Town and Country Planning Act 1990

Phase I Contaminated Land and Environmental Desk Study

Land off Hill Top Lane

Redbrook Road
Gawber
Barnsley
S75 2RF

On behalf of

site4selfbuild.co.uk

Planning Application No: 2013/0528

Report AC00052/PI

June 2013

AC Environment Solutions Ltd
Unit 5A Enterprise Court, Farfield Park, Manvers,
Rotherham, South Yorkshire S63 5DB
Telephone 01709 711850
Email info@ACEnvironment.co.uk
Website www.ACEnvironment.co.uk

Registered in England & Wales 07280914
VAT Registration No 110 2658 59

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1 Executive Summary

1.1 This section summarises the findings of the report and any recommendations for further work. In order to gain a full understanding of the assessment undertaken and conclusions reached this section should be read in conjunction with the remainder of the report.

1.2 The site is considered to present a Low overall level of environmental risk in relation to its planned redevelopment. A number of issues and recommendations have been identified which are summarised below:

- There is a potential for the natural occurrence of sulphate, in soils due to underlying coal measures strata which would suggest that routine testing for sulphates / sulphides and pH should be undertaken during the geotechnical investigation for the purposes of foundation design.
- The potential for Asbestos Containing Materials (ACMs) within areas of Made Ground and within the remaining dilapidated site buildings should be considered further by means of asbestos screening of composite samples and a type 3, pre-demolition, asbestos survey. Any identified ACMs would then need to be removed from site using licensed contractors. The disposal of non asbestos containing wastes should be arranged via registered waste carriers to licensed waste disposal or recycling facilities.
- Construction workers should be required to adopt work procedures in line with best practice including the use of suitable PPE, good hygiene practices and dust suppression measures as necessary.
- An assessment of whether the site is being affected by landfill gas and or mine gas is required to enable the design of any gas protection measures. Since the site is also known to be within a Radon Affected Area, the minimum measures should include passive venting, a low permeability membrane and sealing of joints around service entry points whether or not any landfill and/or mine gas is detected during further investigations. Discussion with the Environmental Health Department of Barnsley Council will be required to determine the extent of the investigation expected.
- A capped mine entry has been identified within 20 metres of the site and further mine entries are apparent in the surrounding area. The structural engineer providing the engineering design should take the vicinity of mine entries into account during the design process alongside the potential for landfill gas and radon.

2 Introduction

2.1 AC Environment Solutions Ltd was instructed to proceed with a Phase I Contaminated Land and Environmental Desk Study for the site identified as Land Off Hill Top Lane, Redbrook Road, Gawber, Barnsley S75 2RF by Mr Paul Wright of Site 4 Self Build on 3 June 2013.

2.2 It is understood that the client intends to redevelop the site and that this study has been undertaken in support of the planning application.

2.3 A location plan, showing the position of the site in relation to the surrounding area, is presented as Appendix A and a site plan, showing the extent of the redevelopment area denoted in red is presented as Appendix B. A drawing showing the proposed development site layout has been made available to AC Environment Solutions Ltd which is provided as Appendix C.

2.4 A title plan has been provided subsequent to highlighting minor irregularities with the site boundary observed by AC Environment Solutions during the site inspection. The plan originally provided did not match the title plan and adjustments have therefore been made to the study undertaken by AC Environment Solutions. It should be noted that data and historical maps were obtained prior to the site inspection and show the original area, although the body of our report has been revised to reflect the area shown on the title plan. The proposed layout drawing for the development is also in need of readjustment to reflect the demised premises as shown on the title plan.

2.5 This report comprises a Phase I Contaminated Land and Environmental Desk Study to identify and assess the potential for environmental risk which may impact both upon the development of, and the intended future use of, the site. No intrusive testing has been carried out as part of this phase of the assessment. The report may be used as both a reference point and an informative tool by the client in the design of future investigative works in the event that a potential for environmental risk, including the potential for significant issues associated with the presence of any contamination is identified.

2.6 This study includes information from a number of relevant sources including Ordnance Survey mapping, British Geological Survey the Environment Agency, the Local Authority and other organisations, some of which has been acquired as a dataset from Groundsure Limited.

2.7 A site visit has recently been undertaken by AC Environment Solutions during which the Royal Institution of Chartered Surveyors (RICS) Property Observation Checklist has been completed. This checklist forms part of the RICS guidance note entitled '*Contamination, the environment and sustainability – implications for chartered surveyors and their clients'* third edition published 2010.

2.8 The conclusions reached in this report are necessarily restricted to those which can be determined from available information and may be subject to amendment in the light of additional information becoming available or to changes in relevant legislation.

2.9 The writer knows of no conflicts of interest in the production of this report.

3 Site Location and Topography

3.1 The site is located to the north west of Hill Top Lane within the Gawber area of Barnsley, as shown on the location plan provided within Appendix A.

3.2 The National Grid Reference for the site is 432698, 407349 and the property is known to be approximately 0.66 hectares in aerial extent.

