

AUDIT CONTAMINATION REPORTS
1 PONTEFRAC T RD
CUDWORTH
BARN SLEY
S72 8AJ

ON BEHALF OF

Parkside Developments

Phase 1

Phase 2

Mitigation

June 2011

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Phase 1 Audit Contamination Report on 1 Pontefract Rd, Cudworth Barnsley S72 8AJ

1. Executive Summary

1.1 A phase 1 Audit report was requested by Barnsley M.B.C. to be submitted together with a planning application under the change of use application B/05/0340/CU

1.2 The purpose of the audit is to identify any possible source of contamination within the proposed site area and assess the subsequent environmental impact

1.3 The audit is composed of site and local area investigations, carried out on foot, and research into the relevant publications.

1.4 The earliest recorded use of the land shows the presence of allotment gardens on the 1917-1931 map. Subsequently being identified as garage on the 1962 map. The earlier 1854 and 1893 maps show the site as being open fields. It is considered by local knowledge that the present site has been in existence over thirty years used as a concrete product manufacturing facility. At sometime before the concrete making facility was started the site after being used as a garage became an engineering workshop for a brief period.

1.5 At the time of the walkover survey there were houses surrounding the site on all sides. To the north of the site is Intake Lane and the site of a former petrol station currently for sale for conversion to residential dwellings. Intake lane is used for access to the rear of properties on Pontefract rd.

To the east and the south are private dwellings; to the west adjacent to the site is Pontefract Rd a major through route artery to the local towns of Barnsley and or Pontefract.

1.6 No gas monitoring has taken place.

2. SITE location

2.1 The site is in Cudworth centred at 438988 E and 409568 N. There are no railway lines or major water courses nearby.

2.2 The site to be developed is currently and for approximately thirty years has been operating as a concrete product manufacturing facility. The entrance to the site and the proposed parking areas is by turning off Pontefract rd into Intake lane and then entering the site approx. thirty metres down intake lane.

3.0 LOCAL SITE SETTINGS

3.1 The site is located to the north east of Cudworth village centre. Bounded by both Pontefract Rd to the west, Intake lane to the North, and private residences to the east, and lime tree cottage to the south, screened by a row of mostly sycamore trees currently enjoying a tree preservation order. Residential dwellings surround the entire site, and it is considered that in its present use of concrete making facility it is out of character with its present neighbours. Consent for conversion to residential dwellings would be more in keeping with the local residential appearance of the area.

4.0 TOPOGRAPHY

4.1 The site is basically flat being approximately 80.5m above seal level. There are no major or minor watercourses in the vicinity and there are no wells or natural springs shown on any of the historical maps

5.0 GEOLOGY

5.1 The proposed area of development is sited on Mexborough rock of the Pennine Middle Coal Measures, consisting mainly of sandstone, siltstones, and mudstones. There are no records of boreholes, wells, shafts, aquifers or waste sites in the vicinity. There are no landslips, alluvian deposits or man made artificial deposits on the site. Strata in the locality undisrupted by faulting is generally dipping to the NE.

6.0 GROUND CONDITIONS

6.1 The entire site is covered with a concrete floor of about 150mm thickness the current buildings on site occupy about 80% of the site area.

The present site entrance there are three, are all off intake lane., To the rear of the site at the eastern end is a lane, this lane provided access to the fields at the southern extremity, this lane now belongs to Cudworth Concrete products and is planned to become part of the parking area for the new development. There is no evidence of ground water anywhere on the site and the ground is dry.

7.0 HYDROLOGY AND HYDROGEOLOGY

7.1 Hydrology

There is no surface water in the near vicinity of the site
There are no main large watercourses in the near vicinity of the site.
There is no evidence in either the, 1854, 1893, 1917-1931, or indeed the 1962,05 map of springs or wells in the near vicinity.

7.2 Hydrogeology

The sandstone's found within the coal measures are, generally medium grained, and less well cemented, and therefore demonstrate medium levels of porosity and intergranular permeability as is often observed in this type of coal measure strata.

Ground water movement therefore is likely to occur both through the sandstone and along faults and fractures and between impermeable horizons such as the mudstones and shale layers

Any groundwater movement will likely permeate through the sandstone until impermeable horizons are met and will likely move down the dip i.e. in a north east direction.

This coincides with the dip of the topography and so is also the direction surface water is likely to issue.

8.0 HISTORY OF THE SITE

8.1 The history of the site was obtained from the data from national archives, the 1871 census, and the following OS maps, 1854, 1893, 1917-1931, and the 1962

8.2 Both the 1854 and 1893 OS maps show the site has been agricultural land, the 1917-1931 map shows the site has been allotment gardens, whilst the 1962 shows the presence of a garage

8.3 It is therefore considered that at sometime between 1893 and 1917 the site became used as allotment gardens as the area around the site started to become residential, there is evidence of the first houses being built across from the site in 1893. The 1917-1931 OS map indicates a number of terraced houses developed along Pontefract Rd to the north of the site

8.4 At some point between 1931 and prior to 1962 the allotment gardens were sold and a garage was built on the site. The garage remained in operation until 1965 until it was converted into an engineering works and subsequently into a concrete product production unit in approx. 1975.

