

Our Ref: 23154/LO.001/AMG

Mr N. Wibberley

16 December 2024

Dear Nigel

**REMEDIATION METHOD STATEMENT
FORMER MINERS REST PUBLIC HOUSE, FROGHALL ROAD, CHEADLE, STOKE-ON-TRENT**

As requested, please find attached our Remediation Method Statement for the above site.

This report will need to be submitted to the Local Planning Authority for approval before works commence on site.

Please do not hesitate to call should you need to discuss anything further.

Yours sincerely



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Director**

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REMEDIATION METHOD STATEMENT
FORMER MINERS REST PUBLIC HOUSE, FROGHALL ROAD, CHEADLE, STOKE-ON-TRENT

Introduction

This document summarises the remediation measures required to address human health risk issues at the above development site based on the findings of the following reports:

- *'Phase 2 Ground Investigation'* by Strata Renewables Limited (SRL) reference SRL1519 dated April 2022;
- *'Geoenvironmental Assessment'*, by Georisk Management Limited (Georisk) reference 23154/1 dated June 2023.

The development at the above site has been granted permission by Staffordshire Moorlands District Council, reference SMD/2020/0413, and this includes Conditions 15 and 16 that relate to contaminated land. The above referenced reports should be sufficient to discharge parts i) of Condition 15 and this Remediation Method Statement should be sufficient to discharge parts ii) Condition 15. It will only be possible to discharge the remaining parts of Condition 15 and Condition 16 following completion of remediation and verification works following commencement of development.

Proposed Development

The proposed development at the site is to comprise construction of 8 No. houses with private gardens, as shown on the drawing entitled *'Proposed Site Layout'* by Wyvern Partnership LLP reference 12653A(CH)-13B dated February 2023, which is included in Appendix A for reference.

Investigation Summary

The site is situated to the east of Froghall Road, approximately 1.5 km north of Cheadle town centre near Stoke on Trent, Staffordshire and can be located approximately by National Grid Reference 401130, 344590.

It covers an area of approximately 0.2 ha and comprises a roughly rectangular strip of vacant land. Froghall Road and Hammersley Hayes Road form the western and northern site boundaries respectively, with gardens to neighbouring houses forming the eastern and southern boundaries.

No evidence of potential significant contamination was noted during the site walkover.

Ground investigation identified Made Ground across the site to depths of between 0.25 and 0.75 m begl that typically comprised a surface covering of crushed limestone with brick and tile or light brown topsoil with occasional wood, limestone, metal and brick.

The Pennine Lower Coal Measures Formation was encountered beneath the Made Ground and comprised stiff friable yellow mottled grey slightly sandy clay with mudstone gravel.

No visual/olfactory evidence of potential significant contamination was identified during the ground investigation.

During the fieldwork, groundwater was not encountered in the exploratory holes.

Chemical testing identified the following results from Made Ground that exceeded the relevant assessment criteria:

- GTP02 at 0.2 m begl: arsenic (62 mg/kg), lead (650 mg/kg);
- GTP03 at 0.3 m begl: lead (250 mg/kg), benzo(a)pyrene (6.7 mg/kg), benzo(b)fluoranthene (7.8 mg/kg) and dibenz(ah)anthracene (0.95 mg/kg);
- GTP04 at 0.5 m begl: arsenic (65 mg/kg), lead (230 mg/kg), dibenz(ah)anthracene (0.95 mg/kg);
- TP02 at 0.3 m begl: benzo(a)pyrene (8.4 mg/kg), benzo(a)anthracene (11 mg/kg), benzo(b)fluoranthene (9.5 mg/kg), dibenz(ah)anthracene (1.3 mg/kg) and naphthalene (3.1 mg/kg).

Risk Evaluation

The site is to be developed for housing with private gardens. Future site users should be considered as receptors through physical contact, ingestion and dust inhalation associated with Made Ground beneath gardens. For housing with private gardens, root uptake by vegetation of any contamination present in the near surface soils also needs to be considered.