3.3 The majority of the site comprises a disused area of open land, formerly used as a paddock, which slopes down to the north-west. A rectangular area at the eastern edge of the site, which appears to form part of an adjacent residential property (currently under redevelopment), has also been confirmed as part of the subject site.

3.4 The nature of the site as it currently exists is described in detail in section 5 of this report.

4 Site History

4.1 The history of the subject land and its surroundings has been ascertained from historical 1:2,500 and 1:1250 scale Ordnance Survey (OS) map extracts dating from between 1893 and 2012, copies of which are presented in Appendix D. 1:10,560 and 1:10,000 scale mapping has also been reviewed to check for any additional information and copies are also provided within Appendix D.

4.2 The earliest 1:2,500 scale map extract of 1893 shows that the site was predominantly an area of open ground, probably comprising agricultural land, with a number of small enclosures along the northern part of its eastern edge. A number of small outbuildings, possibly including privies, associated with residential and farm premises to the south are also apparent within the boundary of the site.

4.3 The buildings to the south and south east, identified as Gawber Height on earlier extracts, were evident from earliest mapping, including a 1:10,560 extract dating from 1850. Confirmation that the subject site was predominantly open land with enclosures is apparent on the 1850 extract.

4.4 The site remains as open land with enclosures and outbuildings associated with the premises to the south throughout the period covered by historical mapping while the surrounding area has become progressively more developed with residential dwellings.

4.5 The early maps identify that the surrounding area was predominantly agricultural in nature with a scattering of sandstone quarries. The old part of the village of Gawber existed on the earliest mapping (1850 at 1:10,560) beyond Huddersfield Road approximately 50 metres to the south west.

4.6 An unidentified building or structure within an area identified as rough pasture is shown to the immediate north of the site on the 1893 extract. The 1850 1:10,560 scale extract shows enclosed areas to the immediate north containing several unidentified buildings and an access road along the north-western boundary of the subject site. By 1890, all but two of the buildings had been cleared and the land was identified as rough ground indicative of disuse.

4.7 The village of Gawber experienced extensive growth during the early part of the 20th Century. Residential properties were established immediately beyond the south western and eastern boundaries sometime between 1906 and 1959. 1:10,560 extracts show that the development to the east took place before 1929 and that to the south west was planned in the late 1930s and constructed by 1948.

4.8 A 1989 extract shows that former agricultural land to the north of the site was developed as a residential estate; this is shown to have been developed after 1965.

4.9 No obvious surface waters (streams or rivers) are apparent on historical mapping in the immediate vicinity of the subject site.

5 Site Reconnaissance

5.1 An inspection of the subject site was undertaken by a representative from AC Environment Solutions Ltd on 4th June 2013.

5.2 The RICS Property Observation Checklist for rural land uses was completed during the course of the visit to record obvious potential for contamination and representative photographs were taken which are presented as Appendix E. The weather at the time of the inspection was cool and overcast.

5.3 The site was observed to predominantly comprise a disused area of open land, the majority of which is densely vegetated. The area of the site was noted to slope down to the north west.

5.4 Hill Top Lane bounds the southern part of the eastern boundary of the site and Barden Drive is noted to approach the north western boundary of the site. The surrounding properties are entirely residential in nature with a mix of detached and semi detached houses. A large residential estate was observed to the north of the site.

5.5 Site boundaries comprise a mix of garden fencing, hedges and solid walls although 'Heras' type fencing was observed across the terminus of Barden Drive for additional security. However, a path through the vegetation has been established just to the left of the fencing allowing pedestrian access to the site and informal paths were observed across the site.

5.6 The observed uses within the property and in the site vicinity are noted as follows :

Observed use of the **subject property**:

Industry/manufacturing?	☐ Yes	☑ No
Waste disposal or waste processing?	☐ Yes	☑ No
Surface or underground mineral working?	☐ Yes	☑ No
Vehicle maintenance or refuelling?	☐ Yes	☑ No

Evidence seen of such uses having taken place **within the vicinity** of the subject property:

Industry/manufacturing?	☐ Yes	☑ No
Waste disposal or waste processing?	☐ Yes	☑ No
Surface or underground mineral working?	☐ Yes	☑ No
Vehicle maintenance or refuelling?	☐ Yes	☑ No

Evidence of **potential flooding issues** on or within the vicinity of the subject property:

Is the property near a river, stream or ditch?	☐ Yes	☑
Is the property in a hollow or at the bottom of a hill where flood water could collect?	☐ Yes	☑
Knowledge of any flood events affecting the property or immediate area?	☐ Yes	☑ No

5.7 A rectangular area at the eastern edge of the site, which appears to form part of an adjacent residential property (currently under redevelopment) and was not shown as part of the site on the plan originally provided, has also been confirmed as part of the subject site since the initial inspection.

5.8 As previously noted, the majority of the site was observed to be densely vegetated with tall grasses and wild flowers. The edges were, in places, seen to be overgrown with brambles and nettles and numerous mature trees were also evident. Only a minimal amount of litter was observed within the area of the site.

