove the receptor from the environment.



If the pollution chain is broken, the risk associated with pollution can be removed. If the source is removed or treated, the pollution has been removed and as such, risk is removed. If the pathway is broken, the contamination cannot impact on the receptor as no pathway is in place. If the receptor is removed, (however unlikely this is), features / receptors cannot be impacted on.

As such, if the pollution chain is broken, risk is removed.

Considering the development of the site a combination of remediation options are proposed for the site which will be detailed as follows:-

3.1.1 Source Removal

The removal of source risk can be completed to include both removal of near surface soils to provide a capping system across the site where contaminated soils are placed directly over the underlying low-level contamination and provides a barrier between the human being and the underlying contamination. The depth of capping which is generally considered viable to remove risk is 0.60 metres.

A further source removal technique will form the removal of all contamination where contamination is identified as shallow. If the depth of capping is a minimum of 0.60 metres and the contaminated layer only extends to a depth of say 0.45 metres, if the full depth of contamination is removed and this exposes clean ground underlying this depth, clean soil will then overlie clean soil.

Confirmation will be required to confirm the level and extent of contamination which is in place within the base of any remediation cell.

3.1.2 Pathway Removal

A combination of factors will be employed in the development of the site. This will incorporate placement of permanent hard surfaces over the contamination a mechanism to remove interaction with the contamination. Dermal contact, inhalation and ingestion pathways will be removed through the placement of hard cover across the site. These will include roads, pavements and driveways, although, will not include patio areas where future excavation may occur.

Protective pipework may be required to remove risk to the water mains.

3.1.3 Receptor Removal

Receptors relate to the presence of human health interaction in the site upon completion of the development. This cannot change through the development.

Based on the above, the soils remediation process will comprise the following.

3.2 Possible Remediation Options - Human Health Risk

Various remediation options are available to remove the risk to human health these are noted in section 6 of this report, but based on the risk in place within site, the proposed land use and the specific site conditions the following remediation action is proposed.

3.3 Specific Remediation Works

General Contamination Risks Brought Forward

Targeted Risks

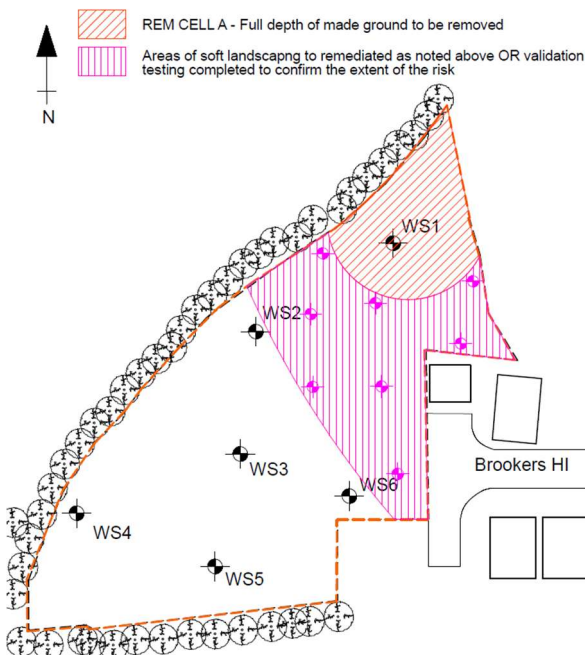
- Risk from PAHs within the location of WS1 (within the north of the site) at a depth of 0.30m

Spatial Risks

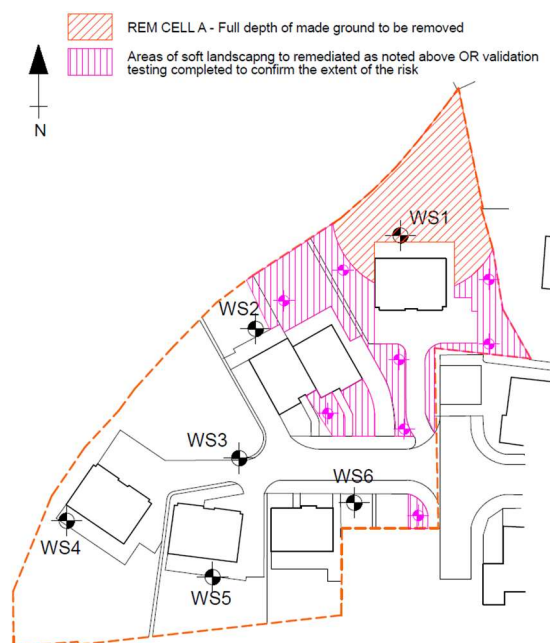
- None.

Figure A Remediation Plans

Existing Plan



Proposed Plan



The broad proposal for the site is as follows :-

3.3.1 Remediation Cell A – PAHs (WS1)

- Based on the current density of testing there are sections of the site which have been assumed as contaminated (pink areas within Figure A). Should further testing be completed to confirm the extent of the risk the area for remediation may be reduced.

