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Contaminated Land Phase One Desk Study and Coal Risk Assessment for proposed residential development at Land Adjacent 52 Ingham Road, Thornhill Lees, Dewsbury, Kirklees, WF12 0AQ.

Prepared for

MP Town Planning
111 Ravensthorpe Road
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Summary

This report consists of a phase one contaminated land desk study and coal risk assessment produced in support of planning application for the development of a residential dwelling on land adjacent 52 Ingham Road, Thornhill Lees, Dewsbury, Kirklees, WF12 0AQ.

Contaminated Land

Following the site walkover and review of the available information it has been concluded that there are no contaminants off-site which pose a significant risk of significant harm to the identified receptors. On site, the former domestic garage has the potential, subject to further information being obtained, to present a slight risk from oil/flue leaks and asbestos within the structure to the receptors. As such additional information or a further intrusive investigation is recommended around this former structure.

High Radon levels have also been identified in the area and basic radon measures are required. .

The report further recommends that a watching brief is maintained throughout the construction of the new dwellings and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary.

Coal Mining risk Assessment

A review of available information has been undertaken, including records from the coal authority. This has identified historic underground worked coal seams below 53m depth beneath the development site.

Given the records held it is considered unlikely that any shallow (<30m) workings have occurred beneath the site.

As such the identified coal mining activities do not pose a risk to the site and no further investigations are required.

It is recommended that the above radon protection measures are installed so that the barrier is capable of preventing both radon and mine ground gas from entering the property as an additional precaution.

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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase one contaminated land desk study report and coal risk assessment in relation to a proposed residential development at land adjacent 52 Ingham Road, Thornhill Lees, Dewsbury, Kirklees, WF12 0AQ.

Aims and Objectives of the report.

The aims and objectives of this report are as follows:

Contaminated Land

- Assess the likelihood of contamination affecting the site,
- Identify any likely receptors to be affected by the potential contamination,
- Identify the pathways by which the receptors will be exposed to any potential contamination,
- Identify any areas where further investigation will be required.

Coal

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site.
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues.
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development, and:
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Scope of works

This report has been written in line with the 'BS 10175: 2011+A2: 2017 Investigation of potentially contaminated sites – Code of Practice' and Land Contamination Risk Management (LCRM) and with regard to *'The Coal Authority, Risk based approach to development management, Guide for Developers, 2017'.*

The scope of this report covers the phase one desk study and coal risk assessment only. It will look at relevant information on: -

- the history of the site and surrounding area,
- the current use of the site and surrounding area,
- the geology and hydrogeology of the area,

A site walk-over survey has been undertaken in addition to consultations with the existing site owner, to identify any potential contamination issues.

Evaluation of the above information will be used to construct an initial conceptual model as appropriate, with the identification of any additional investigations that may be required.

The Site:

Site Address: Hagg Cottages, Shore Road, Warton, Carnforth, LA5 9HY.

Grid reference: 349431; 471065

An aerial photograph of the site is included in Figure 1.

Current Site use:

The site currently consists of barn with stables and an open piece of land to the south. Additional building s are located to the east and north. The building to the north consists of disused and ruined animal housing, the building to the east is intact and used for storage. Residential properties are located to the northeast, and east. Agricultural land to the south, west and northwest.

Research

Details of Research

This report has been based on information gathered from a number of reputable sources, covering details:

- on the historic and current use of the site,
- any known waste disposal activities in the area,
- any regulated industrial activities within the vicinity of the site including recorded industrial accidents,
- on the geology, hydrogeology, hydrology of the area,
- identification of any environmentally sensitive sites,
- any natural hazards.

Principle sources of this information have been:

- environmental data from Groundsure Limited
- the Local Planning Authority,
- historic maps (Groundsure Ltd),
- site walk-over survey and discussion with the current owners.
- A Coal Mining Report, attached in Appendix A.
- Published geological maps of the area from British Geological Survey (BGS),
- The Coal Authority interactive maps

Site History

Information on the historic uses of the site has been obtained from historic mapping information (Appendix 2), and environmental data from Groundsure Limited.