5.9 A neighbouring resident advised that one of the trees, at the eastern site boundary, is known to be the subject of a Tree Preservation Order (TPO). A discussion has since taken place with Ed Jowett of Barnsley MBC regarding TPOs at the site and it has been confirmed that there are three trees within the site which are protected by TPOs.

5.10 A former animal shelter / shed building was observed at the eastern edge of the site, beneath the tree which was indicated by the resident as protected. Overgrown vegetation, including nettles and young saplings, was noted in the area surrounding the building and no internal inspection was therefore made.

5.11 A gated entrance was observed at the top of the field at the eastern boundary with vehicle tracks worn into the vegetation. This originally appeared, from the plans, to be associated with an adjacent private property and was not initially inspected as part of the site. An area near to the gate was seen to be less densely vegetated and appears to comprise Made Ground (fill material) as discarded builders rubble was observed including aggregates, bricks, tiles and concrete blocks in a fine matrix.

5.12 A large wooden post on top of a pile of recovered bricks was observed at a location to the north east of the area of Made Ground. It is possible that these are being stored as building work was ongoing at the adjoining residential property beyond the gated access.

5.13 The southernmost part of the site appeared to have been segregated from the remainder of the land by a solid stone faced wall and developed as hardstanding for use by the adjacent residential properties. However, the title plan subsequently provided has confirmed that this is outside the area of the subject site.

5.14 A re-inspection was undertaken on 11th June 2013 to view the additional area which had previously been identified as an adjacent property and is separated from the field by a gated access. A difference in ground level was noted and a stone wall was observed delineating the change in use. The area was noted to be mainly surfaced in Made Ground and used for the storage of building materials. A single glazed window unit was also noted on this piece of land.

5.15 Mature vegetation was observed at the edges and a dilapidated outbuilding was seen against the eastern boundary wall. Miscellaneous abandoned items were apparent within the outbuilding, although their nature was not confirmed.

5.16 A conversation with the developer who is currently renovating the adjacent residential dwelling, Mr Tony Carney, indicated that the storage of building materials and establishment of a working surface was temporary and would be removed on completion. It was further advised that the area had been overgrown with vegetation before he had created a working surface.

5.17 The other properties on Hill Top Lane, to the south and east of the site, appear to have been refurbished recently. A newly laid concrete access road was observed with a gate and signage prohibiting entry and identifying the lane as a private road. It is understood that this was undertaken to deter groups of youths that had been using the lane as a cut through to the residential estate further to the north-west.

5.18 A stone faced wall also extends along the eastern site boundary with Hill Top Lane as far as the entrance to the garden of the residential dwelling currently under renovation. Mr Carney has constructed a rough blockwork wall which he intends to finish in brick and it is understood that he has offered to face both sides were the costs of doing so to be split.

5.19 As a consequence of Hill Top Lane being established as a 'private road' and the construction of solid boundary walls, public access is not currently available directly from Redbrook Road. A public house and local shops were observed on Redbrook Road.

6 Geology

6.1 An assessment of the geology relating to the site has been made based on the published 1:50,000 series British Geological Survey (BGS) map, sheet 87 (Sheffield) solid and drift edition dated 1993. This has been used in conjunction with the BGS web based Geology of Britain Viewer, lexicon of named rock units and borehole records for the locality.

6.2 From the above it is anticipated that the sequence of strata beneath the site and any foundations or hardstanding, in order of successive depth, is as set out in the following table.

Artificial Ground	
Made Ground	Observed within eastern part of site close to the gated entrance of the paddock and land adjacent to a residential property under renovation. The area of Made Ground was observed to include aggregate, bricks, tiles and concrete blocks in a fine matrix (building rubble).
Superficial Geology	
None recorded	
Solid Geology (Bedrock)	
Pennine Lower Coal Measures	Comprising interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part. Silkstone Coal is seen to outcrop in close proximity to the south east. This is a Sedimentary Bedrock formed approximately 308 to 314 million years ago in the Carboniferous Period. The local environment would have previously been dominated by swamps, estuaries and deltas.

6.3 The geological map of the area indicates that there is no faulting in the immediate vicinity of the subject site.

6.4 The British Geological Survey GeoIndex indicates that there are no borehole records within the subject site or the immediate surrounding area.

7 Mining and Ground Stability

7.1 The *'Review of Mining Instability in Great Britain'* summary map dated July 1990 and prepared by Arup Geotechnics for the Department of the Environment (DoE), now Department for Environment Food and Rural Affairs (DEFRA), indicates that the site is located in an area which may have been undermined, but the map indicates the existence and extent of any coal mining to be 'inconclusive'.

7.2 Reference to the Coal Resources Map of Britain prepared by the British Geological Survey (BGS) and the Coal Authority and dated 1999, indicates that the site is located within the South Yorkshire Coalfield and therefore may have been undermined in the past.

7.3 The subsidence hazard relating to shallow mining on site has been assessed to be low to moderate.

7.4 No brine affected areas have been identified within 75 metres of the subject site.

7.5 BGS GeoSure data reveals that the site is located in an area with a negligible hazard rating in terms of compressible ground, running sand and soluble rock stability hazards and very low risk in terms of shrink swell, landslide and collapsible rock ground stability hazards.