- Considering the depth of the made ground within the location of WS1 as well as across the site area being between 0.20 – 0.40 meters the full depth of fill is to be removed from the remediation cell rather than a capping system, as noted in figure 1 in section 6.
- Should deeper area of fill be encountered and considering the nature of the contamination identified, (*i.e.* **PAH's**), a capping system with a geotextile layer laid over the top as defined within Figure 2 may be required.
- A review of the reduced dig area of the remediation cells should be made upon completion of the removal of the made ground. A measurement of the remediation cell depth should be completed using staff at sides of the remediation cell to record depths for future reporting. Photographic evidence of this will be required.
- Validation data should be collected at stages through the remediation process to provide lines of evidence that the works have been completed in accordance with the remediation strategy outlined here. These are outlined as follows :-
 - A record of the soils to remain in place at the base of the remediation cell should be kept, through site notes and photos, for validation.
 - Should the watching brief record any elements of risk which require investigation, the area should be left and barriers placed around the area for inspection by an external environmental engineer.
 - Any reporting undertaken due to the watching brief should be submitted to the local authority for approval prior to works commencing within that specific area.
 - Validation sampling should be completed by an external environmental engineer for any sampling and testing which will include all validation sampling of subsoil and topsoil delivered to the site.
- A Materials Management Plan, (MMP), will be required in order to provide adequate confidence that cross contamination from both the demolition process of existing site features and structures and also the potential for soils to become cross contaminated to other areas of the site which may increase costs for site remediation does not occur. The groundworks contractor / remediation contractor will be required to provide adequate reporting that cross contamination has been fully prevented and validation that the proposals have worked.

General

Detailed notes will be required through the development to confirm the extent of options above and where contamination extends to depth and where full contamination has been removed and different scenarios as recorded. This should be documented on detailed plans by the onsite contractor for use in a verification plan.

Validation of these remediation cells is required see section 4.1.

The remediation of the area could either be undertaken :-

- At the start of the development so that all contamination is removed from the site prior to any other ground works being undertaken. This is sometimes completed at the time of the demolition and clearance of the feature currently within the site area.

Or

- At the end of the development when all the areas of the proposed gardens and communal landscaping within this remediation cell will need to be remediated as above. This scenario is likely to incur cross contamination and as such, is not recommended.

A method statement for the movement of soils around the site for off site disposal must be developed and submitted to ourselves for approval for the movement and off site disposal of the remediation cells at the site.

It should be noted that a significant cause of cross contamination forms the mixing of site based contamination from remediation cells with clean areas of soils, particularly in the case of Asbestos which can spread to clean areas. As such, a defined Materials Movement Plan should be developed and followed to avoid cross contamination risks. This should be designed in accordance with Definition of Waste – Code of Practice.

3.3.2 Semi Permanent Landscaping, (Patio Areas)

Treat as Soft Landscaping if in defined remediation cells.

3.3.3 Permanent Hard Landscaping, (Main Driveway)

Permanent hard landscaping could form the main driveway and parking area which is laid to tarmac and cannot be removed by the residents.

The hard standing will cap off any contamination and removed the pathway, no additional works are required.

3.3.4 Construction Features

New water main pipework can be laid in a conventional pipework system.

Any water main pipework should be laid in clean corridors in order to prevent future risk to workforce used in the maintenance and repair of any water main system.

3.3.5 Below Habitable Buildings - Vapour Risk

No risk are in place.

3.4 Workforce

- All Site Staff and visitors to the site should be made aware of the contamination risk within the site area (PAH's).
- Appropriate PPE should always be worn.
- Washing facilities should be made available for washing hands prior to consumption of any food or water within the site area.

3.5 Groundwater Risk

Groundwater is identified as a low risk.

3.6 Process of Remediation

The development of the site is anticipated to incorporate the following phases :-

- Materials Movement Plan to be developed and approved.
- Demolition of any and all features within the site.
- Site Strip in preparation for the development of the site.
- Full soil remediation works implemented.

- Foundation Construction.
- Main development.
- Placement of hard standing.
- Remediation works completed to soft landscaped area (if not completed within an earlier phase).
- Install clean and certified topsoil within soft landscaping (if not completed within an earlier phase).
- Verification Reporting.

4 Validation requirements

No permanent monitoring proposals are in place in relation to the site.

Soils which fail the human health criteria will not be permitted to be re-used within the site development. Any soils which fail the criteria should be removed from the site with appropriate waste tickets retained.