The Made Ground represents no plausible pollutant linkage to site users beneath plots or hardstanding and; therefore, no specific remedial action is needed in these areas. Any excess Made Ground that requires removal off site will need to be taken to a suitably licensed tip under duty of care documentation.

During the redevelopment of the site, construction workers are likely to be in direct contact with the near-surface Made Ground and appropriate Health and Safety measures will need to be implemented based on the findings of the ground investigations.

Based on the findings of the investigations, we consider that the use of standard water pipe laid in trenches with clean gravel backfill should be acceptable. It is recommended that a copy of this report is supplied to utility companies to confirm this recommendation prior to any irrecoverable works being undertaken.

Following risk assessment utilising data obtained from the intrusive investigation, the following remaining pollutant linkages have been identified as being of concern in terms of the redevelopment of the site:

Source	Pathway	Receptor
Elevated concentrations of arsenic, lead and PAH in Made Ground	Dermal contact	Site user: female child 0-6 years
		Site construction worker
	Ingestion	Site user: female child 0-6 years
		Site construction worker
	Consumption of home-grown vegetables	Site user: female child 0-6 years
	Ingestion of soil attached to home-grown vegetables	Site user: female child 0-6 years
	Dermal contact with dust derived from Made Ground	Site user: female child 0-6 years
		Site construction worker
	Ingestion of dust derived from Made Ground	Site user: female child 0-6 years
		Site construction worker
	Inhalation of dust derived from Made Ground	Site user: female child 0-6 years
		Site construction worker

In summary, the remedial measures required to achieve safe redevelopment of the site for housing are as follows:

- **provision of clean cover in gardens.**

Based on the findings of the ground investigation, remediation works are required in order to facilitate safe redevelopment of the site and further details with respect to the remediation methodology are provided in the following sections.

Remediation Proposals – Human Health - Risk from Arsenic, Lead and PAH in Made Ground

To address the remaining pollutant linkages to future site users from elevated levels of arsenic, lead and PAH in the Made Ground, it is recommended that allowance is made for the provision of a blinding layer of clean imported soil in gardens to act as a physical barrier between site users and the Made Ground.

The composition and thickness of the cover layer would need to be agreed with the relevant regulators in advance of any works starting on site; however, we would suggest allowing for the following minimum thicknesses:

- back gardens: 600 mm (nominally 150 mm topsoil and 450 mm subsoil);
- front gardens: 300 mm (typically 300 mm topsoil).

The clean cover proposals are based on guidance and design methods given in BRE465 'Cover Systems for Land Regeneration' (2004) which is considered appropriate for this site. On this basis, clean cover in private gardens would typically be set at a minimum of 600 mm to take account of possible double digging. In front gardens, the cover thickness can be reduced to 300 mm as double digging is unlikely.

The provision of a simple cover layer at the site is considered appropriate for the following reasons:

- the contamination identified within the near-surface Made Ground is predominantly relatively low level heavy metals and PAH and is not considered 'significantly elevated' that would render a simple cover inadequate;
- there is no shallow groundwater beneath the site and; therefore, capillary rise is not a significant potential constraint to the use of a simple cover layer;
- there is not any petroleum hydrocarbon contamination within the near-surface Made Ground that could be mobile;
- there are no significant risks to controlled waters;
- all deep excavations for foundations, drainage, fencing and planting are to be carried out before the construction of the cover layer;
- there is no organic contamination, such as phenols and petroleum hydrocarbons, and buried services are to be constructed in trenches backfilled with clean gravel;
- the site is relatively level and there are no significant slopes;
- the likelihood of rabbit or badger populations establishing within the new housing area is not considered likely.

Diagrammatic sections of the cover layer are presented below:

Back Gardens

	150 mm topsoil
	450 mm subsoil

Front Gardens

	300 mm topsoil
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The cover layer should be constructed post plot construction to avoid damage or cross-contamination. The area should first be regraded to achieve a formation capable of accommodating placement of the clean soil and any oversize/unsuitable materials present at formation level should be removed.