7.6 The Coal Authority Interactive Map Viewer indicates that there are a number of mine entries and areas where surface stability needs to be considered at the time of redevelopment in the area surrounding the subject site.

7.7 A Coal Authority Mining Report, dated 7 June 2013, has been obtained for the purposes of this report and a copy is provided as Appendix F.

7.8 The report indicates that the records in the possession of the Coal Authority show the site is located within the likely zone of physical influence at the surface from workings in 6 seams of coal at 100 to 390 metres depth and last worked in 1982. However, the Coal Authority indicates that any ground movement from these coal workings should by now have ceased.

7.9 The site is not in the likely zone of influence of any present or any planned future underground workings. Reserves of coal are, however, known to exist which could be worked at some time in the future.

7.10 No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

7.11 The report indicates that there is a mine entry within 20 metres of the subject site, an approximate position for which is given on the plan provided with the mining report. The plan shows the mine entry at a location approximately 10 metres to the north of the site between 4 and 8 Ravenshaw Close. The mine entry, reference 432407-053, is known to have been capped in June 1988, which ties in with the date of development of the residential estate.

7.12 It is a possibility that surface instability problems may have been identified during the development of the estate and the buildings identified on mapping from the late 19th century may have been associated with underground coal workings.

7.13 The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

7.14 The property is not within the boundary of any historical opencast coal mine and it is not within 200 metres of any current opencast site or within 800 metres of the boundary of any planned future opencast workings.

7.15 In relation to coal mining subsidence, the Coal Authority indicates that no damage notice or claim has been made for the property since 31 October 1994. However there is one claim identified within a 50 metre radius of the site boundary.

7.16 There is no current Stop Notice delaying the start of any remedial works or repairs to the property and the Authority is not aware of any request to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

7.17 There is no record of any mine gas emission requiring action by the Coal Authority at the subject site

7.18 The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

7.19 The Authority indicates that the property is in an area for which notices of entitlement to withdraw support have been published dating from 1956, 1976 and 1977. No notice has been given under section 41 of the Coal Industry Act 1994 revoking the entitlement to withdraw support.

7.20 The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

7.21 The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975 or the Coal Industry Act 1994 in relation to payments to owners of former copyhold land.

7.22 The Authority confirms that the area is not within the Cheshire Brine Compensation District.

8 Hydrology

8.1 The nearest surface water feature to the site is a, now culverted, stream which is identified on historical mapping at a location approximately 340 metres to the east of the site. The stream is noted to flow in a northerly direction and appears to form a tributary of the River Dearne which exists approximately 1.46 kilometres to the north east of the subject site at its nearest point. The disused Barnsley Canal is also shown on mapping at a location approximately 1.08 kilometres to the north of the site.

8.2 No historic water quality information is available from the Environment Agency for the stream or the nearest stretch of the River Dearne under the Agency's chemical General Quality Assessment Scheme classification.

8.3 According to the Environment Agency's River Basin Management Plan (RBMP) which is a programme of measures to meet the European Union's Water Framework Directive for the management of Europe's rivers, the current ecological quality of the River Dearne is 'Moderate' and the current chemical quality of the Dearne is 'Good'.

8.4 Reference to the Environment Agency map of Drinking Water Protection Areas shows that the area in which the site is located is not classified in terms of 'Surface Water Drinking Water Protected Areas' and no 'Surface Water Safeguard Zone' has been identified in the locality.

8.5 There are no Environment Agency licensed surface water abstractions recorded within a 1 kilometre radius of the site.

8.6 There are no Environment Agency recorded Water Industry Act Referrals relating to potentially harmful discharges to the public sewer within 500 metres of the site.

8.7 There are no Environment Agency recorded Red List discharge consents relating to potentially harmful discharges to controlled waters within 500 metres of the site.

8.8 No Environment Agency recorded discharge consents have been identified within a 500 metre radius of the site.

8.9 There are no pollution incidents recorded on the Environment Agency National Incidents Recording System within 250 metres of the site, which have had an impact on water.

Flooding

8.10 In respect of flooding, the Environment Agency Flood Map has been consulted which identifies the extent of the natural floodplain if there were no flood defences as well as the location of any flood defences constructed in the last 5 years.

8.11 The Environment Agency define a floodplain as *'the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas'*. On rivers this will normally be the area affected by a river during a flood that has at least a 1 in 100 year return period. In coastal areas the floodplain will be the area affected by the sea during a flood that has at least a 1 in 200 year return period. In addition the Environment Agency has defined areas that are likely to be affected by a major flood with up to a 1 in 1000 year return period.

8.12 An extract from The Environment Agency Flood Map for the area, presented as Appendix G indicates that the subject site is outside the floodplain and is therefore unlikely to be susceptible to flooding from main rivers or the sea.

8.13 The site is located within 50 metres of an area which is defined as having a very low susceptibility to groundwater flooding based on the underlying geological conditions. The BGS confidence rating for the groundwater flooding susceptibility area is given as low. Groundwater flooding is defined as 'the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded'.

