



CONTAMINATION REMEDIATION STATEMENT

FOR

195 LEEDS ROAD
HECKMONDWIKE

ON BEHALF OF
ORION HOMES LTD





ARP GEOTECHNICAL LTD

CHARTERED CONSULTING ENGINEERS

Northwest House 5/6 Northwest Business Park Servia Hill Leeds LS6 2QH

☎ 0113 245 8498 ✉ leeds@arpgeotechnical.co.uk 🌐 www.arpconsultingengineers.co.uk

CLIENT: ORION HOMES LTD
 JOB NUMBER: ORH/25
 PROJECT: 195 LEEDS ROAD, HECKMONDWIKE
 REPORT TYPE: CONTAMINATION REMEDIATION STATEMENT
 REPORT REFERENCE: ORH/25rem1V2

	Name	Signature
Prepared By:	O Gwilym BSc MSc FGS	
Reviewed & Authorised By:	Mike Harper BSc (Hons) MSc CEnv MIEEnvSc	

ISSUE	DATE	STATUS
1	07 th APRIL 2026	V1 FINAL
2	09 th APRIL 2026	V2 FINAL

1.0 Introduction

- 1.1 This document has been prepared to provide information for the Client and other interested parties, such as the regulatory authorities, outlining how contamination encountered on the site will be managed to ensure that the site is environmentally suitable for the intended residential use. The document should be agreed, prior to implementation, with the relevant regulatory authorities, usually the local planning authority and building control provider.
- 1.2 A Method Statement for Assessment of Imported Soils ORH/25imp, dated 18th November 2024, appended to the Combined Stage 1/Stage 2 Geo Environmental Report (ORH/25r1) was submitted to Kirklees Council in support of the planning application. Following review of the document, the Environmental Health department at Kirklees Council required supplementary testing. The supplementary testing was undertaken on the 20th March 2026 with the results reported in letter ORH/25L7/OGjc, dated 7th April 2026. The results have been used in preparation of this document, which supersedes the Method Statement for Assessment of Imported Soils, referenced ORH/25imp.

2.0 The Site

- 2.1 The ARP Geotechnical Ltd Combined Stage 1/Stage 2 Geo-environmental Report, dated November 2024 under reference ORH/25r1, makes an assessment of contamination, along with other aspects.
- 2.2 The conceptual site model is for residential with private gardens.
- 2.3 The vast majority of the site comprises four undeveloped grassed fields, separated by post and wire fences. A narrow grassed area provides access from the farm road at the northeastern boundary. A smaller area of the site comprises the buildings, gardens and outbuildings associated with two semi-detached dwellings in the southeastern corner of the site. The site and surrounding area slope down to the south. The site is bounded to the north, and part of the northeast, by an access track to a farm adjacent to the northern boundary. Residential properties abut the eastern, southeastern, and southwestern boundaries of the site. Farmland is present across the track to the north (surrounding the farm) to the northeast, and northwest.
- 2.4 Ordnance Survey archive maps show no indication of any potentially contaminating use of the site, or of significant development, except for limited residential development in the southeastern corner.
- 2.5 The geological maps show the site to be underlain by undifferentiated strata (mudstones, siltstones and minor sandstones) of the Lower Coal Measures. No superficial deposits are indicated to be present. A fault and a coal seam outcrop are shown to cross the site.
- 2.6 A rotary borehole investigation was undertaken in January and February 2025 to check for any evidence of shallow workings beneath the site. Evidence of shallow workings was identified within influencing depth of the surface and treatment will be required.