Any materials imported onto site for use as clean cover must be stockpiled on plastic sheeting to avoid cross-contaminating imported material with on-site Made Ground.

Hardcover areas such as drives and pathways will be constructed with stone capping layers placed above existing levels and; therefore, further mitigation is not required.

Clean Cover Validation

Placement of the cover layer will require independent verification and validation and these requirements are set out below.

All subsoil or topsoil imported onto site will need to be subject to validation testing.

The schedule for this testing would also need to be agreed with the Local Authority in advance and the testing regime and site acceptance criteria proposed are set out below:

Determinand	Maximum Allowable Concentration (mg/kg)
Arsenic	37
Asbestos	Not present/<0.001%
Cadmium	11
Chromium	910
Copper	2400
Cyanide	34
Lead	200
Mercury	40
Nickel	130
PAH compounds	LQM/CIEH S4ULs
Phenol	120
Selenium	250
Total Petroleum Hydrocarbons	LQM/CIEH S4ULs for aliphatic/aromatic carbon ranges
Zinc	3700

The site acceptance criteria set out above are based on the following generic human health risk assessment values for a 'residential with plant uptake' end use:

Contaminant Group	Determinands	Assessment Criteria Selected
ORGANIC CONTAMINANTS		
Non-halogenated hydrocarbons	Phenol	LQM/CIEH S4UL
	TPH	LQM/CIEH S4UL
Polyaromatic Hydrocarbons (PAH)	USEPA 16 priority compounds	LQM/CIEH S4UL
INORGANIC CONTAMINANTS		
Metals	Lead	C4SL
	Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Selenium, Zinc	LQM/CIEH S4UL
Non-metals	Cyanide	Atkins AtRisk Soil Screening Value (SSV)

The following hierarchy has been adopted by Georisk for determining which assessment criteria to be followed:

- Suitable 4 Use Levels (S4UL) developed by LQM/CIEH (2015);
- C4SL (in the absence of other assessment criteria);
- Soil Screening Values developed by Atkins ATRISKsoil (in the absence of other assessment criteria).

The test results for all imported subsoil and topsoil must achieve the acceptance criteria set out above.

It is recommended that the imported subsoil and topsoil are from a 'greenfield' source, for which testing would need to be carried out at a frequency of 1 sample per 250 m³ of import or minimum of 3 samples per source.

In addition any topsoil materials should be free from large stones and deleterious materials based on the guidance presented in BS 3882:2015.

The testing outlined above should be carried out at an independent UKAS accredited laboratory and supplier certification results made available in advance of any topsoil being imported onto site to confirm that it is suitable for use.

All soil (subsoil and topsoil) imported onto site for use as clean cover will need to be sampled and tested after placement to validate the pre-importation test results – the proposed test locations are:

Plots 1/2	Plots 3/4	Plots 5/6	Plots 7/8
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These are also shown on the Validation Plan, included as Drawing No. 23154/2 in Appendix A.

Once appropriate certification has been provided and the clean cover has been placed in the required areas, the thickness of placed soil will require validation. This is best achieved either by inspecting the soils during placement or by inspecting trial holes dug through the placed soil. A validation engineer should attend site to record the thickness of cover placed at the locations set out below:

Plots 1/2	Plots 3/4	Plots 5/6	Plots 7/8
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These are also shown on the Validation Plan, included as Drawing No. 23154/2 in Appendix A.

A verification certificate/report confirming the installation of clean cover will be issued following completion of the verification visit and will include:

- date of inspection;
- photographic records to demonstrate compliance with the remediation strategy;
- testing of import materials to confirm suitability for use;
- validation of the thickness of cover layer placed;
- certification and validation of imported materials.

The Validation Report will be submitted to the Local Authority for approval and discharge of part ii) of Condition 15.