4.1 Validation Requirements for Remediation Cells

The extent of validation works which should be implemented will incorporate the following details which should be completed, retained and reported as evidence of appropriate validation within any validation reporting:

- Validation that the excavation and removal of the PAH contaminated soils has been completed, by an external environmental engineer and recover photographic evidence and validation samples of the excavation for use in a validation report.
- Validation that the excavation and removal of contaminated soils has been completed or that a sufficient clean capping has been installed, to all areas of soft landscaping by an external environmental engineer and recover photographic evidence of the excavation for use in a validation report, OR provide evidence and plans where full removal has taken place and no capping is present, (i.e. clean natural soils overlain by clean imported soils).
- Retain all 'Muck Away Certificates' which have been received as a result of the excavation of remediation cells only. Muck away certificates relating to muck away for say pile arisings will not be required under validation criteria.
- Where the depth of made ground extends to depths and a capping system and a demarcation barrier has been placed in areas of soft landscaping, a file note and plan should be completed of these locations. Recover photographic evidence of the membrane installation.
- Replace the remediation cell void with fully certified and tested topsoil or subsoil, (as required)
- Evidence of specific segregation of waste product must be completed along with all lines of evidence to confirm that cross contamination has not taken place, (as should be designed within a materials management plan).

Table 2 Remediation & Validation Requirements

Location	Remediation Cell No	Validation Sampling	Testing Criteria
WS1 north of the site	Remediation Cell A	2-4 Samples from the side of the remediation cell. 4-8 Samples from the base of the remediation cell	PAH's

4.2 Photographs

Photographs will be required at key stages of the development which should be included within a validation report. Specifically, these will need to include :-

- Photos should also be taken of the key stages of the development and any contamination encountered, including unexpected contamination.
- Photographs of any reduced digs carried out within the site area, especially if natural soils are encountered.
- Photographs of the exposed remediation cell to soft landscaping which exposes the underlying soils and includes measuring staff.
- Photographs of the remediation cell to soft landscaping.
- Photographs of the finished final site condition.

4.3 Removal of Contaminated Soils

- Contaminated soils should be removed from site via a licensed haulier.
- All waste consignment notices should be retained as evidence that the soils have been removed from site.
- No WAC Testing has been completed at the site. For full classification of the materials for muck away purposes. In line with best practice, we can confirm that the classification and correct disposal of waste should be adhered to in line with Waste Framework Directive. This will include the classification of the waste, appropriate paperwork to be recorded for disposal routes, confirmation of waste classification upon excavation of the waste and validation of its removal.

4.4 Validation of Imported Soils

- Upon importing of subsoil, (if any), and topsoil, samples will be required for chemical analysis. It should be noted that soils which are placed in the site are recommended for pre-validation such that confirmation that these soils will form clean and acceptable materials based on the validation criteria shown within Table 3 as well as BS3882:2015 Specification for topsoil and BS8601:2013 Specification for Subsoil and Requirements for Use. It is often the case that soils are manufactured in landfill sites or waste management facilities which still promote an unacceptable risk based on an end use of residential land uses. This should be noted within the importing status of any soils to the site.

- A visual and olfactoral inspection of any soils to be used within the placement of gardens should be completed by an external environmental consultant to confirm the material is suitable for use.
- In accordance with guidance produced by Essex Local Authorities, 'Land Affected by Contamination 2nd Edition – Technical Guidance for Applicants and Developers', we would recommend that a single sample should be recovered per 15m³ of imported soils and tested for full Standard Environmental Suite including Speciated Poly Aromatic Hydrocarbons and Speciated Total Petroleum Hydrocarbons.
- As a minimum over and above the previous bullet point, we would confirm that per source of delivered topsoil, a minimum of three samples must be recovered and tested for a standard suite of environmental pollutants to ensure source compliance of risk.
- Validation of imported soil should also consist of testing the imported topsoil for BS3882:2015 (Specification for topsoil) and the subsoil in accordance BS8601:2013 (Specification for Subsoil and Requirements for Use).
- The above along with a current certificate from the supplier, if available, will confirm the topsoil or subsoil to confirm that the contamination status for confirm the material is suitable for use in a residential land use scenario, (Sensitive Land Use).
- Verification sampling of imported uncontaminated soils should be carried out independently of the supplier, as will their despatch for laboratory analysis for the listed contaminants.
- It is strongly recommended that Imported topsoil should not be laid to the soft-landscaping/ gardens until construction is complete, to avoid cross-contamination of this material.

4.5 Validation Protocol

HESI have derived soil remediation targets for the principal contaminants of concern in for materials which are proposed to be brought onto the site. These conform to current UK residential land use standards for contaminated soils and as such are stringent levels. As a result of these levels, we would suggest that initial pre-validation of soils is undertaken prior to placement or even bringing the soils on site such that confirmation is gained that the soils are suitable.