8.14 The susceptibility data is used for planning purposes where the groundwater flooding information will be used alongside a range of other relevant information to inform land-use planning decisions. The susceptibility data is not designed to be used on its own to indicate risk of groundwater flooding.

8.15 Reference has been made to the Environment Agency online Reservoir Flood Map which shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. This shows that the site is not located in the potential path which water would follow if a reservoir dam or embankment was to fail in the surrounding area.

8.16 No flood storage areas have been identified within a 250 metre radius of the subject site.

8.17 The above information indicates that the site is not located in an area of high sensitivity in terms of surface water resources and flooding at the site is unlikely.

9 Hydrogeology

9.1 The bedrock aquifer designation for the underlying Pennine Lower Coal Measures is a secondary A aquifer. Secondary aquifers include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary A aquifers have permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

9.2 The former classification of this aquifer designation was as a minor aquifer of high permeability which was generally regarded as seldom producing large amounts of water for abstraction although potentially important for local supplies and in supplying base flow to rivers.

9.3 The former Groundwater Vulnerability map also identifies the site to be underlain by soils classified as having a high leaching potential. These are soils which have the ability to move pollutants rapidly to underlying strata or to shallow groundwater.

9.4 The data indicates that there is no superficial aquifer at this location.

9.5 The Environment Agency indicates that the site is not located within any of the nearly 2000 Source Protection Zones which have been identified in England and Wales as major groundwater sources (wells, boreholes or springs) used for public drinking water supply.

9.6 Reference to the Environment Agency map of Drinking Water Protection Areas shows that the groundwater beneath the area in which the site is located is probably at risk of needing extra drinking water treatment although no 'Groundwater Safeguard Zone' has been identified in the locality.

9.7 According to the Environment Agency's River Basin Management Plan which is a programme of measures to meet the European Union's Water Framework Directive for the management of Europe's rivers, the current chemical quality of groundwater in the area is poor.

9.8 There are no Environment Agency licensed groundwater abstractions recorded within a 1 kilometre radius of the site.

9.9 Based on the above information it is considered that the site is not located in a highly sensitive area in terms of groundwater resources.

10 Other Environmental Information

Radon

10.1 Reference to the HPA-RPB-033 Indicative Atlas of Radon in England and Wales dated November 2007 indicates that the site is located in a Radon Affected Area where between 3% and 5% of homes tested are above the action level of 200 Bq/m^3.

Carbon Dioxide and Methane

10.2 The British Geological Survey (BGS) document prepared for the Department of the Environment (DoE), now Department for Environment Food and Rural Affairs (DEFRA) entitled '*Review of 'Natural' Contamination in Great Britain: Methane, Carbon Dioxide and Oil Susceptibility*' and dated 1995 has been consulted. This indicates that the property is located in an area of 'Moderate' susceptibility to methane and carbon dioxide emissions and / or oil seeps at the surface and underground derived from solid strata (e.g. Coal Measures).

Background Contamination

10.3 The BGS document prepared for the DoE (now DEFRA) entitled *'Review of 'Natural' Contamination in Great Britain: Distribution of Areas with Above National Average Background Concentrations of Potentially Harmful Elements (Arsenic, Cadmium, Copper, Lead & Zinc)'* and dated 1995 has also been consulted. This indicates that the land is located in an area where stream sediment concentrations range from two to four times the national average upper limit of background contamination. This means that the natural background levels of arsenic, cadmium, copper, lead and zinc within the sediment of nearby streams is high, although it is considered that this should not have any adverse impact on redevelopment proposals.

Waste

10.4 The influencing distance of a gassing landfill is dependent on a number of variables, including the type of waste, geology, hydrogeology, site engineering etc. Therefore, owing to the specific nature of each of these factors, it is not possible to guarantee that a site is not within the influencing distance of a known landfill site. However, it is normal practice to consider the 250 metre consultation zone around the property.

10.5 Where records without plans identify landfilling operations within a 500 metre radius of the site, these have been considered as they may encroach within the adopted 250 metre radius consultation zone.

10.6 The Environment Agency has not identified any currently authorised landfill sites within a 1 kilometre radius of the subject site.

10.7 However, the Environment Agency identifies sixteen historical landfill sites within a 1 kilometre radius of the subject site, four of which are recorded as being within 500 metres of the site, the details of which are summarised in the following table.

Operator and Address	Waste Control Measures	Waste Types	First Waste Received	Last Waste Received	Location
Darton Urban District Council Redbrook Road, Gawber	Gas	Commercial & Household	31/12/1965	31/12/1975	154m NW
Darton Urban District Council Gawber Refuse Tip, Wilthorpe Lane, Gawber	Not given	Commercial	16/11/1967	Not given	302m N
Mr B Dixon Dayhouse Lane and Wilthorpe Road, Gawber	Not given	Not given	Not given	Not given	405m N
Tineslave Limited Redbrook Business Park, Gawber	Not given	Inert & Commercial	01/10/1995	Not given	486m N

10.8 One record of a non-operational landfill site, as sourced from the Landmark Information Group, has been identified within a 500 metre radius of the subject site. This relates to a landfill site on Wilthorpe Road approximately 459 metres to the west which accepted inert wastes.