9 CONCEPTUAL MODEL THEORY

9.1 The Environment Agency and DEFRA use a risk based assessment in the reclamation and redevelopment of brown field land. The guidance issued in the Contaminated Land Report No 10 (CLR 10), uses the CLEA (CONTAMINATED LAND EXPOSURE ASSESSMENT) programme to model possible pathways and effects of land contamination. It takes into account levels and lengths of exposure and of all the possible pathways from contaminant to receptor

9.2 The redevelopment of any site should therefore take into account all possible sources of contamination and their effects in accordance with CLR 10. Further to this, a solution to any possible problems should then be provided so that the pathway from contaminant to receptor is effectively severed. The receptor is defined as any person working at or inhabiting the building during construction or after

9.3 The model estimates the daily exposure (ADE) of each particular contaminant over the exposure period. Exposure is assumed to be via ingestion, inhalation, and absorption of all possible contaminant carriers i.e. Water, soil, dust, and vapour.

9.4 The model also takes into account the various possible pathways from contaminant to receptor i.e. the pathways for exposure such as:

1. Airborne dust from soft landscaping or residual dust from factory operations
2. Surface runoff from the site
3. Ground water pollution and issue of water from springs down flow gradient that has been recharged via water flow through the strata.
4. Ingestion if the residual contaminants thorough the soil or food grown on the land, can occur directly thorough the vegetation or indirectly via fauna fed on the vegetation. This data can then be used to obtain the total estimated daily intake.

9.5 Comparison between the TEDI and known acceptable levels of contaminants can then be made. Contaminants that are considered minimal risk have the index dose for referral (ID). For more harmful substances with a threshold "harm" level, the tolerable daily intake (TDI) is used. This takes into account the background levels of contaminants from the land around the site

9.6 if the TDI is exceeded by the TEDI then further action must be taken to reduce the risk of contamination to below that of the TDI

9.7. The system is tailored to each specific site by the collection of data on each specific contaminant, and the use of equations to arrive at a solution where by the TEDI is equal to or less than the TDI. This is seen as a more robust system than than ICRL Guidance, as that guidance was a more general approach to contamination

9.8 the remediation and development of a site should incorporate a programme of works through good management techniques and encapsulating waste or contaminating materials to sever any pathways between contaminants and the surface, both on and off site, or to groundwater on the surface or via drains or spring lines.

9.9 The contamination pathways are the air, water and underlying strata. The receptors are the people who will work and live in the development once complete, Children playing on the ground and the possible cultivation of the land must also be considered.

10.0 CONCEPTUAL MODEL FOR THE SITE

10.1 The conceptual model for the site, as previously stipulated, must take into account all possible contaminant pathways. The site has been investigated by a data search and site visits. The site for the last thirty years as been a concrete product manufacturing facility and before that possibly for a further thirty years the site of a garage for the storage and repair of vehicles.

10.2 The sources of pollution is any material, / materials that have been used on this site that are considered a contamination risk. As the ground had previous industrial uses.

10.3 The possible pathways are air , water and the strata.

10.4 The receptors are the residents of the dwelling once it is ready for inhabitation, and the construction workers.

Other possible receptors are

10.5 The groundwater. The previous uses of this site, and the surrounding area.

10.6 Contaminates present would likely to be organic compounds found within oil and diesel being present in the former use of the building as a garage site.

10.7 The building materials to be used; contaminants such as sulphates can cause degradation of concrete and mortar, although it is considered that these are not likely to be present in sufficient quantities as to create a building material hazard.

10.8 Any unpaved garden area will carry a higher risk of ingestion of pollutants. The sealing of certain areas with pathways and tarmac and the position the building itself will sever some of the pathways and therefore reduce the TEDI

10.9 There is also the possibility of contamination from fuel when the used as a garage. This would mean there is a chance of the organic compounds found within oil and diesel being present

10.10 Other possible contaminants are asbestos and PCBs (polychlorinated biphenyl's). Asbestos is often used in the roofing and lagging, which, as seen in the photographs are still in place. The PCBs are productions of the decomposition of certain types of electrical equipment and cables.

11.0 WALKOVER SITE SURVEY

11.1 A walkover site survey was carried out on 22/6/2006. The site is generally rectangular in shape with two-storey building occupying most of the site. The building is brick and block construction with a cementitious asbestos roof consisting of sheets, placed upon metal roofing joists.

The northern end of the site is bordered by Intake Lane, the western boundary by Pontefract Rd, the southern boundary abuts a private drive leading to a private residence which as at its boundary a row of sycamore trees enjoying a tree preservation order. To the south of the site are also private residences.

12.0 PHOTOGRAPH DESCRIPTION-REFER TO APPENDIX A

12.1 PHOTO 1

This photo shows the front elevation of the existing building looking from the west, eastwards. The building looks in reasonable condition but does require maintenance.