We would suggest that for validation of both subsoil and topsoil, the parameters below are met:-

Table 3 Imported soils criteria - Residential Land Use Standards

Pollutant	Allowable (mg/kg ⁻¹)	Level	Source	Pollutant	Allowable Level (mg/kg ⁻¹)			Source
					1% SOM	2.5% SOM	6% SOM	
Asbestos	Absent /Present							
Inorganic Arsenic	37		S4UL	Naphthalene	2.3	5.6	13	
Beryllium	1.7		S4UL	Acenaphthylene	170	420	920	
Cadmium	11		S4UL	Acenaphthene	210	510	1100	
Chromium, (III)	910		S4UL	Flourene	170	400	860	
Chromium, (VI)	6		S4UL	Phenanthrene	95	220	440	
Copper	2400		S4UL	Anthracene	2400	5400	11000	
Lead	200		At Risk Soils	Flouranthene	280	560	890	
Mercury, (Elemental)	1.2		S4UL	Pyrene	620	1200	2000	
Mercury, (Inorganic)	40		S4UL	Benzo(a)anthracene	7.2	11	13	S4UL
Mercury, (Methyl)	11		S4UL	Chrysene	15	22	27	
Nickel	180		S4UL	Benzo(b)flouranthene	2.6	3.3	3.7	
Selenium	250		S4UL	Benzo(k)flouranthene	77	93	100	
Vanadium	410		S4UL	Benzo(a)pyrene	2.2	2.7	3	
Zinc	3700		S4UL	Indeno(1,2,3-cd)pyrene	27	36	41	
Boron	290		S4UL	Dibenzo(ah)anthracene	0.24	0.28	0.3	
TPH, (Total)	>20 required Speciated assessment			Benzo(g,h,i)perylene	320	340	350	
				Phenols	280	550	1100	

Table 4 Imported soils criteria – Residential Land Use with home grown produce Standards – TPHs

Pollutant	1% Soil Organic Matter	2.5% Soil Organic Matter	6% Soil Organic Matter	Source
Total Petroleum Hydrocarbons				
Aliphatic Fractions				
EC > 5-6	42	78	160	S4UL
EC > 6-8	100	230	530	
EC > 8-10	27	65	150	
EC > 10-12	130	330	760	
EC > 12-16	1100	2400	4300	
EC > 16-35	65000	92000	110000	
EC > 35-44	65000	92000	110000	
Aromatic Fractions				
EC > 5-7	70	140	300	S4UL
EC > 7-8	130	290	660	
EC > 8-10	34	83	190	
EC > 10-12	74	180	380	
EC > 12-16	140	330	660	
EC > 16-21	260	540	930	
EC > 21-35	1100	1500	1700	
EC > 33–44	1100	1500	1700	
Aliphatic & Aromatic				
EC > 44-70	1600	1800	1900	S4UL

5 Implementation Process

5.1 Remediation Team

This report confirms the required level of remediation needed to remediate the site to a suitable and fit for purposes standard. We can confirm that at this time, the following parties are involved in the remediation proposals at this site :-

The Client: *the client will ultimately be responsible for the remediation of the site and appointing appropriate personnel to provide lines of evidence that remediation works have been undertaken and that validation works have been completed sufficiently to provide the relevant Local Authority, with documentary evidence that works have been completed to a suitable standard.*

Consultant : *the consultant will undertake validation that the remediation works have been undertaken to a suitable standard although, will require instruction from 'the client' as and when appropriate levels of remediation have been achieved.*

Principle Contractor: *The principle contractor will likely undertake initial site works which will remove contamination from the site as part of the initial site development. It is possible that these works may remove the depths of made ground, (contamination), to remove any and all risk within the site.*

5.2 Watching Brief

During the course of the development it will be the responsibility of the on-site manger to ensure watching briefs are kept. A watching brief consists of a record of:

- Any observations of contamination made during the course of development by any member of site staff, contractor or visitor
- A photographic record of the key stages of development and key occurrences including any contamination found during the course of the development, the formation levels of excavations, any reduced level dig/mass excavation, formation of landscaped or garden areas, etc.
- Contact the Environmental Engineer and strategic points within the development of the site where contamination validation elements will be required.

In areas of the site where there is a greater chance of finding contaminated soil and/or water an area specific watching brief will need to be kept. Such a brief will need to be completed by an appropriately qualified site manager and/or an environmental consultant. The following table specifies works in specific parts of the site that require an area specific watching brief, identifying who must complete the watching brief.

Table 5 Watching Brief – Targeted areas for observation

Area of site	Works to be observed	Person to observe works
Sitewide	Watching brief through any excavations.	Site Agent / Groundworker / Environmental Engineer.

Upon completion of associated works, a written and signed statement will be obtained by the following parties:

- Ground works contractor(s) upon completion of foundations and ground works.
- On site manager upon completion of groundworks and landscaping work.
- Environmental Consultant upon completion of groundworks and landscaping works.

The written statement must clearly state whether or not evidence of contamination was identified during the course of the development and the action that was taken. An example statement is provided below.