10.9 No landfill sites have been identified within a 250 metre radius of the subject site from Local Authority records.

10.10 No operational or non operational waste treatment, transfer or disposal sites regulated by the Environment Agency have been identified within a 250 metre radius of the site.

10.11 No records relating to Environment Agency licensed waste sites have been identified within a 500 metre radius of the site.

Pollution Incidents

10.12 There are no pollution incidents recorded on the Environment Agency National Incidents Recording System within 250 metres of the site with an impact on water, land or air.

Historic Integrated Pollution Control

10.13 No records of historic Integrated Pollution Control (IPC) Authorisations have been identified within 500 metres of the site.

Pollution Prevention and Control

10.14 There are no Environment Agency recorded Part A(1) and Integrated Pollution Prevention and Control (IPPC) Authorisations within 500 metres of the site.

List 1 and 2 Dangerous Substances Inventory Sites

10.15 There are no recorded List 1 and List 2 Dangerous Substance Inventory Sites within 500 metres of the subject site.

Part A(2) and Part B Activities and Enforcements

10.16 There are no Local Authority recorded Part A(2) or Part B Activities within 250 metres of the site.

Radioactive Substance Licences

10.17 There are no Environment Agency recorded Category 3 or 4 Radioactive Substance Licences within 500 metres of the site.

Hazardous Substances

10.18 There are no records of Control of Major Accident Hazards (COMAH) sites, Notifications of Installations Handling Hazardous Substances (NIHHS) sites and no Planning Hazardous Substance Consents (or enforcements) within a 500 metre radius of the site.

Part 2A Contaminated Land Designations

10.19 There are no records of sites which have been determined as contaminated land by the Local Authority within a 500 metre radius of the subject site under Part 2A of the Environmental Protection Act 1990.

Commercial and Industrial Land Uses

10.20 There are currently no sites identified as potentially contaminative industrial sites within a 50 metre radius of the site.

Petrol and Fuel Sites

10.21 Records identify one petrol or fuel site within 500 metres of the subject site. This relates to an obsolete site known as Wilthorpe Service Station on Wilthorpe Road approximately 459 metres to the north-west.

Underground High Pressure Oil and Gas Pipelines

10.22 Records identify no high pressure underground pipelines within 500 metres of the subject site.

Designated Environmentally Sensitive Areas

10.23 A single designated environmentally sensitive area has been identified within a 1 kilometre radius of the subject site which relates to the designation of the area as a Nitrate Vulnerable Zone.

10.24 There are no SSSIs, Nitrate Sensitive Areas, Special Areas of Conservation, Ramsar Sites, World Heritage Sites, Special Protection Areas, Areas of Outstanding Natural Beauty, Environmentally Sensitive Areas, National Nature Reserves, Local Nature Reserves, Ancient Woodlands or National Parks located within 1 kilometre of the site.

11 Planning Records

11.1 A review of Barnsley Metropolitan Borough Council's Planning Records has been made to determine the planning history of the site which has highlighted the following:

Application Reference	Proposal	Status
2005/2018	Residential Development (Outline)	Withdrawn
2007/0947	Residential Development (Outline)	Refused 14/8/2007 Appeal allowed at an informal hearing on 14/04/2008
2010/1508	Extension of time limit for 2007/0947	Granted with Conditions 16/03/2011
2013/0528	Residential development of 23 no. dwellings, 2 pairs of semis and 19 detached properties	Registered 17/05/2013

11.2 Barnsley's current statutory Development Plan comprises:

- the Core Strategy (part of Local Development Framework (LDF));
- Barnsley Education Site Development Plan Document (DPD) (part of LDF);
- the remaining saved policies of the UDP, which was originally adopted in December 2000; and
- the Regional Spatial Strategy (considered above).

11.3 The LDF is a portfolio of documents that will, alongside the spatial strategy, gradually replace the UDP and related Supplementary Planning Guidance as the statutory Development Plan.

11.4 Under the UDP the proposal site in its entirety is allocated for housing development under Policy BA1 and in accordance with Policy H4. The site is allocated as BA1/7 *'Land off Barden Drive (Behind Redbrook Road)'* and described as *'an elevated site with access from Barden Drive'* which, *'in accordance with Policy ES9'* would need *'an investigation to determine whether landfill gas is affecting the site'*.

11.5 Policy ES9 refers to a superseded policy from the UDP which relates to the consideration of landfill gas. This policy has been replaced with CSP 40 which deals with pollution control and protection. Developers are required to minimise the effects of any possible pollution and provide mitigation measures where appropriate.

12 Preliminary Conceptual Site Model

12.1 The following preliminary conceptual site model has been compiled to consider each of the potential source-pathway-receptor linkages associated with the subject site and identify the need for any further investigation.

