



1286/01

MR J PATEL

FORGE LANE, DEWSBURY

PLANNING APPROVAL 2004/60/94709/E2

**PLANNING CONDITION NO. 19**

Introduction

1. Kirklees Metropolitan Council have approved the outline application for residential development of 169No. dwellings on the site at Forge Lane, Thornhill, Dewsbury.
2. The approval was subject to 36 Conditions and Planning Condition No. 19 related to the requirement of preparation of a Remediation Strategy for the implementation and completion of the approved remediation measures.

Design Proposals

3. A Remediation Strategy for the proposed development is highlighted on the attached Statement under reference 1286/01/REM for the scheme.
4. The works shall be carried out in accordance with the Remediation Strategy to satisfy Planning Condition No. 20 and validation of the works to show that these have been carried out in accordance with the remediation strategy shall be prepared and submitted to satisfy Planning Condition Nos. 21 and 23 on completion of the works.
5. In accordance with the Remediation Strategy, if any unexpected contamination is found, then the works shall cease and the Planning Authority informed. Further investigation will be undertaken to assess the unexpected contamination and the Remediation Strategy revised as necessary. This will be undertaken to satisfy Planning Condition No. 22 during the works.

Summary

6. The attached Remediation Strategy is submitted to satisfy Planning Condition No. 19 and enable Planning Conditions Nos. 20, 21, 22 and 23 to be satisfied during the construction of the Development.



**ARP ASSOCIATES**  
**CHARTERED CONSULTING ENGINEERS**

**PROPOSED CONTAMINATION REMEDIATION**  
**METHOD STATEMENT**

**AT**

**FORGE LANE**  
**DEWSBURY**

**ON BEHALF OF**

**MR PATEL**

**AUGUST 2013**

<b>Doc. No: 1286/01/REM</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
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**MR PATEL**  
**FORGE LANE, DEWSBURY**  
**PROPOSED REMEDIATION METHOD STATEMENT**  
**FOR CONTAMINATION**  
**AUGUST 2013**

**1.0 Introduction**

- 1.1 Several third party Geotechnical Engineering Companies have investigated the site, and assessed the contamination status. In October 2011, Arcadis assessed all the existing documents, and site proposals, to produce an "Assessment Findings Summary & Outline Development Constraints and Outline Remedial Strategy" (Issue 3). The findings have been used by ARP Associates in preparation of this Statement.
- 1.2 The western third of the site is predominantly covered by hardstanding, associated with demolished structures previously located in this part of the site. The remainder of the site is covered with rough vegetation, which is dense in several areas. A pond is located in the southern central portion of the site and a surface water ditch is also present in the eastern part of the site.
- 1.3 The site has historically been split into two sections. The eastern part has been generally undeveloped, with embankments and earthworks taking place from the mid-20th Century to present. The western part of site has been used for industrial purposes from before the mid-19th Century, when a glass works was present. The works expanded towards the centre of the site, and by 1908, a gravel pit was marked in the southern-central portion of site. By the 1920s, the northern portion of the glass works had been changed into the "Thornhill Iron and Steel Works" with the gravel pit now marked as a pond feature. By the middle of the century, the glass works had been fully replaced by the iron and steel works. The main factory buildings underwent several changes until the late 1980s, when they were demolished.
- 1.4 The geological maps indicate the site to be underlain by Recent and Pleistocene Alluvium, overlying undifferentiated River Terrace Deposits. Mudstones and sandstones of the Lower Coal Measures underlie the superficial deposits, with a coal seam running north-south through the site. The 1:10,000 Series BGS map sheet SE21NW indicates that there are two coal seams (one unnamed recorded as up to 0.4m in thickness and the other as the Green Lane or Middleton Little seam recorded as 0.3 to 0.7m thick) are present beneath the site.