"I am [insert name] from [insert company]. We undertook [insert works undertaken] between the [start date] and [finish date]. During the course of work at [insert site name and address] we observed [delete were not applicable: no potential contamination / evidence of contamination / significant evidence of contamination].

Where contamination is identified

The contamination identified:

[include a description of the observations of the contamination]

[identify the location of the observations of contamination and mark the locations on a plan]

[Who was notified of the observations]

[What action was taken to mitigate/clear up contamination]"

The on site manager statement must include confirmation of whether all site staff and contractors received an appropriate brief regarding the potential presence of contamination.

5.3 Site Staff Training / Briefing

All site staff, site contractors and, where significant contamination is expected site visitors, will be briefed on the potential presence of land, water or air bourn contamination before commencing work on the site. Apart from any standard Health & Safety practices this will include the following information:

- Health & Safety considerations.
- Asbestos Awareness course.
- The type of land, water or air bourn contamination expected at the development site based on previous use and available site investigation information.
- Any particular areas of the site which are likely to be affected.
- Staff responsibilities under the discovery strategy.

The on-site manager will need to provide written confirmation that site staff were briefed about contaminated land in line with these recommendations.

5.4 Discovery Strategy

The discovery strategy sets out the actions that must be taken if contamination is encountered during the course of a development.

A significant observation includes any observation of contamination. Examples of the types of observations that would be considered significant are set out in the following table.

Table 6 **Discovery Strategy – Examples of Observations**

<i>Evidence</i>	<i>Description</i>
Visual	- Fuel or oil like substances mixed in with or smeared on the soil or floating on perched, groundwater or surface waters. - Waste materials (refuse, barrels, industrial wastes, ash, tar, etc.) buried at specific location or across the site. - Marked variation in colour. For example red, orange, yellow, green, light or dark blue, etc. may indicate contamination from a variety of contaminants. - Soils including large amounts of ash and clinker where such contamination of soils wasn't expected.
Odours	- Fuel, oil and chemical type odours - Unusual odours such as sweet odours or fishy odours
Wellbeing	- Light headedness and/or nausea when in excavations, at the working face of an excavation, when visual or olfactory evidence of contamination exists, etc. - Burning of nasal passages, throat, lungs or skin. - Blistering or reddening of skin due to contact with soil

Note: The examples provided in this table are not exhaustive.

The following table sets out the actions that must be taken if significant or suspected land, water or air contamination is observed by site staff, contractors or visitors.

Table 20 **Discovery Strategy – Action to be taken if risks are encountered**

<i>Person observing contamination</i>	<i>To be reported to:</i>	<i>Action to be taken</i>
Site visitor	Must report observations to the site manager.	Stop work and where possible make area safe and secure area before reporting to site manager..
Contractor	Must report observations to the site manager.	Stop work and where possible make area safe and secure area before reporting to site manager.
On site manager	Must report observations to their direct manager, the appointed Environmental Consultant, the Planning Authority and Contaminated Land Officer at the Local Authority.	Stop work and where possible make area safe and secure area before reporting to others.
Environmental Consultant	Must report observations to the site manager, the Planning Authority and Contaminated Land Officer at the Local Authority.	Advise that work stops and where possible that the area is made safe before reporting to others.

The following table identifies other organisations that may need to be contacted in an emergency or where pollution of controlled waters or nuisance is occurring.

Table 7 **Discovery Strategy – Organisations to be contacted if risks are encountered**

Occurrence	Description	Contact
Risk to the public	If at any point residents, the public or others may be at risk as a result of contamination found during the course of investigation, remediation or development works.	· Contact the emergency services if there is a risk to life. · Contaminated Land Officer/Planning Authority. · Health & Safety Executive.
Nuisance to residents/the public	If a nuisance has been or is likely to be caused to nearby residents, the public and others – for example odours, dust, noise, vibration, etc.	· Pollution Control Team at the Local Authority (and other council's where necessary).
Pollution of controlled waters	If any surface, culverted or groundwater has been polluted – for example slurry, contaminated soil/water or a chemical spillage entering a river or canal.	· Environment Agency. · Planning Authority and Contaminated Land Officer at the Local Authority.
Pollution of adjoining land	If land outside the boundary of the development site is polluted from site activities – for example slurry, contaminated soil/water or a chemical spillage.	· The owner of the land. · Planning Authority and Contaminated Land Officer at the Local Authority.

5.5 Validation Report

The following forms the verification requirements that will be needed in order to prepare and complete a Verification Report for the site and as such, where 'the client' does not provide suitable evidence, further testing may be required.