	Potential Sources	Potential Pathway	Potential Receptor	Perceived Risk	Observations and Proposed Action
Presence of contamination from historical uses of the site: as open land with enclosures, probably agricultural in nature, and outbuildings associated with a farmstead as well as surrounding potentially contaminative uses (including agricultural land and landfilling).	**Potential contaminants from agriculture** (such as buried waste, animal wastes (manure and buried carcasses, leaks/spills from vehicles, vehicle maintenance and refuelling activities). **Potential Asbestos** (Old site buildings). **Made Ground** associated with adjacent redevelopments **Potential Natural Elevations** in calcium, magnesium, potassium, sodium, sulphate, manganese and iron in groundwater due to underlying coal measures.	Direct or indirect contact of contamination with the underlying strata as a result of past uses of the site.	**Underlying strata**	Low	Low potential for significant harm.
		Historical runoff, direct contaminant migration.	**Adjacent residential properties**	Very Low	Very low potential for significant harm.
		Direct contaminant migration or leaching of contaminants.	**Groundwater** Groundwater in rocks beneath the site. However, underlying strata comprises a secondary A aquifer (Coal Measures). No SPZs, ZSIs or nearby groundwater abstractions have been identified.	Low	Receptor not considered overly sensitive and underlying strata may inhibit migration to some degree.
		Natural strata present around foundations – attack of concrete foundations.	**Structures and Services** Concrete used in foundation construction.	Low – Moderate	Routine investigation of sulphates / sulphides and pH during geotechnical investigation for foundation design. **BRE 2005 – BRE Special Digest: Concrete in Aggressive Ground, Third Edition.**
		Ingestion of soil. Inhalation of dust. Dermal and eye contact.	**Construction Workers** Workers on site carrying out clearance of Made Ground and site buildings, earthworks and construction activities.	Low – Moderate	Asbestos screen of made ground (seen to comprise demolition material) and Type 3, pre-demolition asbestos survey for site buildings. Appropriate removal of any asbestos containing materials (ACMs) using licensed contractors. Disposal of wastes via registered waste carriers to licensed waste disposal or recycling facilities. Workers to adopt work procedures including use of suitable PPE, good hygiene practices and dust suppression measures if necessary to reduce risk.
		Inhalation of dust. Dermal and eye contact.	**Occupiers of the residential dwellings (i.e. e**nd users of the redeveloped site).	Low – Moderate	Asbestos screen of made ground and Type 3, pre-demolition asbestos survey for site buildings. Appropriate removal of any ACMs using licensed contractors. Disposal of wastes via registered waste carriers to licensed waste disposal or recycling facilities.

	Potential Sources	Potential Pathway	Potential Receptor	Perceived Risk	Observations and Proposed Action
Presence and migration of gases/vapours from natural sources, landfill and historical uses	**Radon** (Naturally emitted from underlying strata)	Ingress into building through cracks in flooring, service ducts or other gaps and may build up in confined spaces.	**Occupiers of the residential dwellings (i.e. e**nd users of the redeveloped site). Indoor exposure as a result of accumulation of radon gas.	Low	Minimum precautionary approach to design appropriate with passive venting of ground gases, provision of an appropriate gas impermeable membrane and sealing gaps in floor joints and around service entry points.
	Landfill Gas (Methane & Carbon Dioxide) (From nearby landfill sites).	Migration of gases through cracks, faulting and pore spaces in the underlying strata. Ingress into buildings through cracks in flooring, service ducts or other gaps and accumulation in enclosed spaces.	**Occupiers of the residential dwellings (i.e. e**nd users of the redeveloped site). Risk of explosion or suffocation due to accumulation of landfill gas.	Low – Moderate	It should be noted that policy ES9 of the UDP, now superseded by policy CSP 40 of the Core Strategy requires developers to minimise the effects of any possible pollution and provide mitigation measures where appropriate. The original wording of policy ES9 indicates that an investigation to consider whether the site is being affected by landfill gas is required. The standard method of assessment for landfill gas comprises the establishment of gas monitoring boreholes with monitoring to be undertaken on at least six occasions over the course of a minimum period of two months. Shorter monitoring periods may be acceptable using continued monitoring devices such as Gasclam. A precautionary approach to the design with passive venting, provision of an appropriate gas impermeable membrane and sealing gaps in floor joints and around service entry points may be acceptable in lieu of an extended period of gas monitoring. This should be discussed with the Environmental Protection Service and Building Control Officers in setting the specification for the investigation. **NHBC / RSK Group plc (2007) - Guidance on the evaluation of development proposals on sites where methane and carbon dioxide are present. CIRIA Guidance.**

12.2 In respect of the proposed redevelopment of the site for residential dwellings, it is considered that there are potential pollution linkages between potential sources of contamination and ground gases (both onsite and offsite) and various onsite and offsite receptors which could present a potential risk.

13 Risk Assessment and Recommendations

13.1 The historical use of the site as agricultural land, including outbuildings (probably agricultural in nature) is considered to present a potential for contamination, the perceived significance of which has been assessed to be slight.