12.2. PHOTO 2

This is a shot down intake lane again looking from the west eastwards the abandoned garage forecourt appears on the left and the entrances to inside of the buildings can be seen.

12.3. PHOTO 3,4,AND 5

These three shots show the existing entrances off intake lane into the existing buildings. The brick and blockwork fabric of the building is clearly seen

12.4. PHOTO 6

This is a view along the rear of the building looking south showing the rear entrance and the small area currently used for storage.

12.5. PHOTO 7

This is a view along the lane to the rear of the property now owned by Cudworth concrete looking from north to south and is earmarked to become parking for the new development.

12.6. PHOTO 8

This is a shot from the bottom of intake lane looking Southwest towards the rear of the building and up into Pontefract Rd at the top of the lane

12.7 PHOTO 9 and 10

A view of the building from the rear looking into the back of the building in a westerly direction and showing inside the building at the rear

12.8. PHOTO 11

A view along the southern elevation of the existing building looking east to west, the sycamore trees on the boundary of the property enjoying the TPO are clearly visible

12.9 PHOTO 12

A view along the rear of the building looking south to north into intake lane. The height of the building on the left-hand side is 8,5m, built of block with a cementacious roof

12.10 PHOTO 13

A further view into the inside of the building clearly showing the height and the roof structure

12.11 PHOTO 14

A view down the drive off lime tree cottage to the southern elevation showing the building to be redeveloped on the left hand side with the sycamores under the TPO immediately in front of the camera.

12.12 PHOTO 15/16

Views at the top of lime tree cottage drive looking north and Northeast along Pontefract rd and the front of the building to be redeveloped

12.13 PHOTO 17/18

Views from the southwest along Pontefract rd looking directly at the front of the building and towards the old petrol station forecourt to the north of the site.

13.0 GROUND ASSESSMENT

13.1 There is no surface water on the site so water samples have not been taken. No gas readings have been taken from the site, as past use is not indicative of likely gas production.

TABLE 1 - CONTAMINATION RISK ASSESSMENT

RISK DESCRIPTIONS	RISK OF CATEGORY
On site contamination	M
Contamination to be present in significant quantities of concentrations	L
Potential for harm to human health	L
Potential for off site migration of contaminants	L
Potential for contamination of controlled waters	L
OVERALL RISK	
Key L=Low Risk M= Medium Risk H= High Risk	L

14.0 SUMMARY AND RECOMMENDATIONS

14.1 The site was shown as open fields on the 1893 map whereupon afterwards it became allotment gardens as shown on the 1917-1931 map. The present building dates to early 1960 when it was used as a garage for the storage and repair of commercial vehicles, being then converted to a small engineering works and in 1975 was converted into a concrete product manufacturing facility

14.2 The most likely contaminants of the land indicate that organic compounds from fuel together with cement bonded asbestos.

14.3 The large area of concrete and tarmac both in and around the building will have helped to prevent contaminants from reaching the soil

14.4 Plants and trees that are on the site appear healthy and not suffering from distress and show no signs of the presence of phytotoxic chemicals. There will be areas of planting in the new development that will require imported topsoil and this soil should be sampled prior to importation to ensure no contamination is introduced.

14.5 The existing buildings should be dismantled with caution. The concrete floor and the areas of tarmac should be swept clean prior to dismantling the exterior walls and roofs. The brick and blocks should be pulled into a pile for crushing on site. Any recyclable material should be removed from site prior to the demolition of the buildings. The last demolition on site should be the lifting and removal of the surrounding tarmac and lifting of the concrete floors prior to crushing. The crushed brick and concrete can be used for on-site hardcore if there is no evidence of contamination

14.6 if any possible contamination were discovered on site during demolition of the building or the construction of the new development, this would have to be assessed at that time and any remediation carried out before development could continue.

14.7 if contamination was encountered it would require analysing for possible heavy metal pollution, hydrocarbons, phenols and chemicals using the TOX and soil guidance values

14.8 Despite a large history of mining and quarrying in the area all the seams close to the proximity of the site have ceased working, and there should be no problems with mining subsidence

15.0 RECOMMENDATIONS

15.1 It is considered that an intrusive site survey is not required. The cement bonded asbestos sheets should be removed using good management practices and left in whole sheets to wrap and dispose of to an authorised landfill.

16.0 LIMITS AND LIABILITIES

16.1 This report on No1 Pontefract Rd the site of Cudworth Concrete Products is solely for the use of Parkside Developments and their professional advisors on matters pertaining to the application for redevelopment of the aforementioned site. Both the findings and the opinions expressed in this report are relevant to the period of the site visit and data supplied.

Signed

Mr R Holliday C.Eng.
For and behalf of Parkside Developments

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APPENDIX A

PHOTOGRAPHS

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APPENDIX B

MAPS

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APPENDIX C

CONTAMINANTS

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APPENDIX D

GEOLOGICAL MAP EXTRACTS

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APPENDIX E

GEO SCIENCE DATA LIST