- Appropriate method of waste management of soils on site to avoid cross contamination.
- Provide Method Statement for management of waste and segregation of contaminated soils.
- Validation testing of the base of the Remediation cells, where required.
- Plans showing verification sample locations, if completed.
- Plan to show where full depth of fill was removed. where a capping layer was installed (inc depths) where demarcation barriers were installed within the site area.
- Volumes of soils disposed off site.
- Waste Consignment Notices (muck away tickets) and Disposal Register for Duty of Care.
- Topsoil Suppliers certificate to show the soil falls below the Human Health criteria.
- Results of analysis on subsoil/topsoil within the capping layer.
- Volumes of soils imported to site.
- Confirmation that the appropriate water main pipework has been installed within the site.
- Documentation of variations and unforeseen conditions.
- Written signed statements to confirm the watching brief was completed.
- Consents, permits and approvals gained.
- 'As built' drawings.
- Photos completed throughout the development as noted within section 4.3.
- Other records, (e.g. correspondence, photographs etc).

It should be noted that this list may vary dependent upon conditions met on site and therefore is not complete. Upon completion of any and all remediation works which comply with this strategy and a risk assessment and site conceptual model can be completed to confirm no risk is in place to the future user or environment, a site verification report should be completed for submission to the Local Authority and any other interested parties to confirm the site status.

Should the quality of remediation data not be completed in accordance with this report, reasonable attempts to confirm that the works have been undertaken retrospectively should be made. This may involve further more detailed site assessments and testing, monitoring and evidence which will likely incur additional costs.

A validation report will be compiled by HESI or others to document the remediation works undertaken.

5.6 Collection of all necessary Validation Data

The above forms a method of remediation and validation works which will be required as part of the process of discharging of planning conditions. Failure to collect this information in part or in full will result in a failure to discharge conditions relating to contaminated land and lead to potentially significant retrospective site investigation works to enable the collection of this data.

It is the responsibility of the developer to action all necessary remediation works on site and inform the remediation contractor of the need to obtain any and all relevant validation data.

It is possible that the sourcing of this validation data could be recovered by the developer, the main contractor, groundworks contractor, a specific remediation contractor or an external environmental engineer. The selection of the right person to collect the validation data should be carefully selected to ensure that no validation bias in relation to the works is in place upon completion of the development and we would always recommend that the validation data is collected by either a separate remediation contractor or external environmental engineer.

PLEASE BE AWARE THAT THE SOURCING OF VALIDATION DATA AFTER COMPLETION OF THE DEVELOPMENT IS NOT SOMETHING THAT CAN BE EASILY OBTAINED AND AS SUCH, MAY LEAD TO A FAILURE IN DISCHARGING OF ANY PLANNING CONDITIONS ASSOCIATED WITH THE SITE AND THEREFORE THE ABILITY TO SELL THE DEVELOPMENT ON.

6 GENERAL REMEDIATION SCENARIOS

6.1 SOFT LANDSCAPING AREAS (private gardens and communal area)

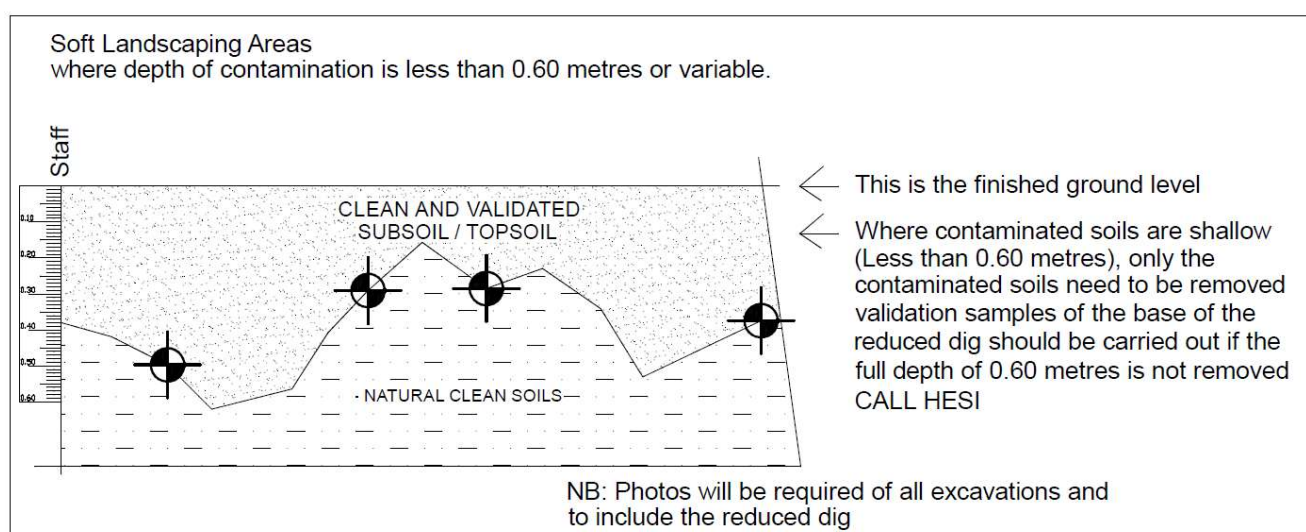
Scenario One Shallow Contamination, (>0.60m) with Validation Samples

When the depth of made ground in locations across the remediation cell in full or part does not extend to the depth of proposed capping system. Therefore, removal of shallower depths of made ground, (say 0.30m), may remove all the contamination and expose clean ground, (either natural or made ground).