13.2 Having established a preliminary conceptual site model for the site it is considered that there are potential pollution linkages between potential sources of contamination and ground gas and various onsite and offsite receptors which could present a potential risk.

13.3 Given the potential for the natural occurrence of sulphate, due to underlying coal measures, it is recommended that routine testing for sulphates / sulphides and pH should be undertaken during the geotechnical investigation for foundation design.

13.4 Asbestos screening of the Made Ground at the surface which was seen to comprise demolition material is recommended. Composite samples should be taken from each of the two distinct areas of Made Ground (on the approach to and within the paddock and adjacent to the residential dwelling currently under renovation (number 30 Hill Top Lane).

13.5 A type 3, pre-demolition, asbestos survey would also be recommended for the remaining site buildings to ensure safe removal of any ACMs which may be identified. Appropriate removal of any ACMs should be undertaken using licensed contractors and the disposal of wastes should be arranged via registered waste carriers to licensed waste disposal or recycling facilities.

13.6 Construction workers should be required to adopt work procedures in line with best practice including the use of suitable PPE, good hygiene practices and dust suppression measures as necessary. This will both protect the workers and prevent nuisance to nearby residential occupiers.

13.7 It should be noted that policy ES9 of Barnsley MBC's UDP, now superseded by policy CSP 40 of the Core Strategy requires developers to minimise the effects of any possible pollution and provide mitigation measures where appropriate. The original wording of policy ES9, which is applicable to the site, indicates that an investigation to consider whether the site is being affected by landfill gas is required. It is noted that the site may be at risk of ground gas from both landfills and shallow mine entries in the area.

13.8 The standard method of assessment for landfill gas comprises the establishment of gas monitoring boreholes with monitoring to be undertaken on at least six occasions over the course of a minimum period of two months. However, shorter monitoring periods may be acceptable using continued monitoring devices such as Gasclam.

13.9 A precautionary approach to the design with passive venting, provision of an appropriate gas impermeable membrane and sealing gaps in floor joints and around service entry points may, however, be acceptable in lieu of an extended period of gas monitoring. This should be discussed with the Environmental Health and Building Control Officers when discussing the specification for a ground gas investigation.

13.10 The site is also known to be located in a Radon Affected Area where the ground may be susceptible to radon emissions and it would therefore be considered appropriate to incorporate radon protection measures. The minimum measures described for protection from ground gas (passive venting, low permeability membrane and sealing of joints) would also serve to protect end users of the site from radon gas emissions.

13.11 The site is underlain by coal measure rocks and mine entries have been identified in the surrounding area, including a capped mine entry within 20 metres of the site to the north, as shown on the plan provided with the Coal Authority Mining Report in Appendix F. It is considered that the structural engineer providing the engineering design should take the vicinity of mine entries into account during the design process alongside the potential for landfill gas and radon.

13.12 It is considered that the overall level of environmental risk is **Low** given the information available in this preliminary appraisal. This risk classification is designed to consider environmental risk in the context of the proposed redevelopment. This may be set in the context of the following hierarchy of risk:

High : Significant risk of contamination without remediation. Precludes all but the least sensitive of development, e.g. car parking. Significant potential for environmental pollution. Remediation measures expensive. Site investigation required.

Medium : Risk of contamination but allowing non-sensitive development, e.g. commercial, for reasonable costs of remediation, although more sensitive development, e.g. housing, may require substantial remedial measures. Potential for environmental pollution. Site investigation may be required.

Low : Little risk of contamination where all development options are likely to be possible with little or no remediation measures. Little potential for environmental pollution. Confirmatory site investigation may be required.

Authored by:

P Scutt MEng DipNDEA BSc
Environmental Surveyor

Authored and QA Checked by:

A Chitoriski BEng (Hons) CEnv MCIWM
Minerals, Waste and Contaminated Land Surveyor

Date: June 2013

14 Report Limitations

14.1 This report has been produced by AC Environment Solutions Ltd for the site known as Land Off Hill Top Lane, Redbrook Road, Gawber, Barnsley S75 2RF on behalf of Site 4 Self Build, solely for the use of the client and his professional advisors with whom the assignment has been agreed.

14.2 AC Environmental Solutions Ltd accepts no responsibility or liability for the consequences of the document being used for any project or purpose other than that for which it was commissioned, or by any third party with whom an agreement has not been executed. Written approval must be sought from AC Environment Solutions Ltd should any third party wish to use or rely upon its contents and a charge may be levied against such approval.

14.3 The opinions expressed in the report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information which has been reviewed should not be considered exhaustive and has been accepted as providing true and representative data pertaining to site conditions in good faith.

14.4 Should additional information become available which may affect the opinions expressed in this report, AC Environmental Solutions Ltd retains the right to review such information, and, if warranted, to modify the opinions accordingly. It should be noted that the risks identified in this report are 'perceived risks' based upon the information reviewed.

Appendix A

Location Plan

Appendix B

Site Plan

Appendix C

Proposed Site Layout Drawing

Appendix D

Historical Maps

Appendix E

Site Photographs

Appendix F

Coal Authority Mining Report

Appendix G

Environment Agency Flood Map