Mapping Year	Changes on Site	Changes off Site
1855	The site forms part of a large open area.	The Lancashire and Yorkshire Railway runs ~400m to the north of the site. 750m northwest a railway station To the north beyond Thornhill Road is the Slaithwaite Wollen Mill, and immediately to the north of the mill the Calder & Hebble Navigation. The village of Thornhill is located 750m to the south of the site. To the east 500m away is a glass works, pump ad beyond a malt kiln. 750m east a chemical works and beyond another glass works at Thornhill Less, along with a Smithy. 500m and 750m north are located two sandstone quarries.
1892-94	No change	The mill to the north is now Hebble Mill. Adjacent a malt house and on the opposite side of the road a smithy 90m from the site. The railway to the northeast now a siding to the north which surrounds a carriage & wagons works 500m away, beyond this a gas works 750m away. To the east 600m away is a chemical works and beyond the Ingham Sidings runs south from the main line to a colliery located over 750m to the southeast. Ingham Pit is also shown 750m to the southwest. Properties are shown to the south and west of the site 30m/10m respectfully. The glassworks to the west has expanded, the chemical works is no longer present and railway tracks are shown at the second glassworks along with an iron works. The railway also runs south to Ingham pit.

		The station appears to have been extended to the north, with additional sidings present 750m away from the site. The quarries are issued, and further away to the northwest are a number of mills.
1905-07	No Change	No significant changes, some more development in the wider area, including housing along Thronhill Road to the north. A railway is in the process of being constructed to the east 500m away, the West Riding Line.
1922	No change	No significant changes, a football ground is shown 75m to the west of the site.
1931-33	No change	Housing to the immediate north has been built. More residential development in the wider area and some works have increased in size.
1937-38	No Change	The football ground site and surrounding area has been redeveloped into a housing estate. With a new leather works beyond and adjacent to the 'canal' 500m away. Allotment gardens are shown to the south before the previously identified housing.
1948	No Changes	No significant changes
1954-57	No Change	A substation is shown at the mill to the north, with a public house adjacent. The allotments have been extended down to Ingham Road adjacent to the site. More development in the area, the leather works is now a brewery, and a recreation ground is present.
1960	No Change	No significant changes
1966-67	Two buildings are shown to the northern part of the site.	Residential development on the far side of the 'canal'.

		The mine to the southwest (Ingham Pit) is disused.
1970-74	No Change	The West Riding line is no longer present.
1983-89	The building to the northeast corner is no longer present	The colliery and Ingham pit sites have been cleared along with the mineral railway lines to them. Further development of the wider area with more housing.
1992-95	No Change	No significant changes
2001-03	No Change	No significant changes
2010	No Change	No significant changes
2023	No Change	No significant changes
Aerial photos	2002 aerial photographs show the building on site to be a garage with a driveway up to it, later photographs show a concrete apron under the garage. The same 2002 photo shows the rear of the site separated from the front by a fence line and the area used as a garden.	The leather works/brewery building has been demolished by 2009 and housing development began. The mill to the northwest is a supermarket and HMRC records suggest the supermarket has been there since at least 2008.

Contaminated Land Assessment

Regulatory Information

Relevant information obtained from the Groundsure report (Appendix 1) is summarised below.

Two permitted activities have been identified within 500m of the site as defined in the Environmental Permitting (England and Wales) Regulations 2016 or previous legislation. Both are waste oil burners and located 432m northeast and 491m south.

Five pollution incidents have been identified in the surrounding area. The nearest and most recent in March 2018 was located 205m northwest of the site involving inert wastes, soils, and clay with a minor impact on the land environment. The other four are all located over 400m from the site and date from May 2002 to September 2003 involving household waste, inert construction waste, biodegradable waste and smoke all having a minor impact to the environment.

Two discharge consents are reported. Located 484m northeast and 499m northeast both involve the discharge of sewage. The first treated effluent into the Calder and Hebble Navigation and the later storm sewage overflow into the River Calder.

The above identified sites are unlikely to impact on the development site.

No active landfill site records have been found in the area. A historic landfill is noted 432m north of the between 1996-1999 accepting inert, industrial, and liquid waste. In addition five historic waste sites are reported from historic mapping. All are relating to scrap yards and four are 299-313m northeast of the development site (the same premises) and the fifth 457m northeast. The latter being a current licensed waste site for metal recycling, vehicle storage and depollution.

52 waste exemptions have been identified. These are all located over 250m from the site and involve the storage of waste, use of waste in construction, burning waste, depositing dredging material , treatment and screening of waste and use of waste as a fuel.