Discovery Strategy

If during construction work, areas of previously unidentified potentially contaminated soil are encountered, construction work should cease and any potentially contaminated soils be left in situ pending further assessment by a geoenvironmental consultant.

The Local Authority would also be made aware of any unexpected or previously unrecorded contamination at the earliest opportunity.

Any further risk assessment and amendments to the remediation strategy would be carried out to the satisfaction of the Local Authority.

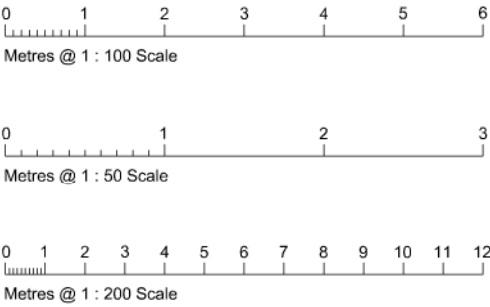
If no further contamination is encountered, a confirmation statement will be provided by a geoenvironmental consultant and issued to the Local Authority.

Construction site management will need to contact Georisk to arrange for site visits - our office telephone number is 0121 553 4044 – please refer to job number 23154.

**APPENDIX A
DRAWINGS**

Drawing No.	Drawing Title
12653A(CH)-13B	Proposed Site Layout (by Wyvern Partnership LLP)
23154/2	Validation Plan

PROPOSED BLOCK PLAN



PROPOSED BLOCK PLAN

The Contractor is responsible for checking all dimensions on site prior to commencement of the works. Any errors are to be reported to Wyvern Partnership LLP as soon as possible.

Any construction work carried out prior to receiving all necessary approvals for Planning and/or Building Regulations is entirely at the client's / householder's risk.

All building work is to be completed to the satisfaction of the Local Authority Building Control Officer and in accordance with current Building Regulations and as such, additional unforeseen building works may be required on site.

The Contractor shall inspect all adjoining properties - when applicable - which may be affected by the works prior to commencement and must report any defects to the owner.

The Contractor shall be entirely responsible for the security, strength and stability of the building during the course of the works.

Drawings produced for the purpose of obtaining Building Regulation Approval do not constitute full working drawings.

Drawings produced for Accommodation and Suitability Reports are to be used to assess the suitability of a property to meet the needs of a client and no other purpose. All proposals are subject to a detailed survey and Local Planning Authority approval.

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B	SITE BOUNDARY CORRECTLY ADJUSTED. PLOTS AND GARDENS ALTERED TO SUIT	09/02/23
A	PLOT 4 ALTERED	07/10/2022
Rev	Notes	Date

Partnership LLP

Wyvern

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Client
STOCKWELL PROPERTY INVESTMENTS LTD

Project
PROPOSED RESIDENTIAL DEVELOPMENT AT FORMER MINER'S REST PUBLIC HOUSE, FROGHALL ROAD, CHEADLE, STAFFORDSHIRE

Drawing
PROPOSED BLOCK PLAN

Project No. 12653A (CH)	Dwg No. 13B	Drawn By BW
Date FEBRUARY 2023	Scale 1 : 200 @ A2	

Wyvern Partnership LLP is a limited liability partnership registered in England and Wales with registered number OC420302. The term partner is used to refer to a member of the Wyvern Partnership LLP.

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Notes

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This drawing is to be read in conjunction with all development drawings, and designers risk assessments.

This drawing must not be scaled. Work to figured dimensions only.

KEY

● PLOTS 1/2 Validation Point

Rev	Date	Description	Initials

Client

N. WIBBERLEY

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Contract

FORMER MINER'S REST
FROGHALL ROAD, CHEADLE

Drawing Title

VALIDATION PLAN

Drawing Status	FINAL	
Drawn By	AMG	Date 09/12/24
Checked/Approved	AMG	Date 09/12/24
Scale	NTS	Drawing Number 23154/2