- 2.7 The strata beneath the site are classed as a Minor Aquifer. There are no groundwater abstractions within 1km of the site. No watercourses shown within 500m downslope of the site. There are no active surface water abstractions for sensitive uses within 1km. The site is not at risk of river flooding.
- 2.8 Basic radon protection measures recommended, to minimise conveyancing issues. Ground gas monitoring is ongoing, to assess risks from indicated shallow coal and possible workings, and the findings will be reported separately on completion.
- 2.9 A Ground\Coal Mine Gas Risk Assessment was undertaken following completion of the gas monitoring programme, and reported in letter referenced ORH/25/MHjcl6, dated 7th March 2025. Six rounds of gas monitoring were undertaken on site. The maximum recorded concentration of CH₄ and CO₂ was 0.0% v/v and 2.8% v/v respectively. No flow was recorded. Atmospheric conditions at the time of the monitoring visits were generally high barometric pressure, with two visits undertaken during falling conditions. Given the lines of evidence approach used in the gas risk assessment, there is considered to be a low risk of mine gas emissions across the majority of the site. Uncertainties exist regarding the potential for gas migration vertically through the geological fault in the southwest of the site and so in this area, there is considered to be a moderate risk. As a result, it is considered that gas protection measures (equivalent to CS2) are required, to mitigate the identified risks. These protection measures should be provided to properties within 20m of the fault. The protection should include a vented sub-floor void, and a gas membrane resistant to CO₂ and CH₄.
- 2.10 The ground investigation only encountered made ground at one location (WS1), 0.4m thick. Below this, and below topsoil on the rest of the site, a sequence of gravelly clays onto clayey gravels onto mudstone, was encountered, consistent with in situ weathering of Coal Measures mudstone. A 0.7m thick weathered coal seam was found in one borehole on the north of the site, which is consistent with the published geological map.
- 2.11 The contamination testing within the main field during the original investigation in October 2024 did not identify any concentrations of contaminants requiring any remedial measures. The supplementary topsoil sampling undertaken on the 20th March 2026, within the main field, supports the original finding that the isolated slight exceedance of arsenic concentration within the topsoil is attributed to be part of the range caused by random variation. Therefore, based on the results it is concluded that the topsoil/subsoil across the main site is suitable for reuse on site.
- 2.12 However, contamination testing of topsoil at HP1, at the southeastern end of the site, at the location of the proposed access road, identified elevated concentration of benzo(a)pyrene at 12mg/kg, together with the identification of asbestos fibres.

3.0 Remediation Strategy

Contaminated Topsoil at HP1 - Location of Proposed Access Road:

- 3.1 The topsoil identified in the southeast at HP1 is not considered to be suitable for retention on site due to the presence of asbestos fibres and elevated benzo(a)pyrene. This area of the site is within the footprint of the proposed access road, therefore the risk to human health would be negligible. However, topsoil is not geotechnically suitable to be retained beneath the road and will need to be stripped during preparation for the road. The topsoil from this location will need to be removed from site to a suitable landfill. The receiving tip may require Waste Acceptance Criteria testing and asbestos quantification. The disposal/transfer documents should be retained for inclusion in the Validation Report.
- 3.2 Validation inspection will be required by the Engineer, to verify removal of all the affected topsoil. Further details are provided in Section 4.0.
- 3.3 If removal of made ground from site is required to achieve the cover soil thickness, or opted for to ease construction and validation, the waste receiver may require Waste Acceptance Criteria Testing (WAC).

4.0 Validation

Contaminated Topsoil Removal at HP1

- 4.1 All the topsoil at/around HP1 should be removed from site. Once the extent of the topsoil has been removed from site, then the resulting excavation will need to be inspected by an Engineer. Where made ground or natural strata are present present below, this will be clearly evident and no sampling or testing is proposed in this circumstance, unless there is any doubt. The area will be photographed and all the details included within a Validation Letter Report.
- 4.2 The disposal/transfer documents should be retained for inclusion in the Validation Report.

5.0 Imported Soils

- 5.1 The topsoil within the main fields is considered to be suitable for reuse within gardens on site. Therefore, it is likely that there is sufficient site won topsoil for use for the final development. However, if any imported soils are required, the source will need to be confirmed, and the material tested for the attached suite of contaminants, to comply with the maximum screening values listed. The frequency of testing is given on the table below.

Material Type	Number of Samples
Topsoil or subsoil from greenfield / manufactured source	Minimum 3No. or 1 per 250m ³ (whichever is greater)
Topsoil or subsoil from brownfield / screened source.	Minimum 6No. or 1 per 100m ³ (whichever is greater)