If this scenario occurs in full or part, validation sampling will be required at the base of the remediation cell to confirm that whilst the minimum capping depth has not been achieved, in fact no capping system is in place as the cell will ultimately form clean soil over natural or clean soils from the original site. In this scenario, the following assessments must be completed :-

- A review of the site must be completed to ensure that hotspots, (large or small), do not remain in place amongst clean underlying soils which are proposed to remain in place. Full removal of contaminated soils should be completed and provided as part of a visual and olfactual assessments completed by an external environmental engineer. This should also include photographic evidence of these remediation cells confirm the above does not take place.
- A visual appraisal of the base and sides of the remediation cell to consider any visual or olfactual evidence that risks outside that defined in the environmental reporting completed to date are in place.
- Validation sampling from the sides of the excavation to confirm that the defined contamination originally identified in the remediation cell has been removed.
- Backfill the excavation with at least 0.60 metres, (or whatever depth has been removed to identify clean soil) of clean and inert soil, (tested to confirm its suitability for use within residential land uses with plant uptake).

Figure 1 **Shallow Contamination – Validation Sampling – Scenario 1**



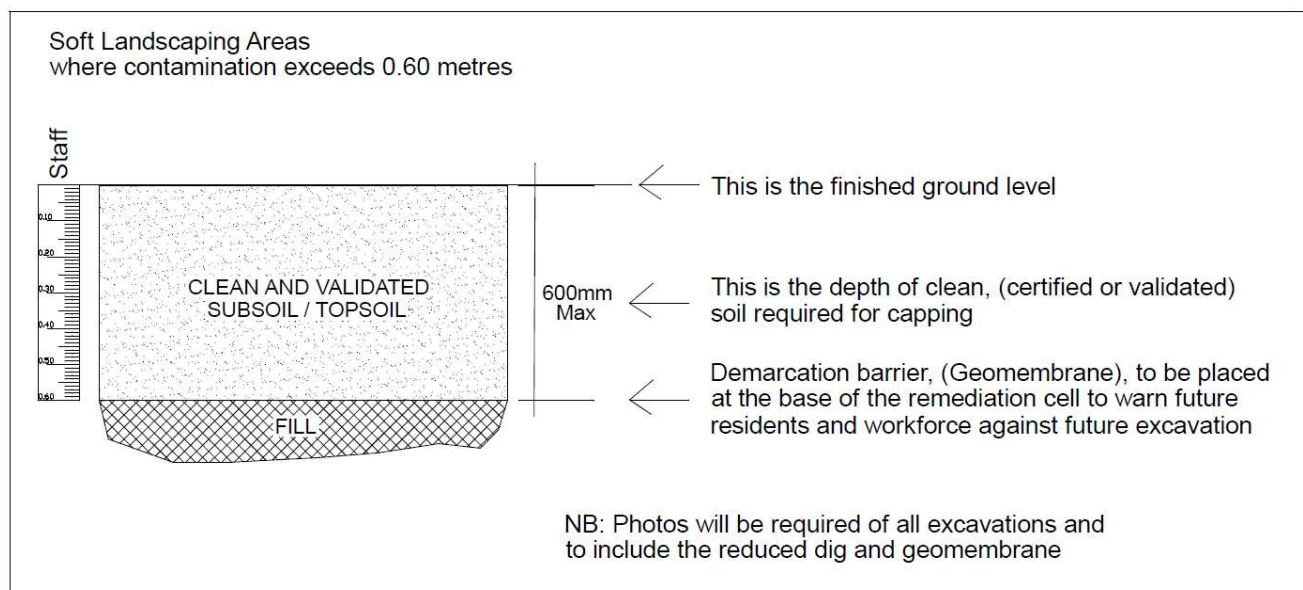
Scenario Two

Full 0.60m Capping Layer with Geotextile

When the full depth of capping is required to be removed as the depth of made ground is in excess of 0.60 metres which will need to implement a Geotextile at the base of the remediation cell as shown in Figure 2. In this scenario, the following assessments must be completed :-

- If the density of Asbestos sampling has not been completed to a suitable density based on BS10175:2011+A2:2017, (Investigation of potentially contaminated sites. Code of practice. Code of practice), sampling should be completed across the base of the remediation cell to confirm the absence of Asbestos.
- A visual appraisal of the base and sides of the remediation cell to consider any visual or olfactoral evidence that risks outside that defined in the environmental reporting completed to date are in place.
- Validation sampling from the sides of the excavation to confirm that the defined contamination originally identified in the remediation cell has been removed.
- Backfill the excavation with at least 0.60 metres of clean and inert soil, (tested to confirm its suitability for use within residential land uses with plant uptake and BS8601 : 2013, (Subsoil), and BS3882:2015, (Topsoil).
-