- 1.5 Previous investigations have identified made ground, overlying Alluvium and River Terrace Deposits, resting upon Lower Coal Measures strata. The made ground was found to be a mixture of materials, and across the majority of the site, ranged in thickness from between 0.3 and 3.5m. In the area of the backfilled gravel pit, deeper made ground was identified, comprising very soft black clay and silt to a depth of 4.8m. The Alluvium extended to depths of between 1.0m and 4.0m, and comprised soft to firm clay, silty clay and clay/silt with occasional plant matter and gravel. The River Terrace Deposits were generally medium dense or dense granular deposits, although occasional clay layers were noted. The River Terrace Deposits extended to depths of between 7.0m and 10.7m. Near the surface, the Lower Coal Measures strata were described as firm to stiff brown clay with occasional gravel and cobbles. With increasing depth, this graded into mudstone with occasional sandstone units and coal seams.
- 1.6 There are two surface water features located on site:- a pond and a ditch (which is culverted in part). The Calder and Hebble Navigation forms the northeastern boundary. The River Calder is located approximately 500m to the west of site at its nearest point.
- 1.7 The site is located over a Secondary 'A' Aquifer. The site is not located within a source protection zone. Groundwater was found to be present within the shallow natural deposits, comprising a single groundwater body at depths of between 0.44m and 3.13m in March 2011. This data indicated a flow direction generally to the north to northeast.
- 1.8 Soil, leachate, sediment, surface water and groundwater samples were analysed during the site investigations, for a broad range of potential contaminants. A number of elevated Contaminants of Concern (CoC) were identified in soils at the site. In addition, elevated concentrations of PAH compounds in groundwater, sampled from the western part of the site, and ammoniacal nitrogen in groundwater from the site and from canal water sample were recorded. Generally the concentrations of CoC measured in soil leachate and groundwater did not indicate a significant linkage between CoC in the unsaturated zone leaching to groundwater. From testing on sediments sampled from the pond, there is no evidence of a significant risk to the pond (or from exposure to the pond) based on the understanding that the pond is unlikely to be used for recreational purposes or fishing. The potential for human health receptors to come into regular contact with either the sediments or surface water is minimal.
- 1.9 Asbestos cement sheeting fragments have been identified at surface in the western part of the site, probably partly originating from the demolition of the former buildings in this area of the site, but also from fly tipping at the site.
- 1.10 The risk assessment has indicated that the majority of exceedences for site residents from the identified CoC were driven by the direct contact pathway. Therefore, if a clean cover system is incorporated into the redevelopment, the risk to residents from contaminants is considered to be low.
- 1.11 The proposed development generally comprises two storey residential properties with associated gardens and access roads. The scheme also includes an Extracare apartment block located in the southwestern corner of the site. The pond, drainage ditch and many

of the existing trees are to be retained. The proposed development is constrained by a number of existing underground utilities, including culverted watercourses, sewers and at least one water main.

## 2.0 Remediation Proposals

2.1 Risks from contamination should be acceptable if the following measures are adopted, provided the necessary agreement of all stakeholders is obtained: -

2.1.1 Where possible, asbestos cement sheeting fragments should be collected and removed from site by appropriately licensed contractors. Material originating from the area of the site where asbestos cement sheeting was observed should not be used in the cover layer. Any areas of Japanese Knotweed should be appropriately treated at this time.

2.1.2 The mounds to the south and north of the pond should not be re-used in a cover blanket without further testing.

2.1.3 It should be assumed that all materials present on the site require either placement or retention below hardstanding or building footprints, or placement beneath an uncontaminated cover blanket of a minimum 0.6m thickness in garden and soft landscaped areas.

2.1.4 The cover blanket to be provided in soft areas on the residential site should be free of all foreign matter, and comply with the specification below.

Thickness (mm)	Description
150	Topsoil
450	Subsoil

2.1.5 If any material is disposed from site to a licenced facility, a Waste Acceptance Criteria (WAC) analysis will need to be undertaken in a UKAS accredited laboratory before removal from site.

2.2 Appropriate PPE should be used until the contaminated material is below cover. To mitigate risk during construction, washing facilities and a mess room, where overalls and boots are excluded, shall be provided for construction workers, and education of workers in respect of the contamination present shall also be undertaken and monitored.

2.3 Surface water run-off shall be controlled by the use of cut-off bunds or trenches, if necessary. Material shall be prevented from entering the watercourse adjacent to the northeast of the site.

## 3.0 Materials Testing and Validation

3.1 To satisfy the Regulatory Authorities, verification that the above measures have been successfully implemented needs to be independently confirmed, in accordance with the guidance supplied in the document produced by the Yorkshire and Humberside Pollution

Advisory Council (YAHPAC): "Guidance on the Verification Requirements for Cover Systems". The measures described below will be required to ensure compliance with the document.

- 3.2 If the made ground is to be placed below hard areas and/or below a cover blanket in soft areas, on completion of the works, trial pits shall be carried out on the basis of one per three plots (including one pit to the front of plots for every two to the rear), to confirm either the absence of contaminated material from soft areas, or the placement of the appropriate thickness of cover blanket materials. 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.
- 3.3 It is anticipated that all topsoil or subsoil will need to be imported. 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.