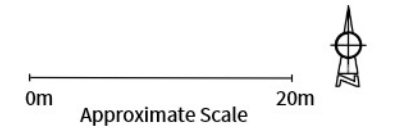
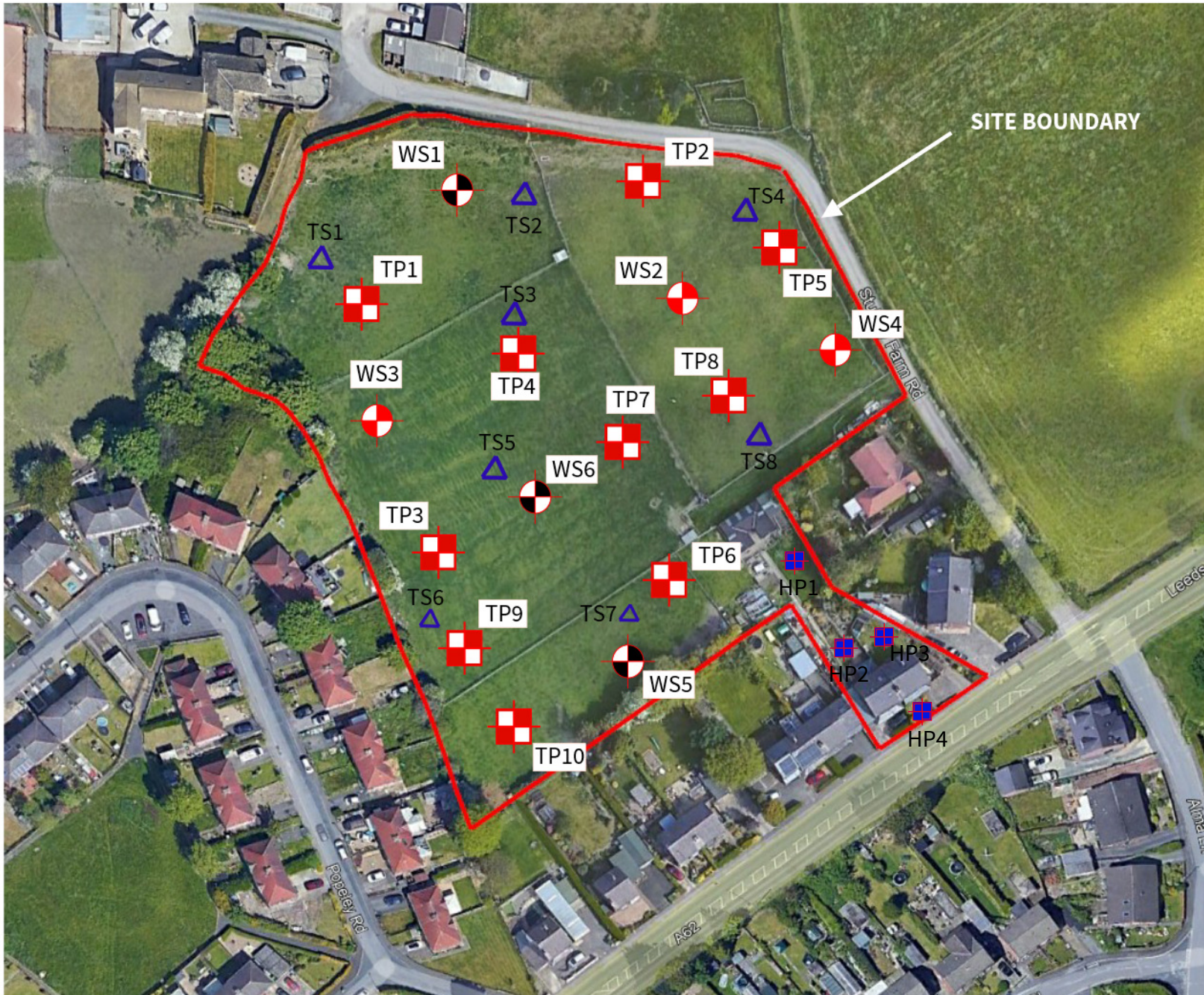
- 5.2 The material should be placed in quarantined stockpiles and once a stockpile has been approved by the Engineer, no further material should be added to the stockpile, and any further import should be stockpiled separately. Further testing shall be carried out where any mixing is suspected to have occurred.
- 5.3 As and when required, the soils will be used around the plots as the development progresses, and it will be necessary to verify that the appropriate soils have been placed on the plots, and not soils from any other source. This will be achieved by excavating trial pits on the basis of one per four plots. The trial pits will be photographed, to include a reference scale, and the photographs included within any report to enable the location on site to be identified.

6.0 Unexpected Contamination

- 6.1 Any unexpected contamination uncovered during the works shall be inspected, sampled and analysed in laboratory for the suite of determinands appended to this Remediation Statement, and compared to the maximum concentration levels listed on the enclosure. Works on the affected materials shall cease until the appraisal is complete and, if necessary, a revised Remediation Statement is to be prepared and approved by the Planning Authority before work is recommenced.