Figure 2 Capping System – 0.60m Cap & Geotextile Barrier – Scenario 2



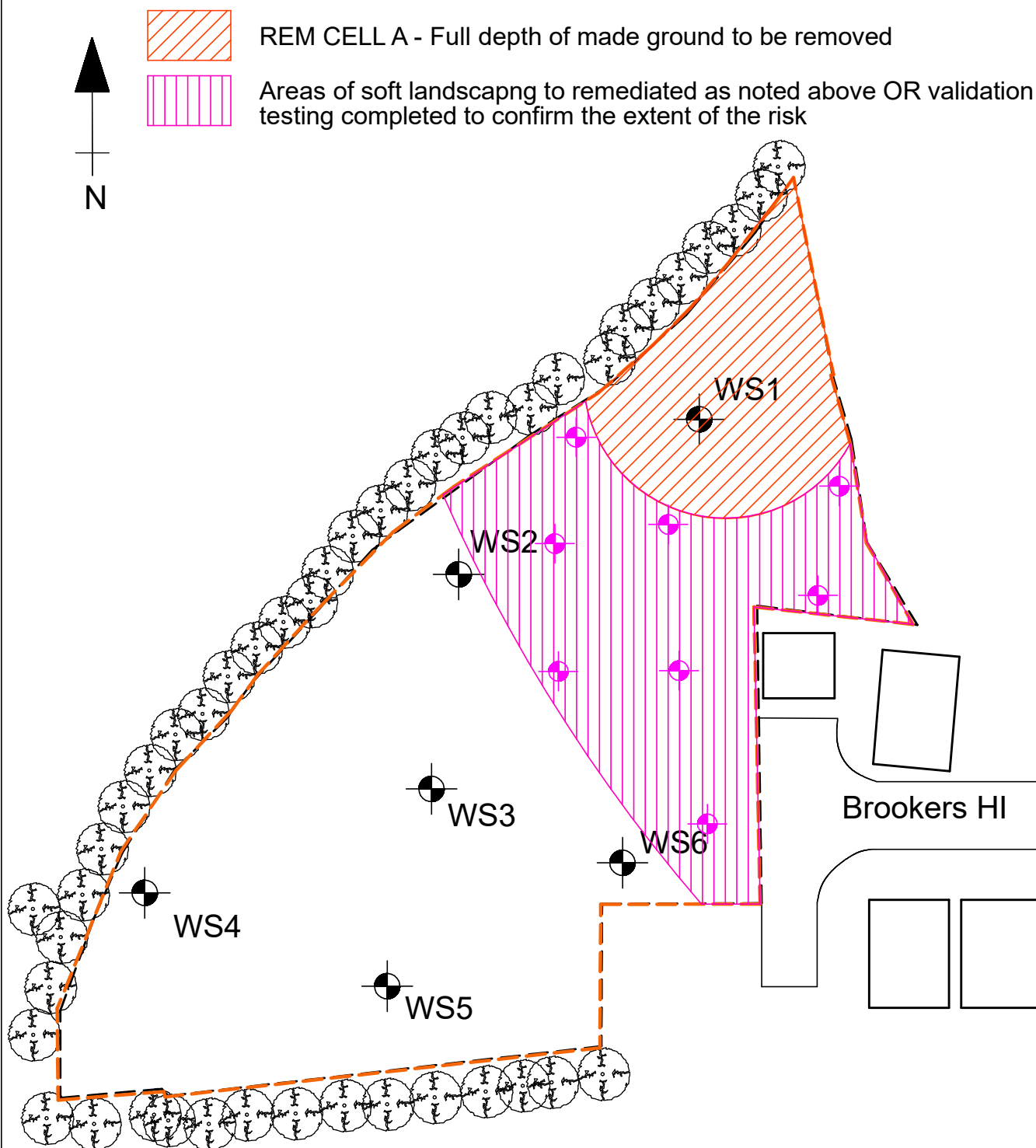
Land Adjacent To Lane End House, Shinfield Road, Shinfield, RG2 9BB

Location Plan



Land Adjacent To Lane End House, Shinfield Road, Shinfield, RG2 9BB

Remediation Plan - Existing Site Plan

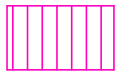


Land Adjacent To Lane End House, Shinfield Road, Shinfield, RG2 9BB

Remediation Plan - Proposed Site Plan



REM CELL A - Full depth of made ground to be removed



Areas of soft landscaping to be remediated as noted above OR validation testing completed to confirm the extent of the risk