<b>Material Type</b>	<b>Number of Samples</b>
Topsoil or subsoil from brownfield site	Minimum 6No. or 1 per 200 tonnes (whichever is greater)
Topsoil or subsoil from greenfield site	Minimum 3No. or 1 per 500 tonnes (whichever is greater)

- 3.4 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. Any cross contamination of materials should be avoided, and further testing carried out where any cross contamination is suspected to have occurred.
- 3.5 If space is insufficient on the site to store quarantined stockpiles, cover blanket materials can be placed directly into the appropriate gardens/landscape areas, but samples of each material would need to be tested from each of the validation trial pits discussed in Section 3.2 above.
- 3.6 The results of all the laboratory analysis, excavation logs, plans, photographs, and import/disposal documents will form part of the Remediation Validation Report.
- 3.7 In order to enable the scheme to progress and sales of properties to continue throughout the construction of the development, interim Validation Reports may be prepared for specific areas, showing how the contamination has been dealt with. This will enable enquiries during the sales of the properties to be satisfied and a final Validation Report will be prepared at the end of the development, incorporating all the interim reports to satisfy the planning conditions.

#### **4.0 Unexpected Contamination**

- 4.1 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.



**ARP GEOTECHNICAL LTD**

**SCREENING VALUES FOR RESIDENTIAL USE**

<b>Determinand</b>	<b>Screening Value (mg/kg)</b>			<b>Source</b>
	<b>1% SOM</b>	<b>2.5% SOM</b>	<b>6% SOM</b>	
Arsenic	32			CLEA SGV 2009
Cadmium	10			CLEA SGV 2009
Chromium (trivalent)	3,000			CIEH 2009
Chromium (hexavalent)	4.3			CIEH 2009
Lead	450			CLEA SGV
Mercury	170			CLEA SGV 2009
Selenium	350			CLEA SGV 2009
Copper	2,330			CIEH 2009
Nickel	130			CLEA SGV 2009
Zinc	3,750			CIEH 2009
Acidity (pH) <sup>2</sup>	Should be greater than 5			CLEA
	<b>1% SOM</b>	<b>2.5% SOM</b>	<b>6% SOM</b>	
Acenaphthene	210	480	1,000	CIEH 2009
Acenaphthylene	170	400	850	CIEH 2009
Anthracene	2,300	4,900	9,200	CIEH 2009
Benzo(a)anthracene	3.1	4.7	5.9	CIEH 2009
Benzo(a)pyrene	0.83	0.94	1.0	CIEH 2009
Benzo(b)fluoranthene	5.6	6.5	7.0	CIEH 2009
Benzo(g,h,i)perylene	44	46	47	CIEH 2009
Benzo(k)fluoranthene	8.5	9.6	10	CIEH 2009
Chrysene	6.0	8.0	9.3	CIEH 2009
Dibenzo(a,h)anthracene	0.76	0.86	0.90	CIEH 2009
Fluoranthene	260	460	670	CIEH 2009
Fluorene	160	380	780	CIEH 2009
Indeno(1,2,3-cd)pyrene	3.2	3.9	4.2	CIEH 2009
Naphthalene	1.5	3.7	8.7	CIEH 2009
Phenanthrene	92	200	380	CIEH 2009
Pyrene	560	1,000	1,600	CIEH 2009
Phenols	420			CLEA SGV 2009
Total TPH	Above 500, speciate and compare with below:			
C5 to C6 Aliphatic	30	55	110	CIEH 2009
C6 to C8 Aliphatic	73	160	370	CIEH 2009
C8 to C10 Aliphatic	19	46	110	CIEH 2009
C10 to C12 Aliphatic	93	230	540	CIEH 2009
C12 to C16 Aliphatic	740	1,700	3,000	CIEH 2009
C16 to C35 Aliphatic	45,000	64,000	76,000	CIEH 2009
C35 TO C44 Aliphatic	45,000	64,000	76,000	CIEH 2009
C5 to C7 Aromatic	65	130	280	CIEH 2009
C7 to C8 Aromatic	120	270	611	CIEH 2009
C8 to C10 Aromatic	27	65	151	CIEH 2009
C10 to C12 Aromatic	69	160	346	CIEH 2009
C12 to C16 Aromatic	140	310	593	CIEH 2009
C16 to C21 Aromatic	250	480	770	CIEH 2009
C21 TO C35 Aromatic	890	1,100	1,230	CIEH 2009
C35 TO C44 Aromatic	890	1,100	1,230	CIEH 2009

SGV = Soil Guideline Value from the Environment Agency

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CIEH = Land Quality Management / Chartered Institute of Environmental Health Generic Assessment Criteria