7.0 Protection of Workers and the Public During Development Works in the southeast

- 7.1 Damping down of the contaminated topsoil in the southeast must be implemented during dry periods, and timely removal of the contaminated material.
- 7.2 Washing facilities and a clean mess room should be provided.
- 7.3 Site fencing will be provided to exclude access to members of the public, and contaminated material will be contained within the site boundary, and removed as soon as possible.
- 7.4 Workers will be educated to use adequate hygiene and PPE.
- 7.5 Movement of contamination off-site on vehicle wheels shall be minimised by cleaning of vehicle wheels and/or use of road sweeper, as required.



- Trial Pit
- Window Sample Borehole
- Window Sample Borehole and Gas Well Installation
- Supplementary topsoil sample Locations.
- Supplementary hand pit locations

ARP

ARP GEOTECHNICAL LTD
CHARTERED CONSULTING ENGINEERS

Northwest House, 5-6 Northwest Business Park, Searby Hill, Leeds LS6 2QH
Telephone: 0113 245 8498 Fax: 0113 244 3864 E-Mail: leeds@arpassociates.co.uk

Project	
LAND AT 195 LEEDS ROAD HECKMONDWIKE	
Client	
ORION HOMES LTD	
Title	
TOPSOIL SAMPLING PLAN AND SITE INVESTIGATION PLAN	
Date	
APRIL 2026	
Drawn	Scale
OG	AS SHOWN
Job No.	
ORH/25	



ARP GEOTECHNICAL LIMITED
IMPORTED SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (unless stated otherwise) (mg/kg)			C4SL (mg/kg)		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent) (MAFF)	400					
Chromium (hexavalent)	6			21		
Copper (MAFF)	80#					
Lead				200		
Inorganic Mercury	40			200		
Nickel (MAFF)	50#					
Selenium	250					
Zinc (MAFF)	200#					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13	15	36	85
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,i)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

S4ULs: Copyright Land Quality Management Ltd reproduced with permission; Publication No. S4UL3378. All rights reserved.

MAFF: Ministry of Agriculture, Fisheries and Food - "Code of Good Agricultural Practice for the Protection of Soil

#pH dependent. If exceeded, to be compared against appropriate MAFF value for the pH



ARP GEOTECHNICAL LIMITED
SOIL CONTAMINANT SCREENING VALUES
PUBLIC OPEN SPACE NEAR RESIDENTIAL

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	79			79		
Cadmium	120			220		
Chromium (trivalent)	1500					
Chromium (hexavalent)	7.7			21		
Copper	12000					
Lead				630		
Inorganic Mercury	120			610		
Nickel	230					
Selenium	1100					
Zinc	81000					
Acidity (pH)	*Should be Greater Than 5					
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene**	4900	4900	4900	11,000	15,000	17,000
Acenaphthylene	15000	15000	15000			
Acenaphthene	15000	15000	15000			
Fluorene	9900	9900	9900			
Phenanthrene	3100	3100	3100			
Anthracene	74000	74000	74000			
Fluoranthene	3100	3100	3100			
Pyrene	7400	7400	7400			
Benzo(a)anthracene	29	29	29			
Chrysene	57	57	57			
Benzo(b)fluoranthene	7.1	7.2	7.2			
Benzo(k)fluoranthene	190	190	190			
Benzo(a)pyrene	5.7	5.7	5.7			10
Indeno(1,2,3-cd)pyrene	82	82	82			
Dibenzo(a,h)anthracene	0.57	0.57	0.57			
Benzo(g,h,i)perylene	640	640	640			
Phenols	440	690	1300			
Total TPH	*Above 3,800, speciate and compare with values below:					
C5 to C6 Aliphatic	570000	590000	600000			
C6 to C8 Aliphatic	600000	610000	620000			
C8 to C10 Aliphatic	13000	13000	13000			
C10 to C12 Aliphatic	13000	13000	13000			
C12 to C16 Aliphatic	13000	13000	13000			
C16 to C35 Aliphatic	250000	250000	250000			
C35 TO C44 Aliphatic	250000	250000	250000			
C5 to C7 Aromatic (Benzene)	56000	56000	56000			
C7 to C8 Aromatic (Toluene)	56000	56000	56000			
C8 to C10 Aromatic	5000	5000	5000			
C10 to C12 Aromatic	5000	5000	5000			
C12 to C16 Aromatic	5100	5100	5000			
C16 to C21 Aromatic	3800	3800	3800			
C21 TO C35 Aromatic	3800	3800	3800			
C35 TO C44 Aromatic	3800	3800	3800			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits. Considered separately.

S4ULs: Copyright Land Quality Management Ltd reproduced with permission; Publication No. S4UL3378. All rights reserved.