Given the distances and nature and age of the sites it is unlikely that the above sites will pose any risk to the development.

The only current potentially contaminative sites identified are a tank located 74m northeast, these were identified on 2003 mapping as two circular above ground tanks

linked to the building, aerial images appear to show them as fire water tanks, but they have been removed by 2011, possible 2009 and an extension to the building built over the area. There are intervening buildings and the main road between the site and the location with groundwater flow heading in the opposite direction towards the river. Two substations are also identified located 141m and 243m north to the site.

Historical potentially contaminative land uses have been identified within 250m of the site from the purchased information; most of these have been identified from the historical mapping and include:

The Mill, located 50m to the north, now a supermarket,

A heap identified in 1982-93 92m northwest, this is banking along the river. The adjacent site has now been redeveloped into accommodation,

Ground works and an unspecified pit in 1905-1951 between 126m-222m northeast, located adjacent to the river the area consists of river banking and in later maps, 1966, a slag heap is identified. The aera has since been redeveloped into housing.

Further groundworks 244m east on the far side of the river adjacent to the housing estate, these appear to be opposite banking for the river.

The above identified tanks 74m to the northeast.

Geology and Hydrogeology

Information from the British Geology Survey 1:50,000 mapping identifies the bedrock in the area as Pennine Lower Coal Measures Formation – Sandstone, with River Terrace deposits and Alluvium Deposits of clay, silt, gravel, and sand within 37m of the site.

The information obtained on the hydrogeology of the area identifies the site as having a Secondary A aquifer in the bedrock 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, no superficial layer information is presented.

Nine groundwater abstraction licenses have been identified, the first an active site is 996m northwest linked to Calder Dyeing Ltd for general use, two historical sites at 1005m northwest, with the final six licenses split across three sites with one activity and one historic at each. These are located 1626m and 1744m north north at Thomas Chadwick & Sons Ltd, and 1761m northwest at Lawton Yarns Ltd. All for general use.

11 surface water abstraction licenses are identified, of which only three are active, 1691m north from the River Calder at Henry Dry & Sons Ltd, 1721m northwest at Lawton Tars Ltd, and finally Thornhill Poer Station 1859m west.

The site is not located within a Source Protection Zone.

The Groundwater vulnerability is described as low in the surface level, and medium in the bedrock layer.

Hydrology

The nearest watercourse is the River Calder located 106m north of the site.

The site is not within a floodplain, and the risk of flooding is classified as low.

Environmental Sensitivity

The only Environmentally sensitive sites in the vicinity of the development are Sparrow Wood Local Nature Reserve 418m north, and the South and West Yorkshire Green Belt located 267m south.

The property is in an area identified as having between 3% -5% of properties above the action level of 200 Becquerel's per cubic metre, based on specific property search. Basic Radon protection measures will be required in line with BR211.

No additional natural hazards have been identified & the site has very low/negligible risk of shrink swell, running sand, and compressible ground.

There are no mining activities identified in the immediate area although nine underground workings are identified the nearest being 512m southwest of the site in 1966 and 715m southeast in 1892. The site is located within a coal mining area as identified by the Coal Authority.

Coal Risk Assessment

The Coal Authority has identified past underground mining activities, all pre-1915 and varying from 53m depth (1873) to 266m depth (1915). It is suggested that the 'Middleton Main' and 'Black Bed' Seams were both mined beneath the site at the previous depths respectfully.

The coal authorities interactive mapping and coal report do not identify shallow mine records within 100m of the site, neither do they identify the potential for shallow mining in the immediate area. Coal outcrops are indicated on the mapping to the north and south of the site, but the purchased data does not identify any outcrops being recorded.

There are no mine entries within 100m of the site. Abandoned mine plan catalogues are present intersecting with the site. A review of the sites on the coal authority's interactive website identifies the site in question as being on the edge of each identified area, with each square covering an area of 0.25miles by 0.25 miles.

The British Geological Society identifies confidential borehole records to the north, beyond the river in the location of the "new" housing estate and to the south. Those to the south 150m away went to depths of 20m and identified a shallow narrow coal seam at 3.5-4m depth. Interactive mapping places this site

There are no opencast mines, tips, faults, fissures or break lines recorded.

There are no reports of site investigations or remediation within 50m of the site and no records of any mining subsidence or claims have been received. No mine gas issues have been recorded within 500m of the site, or mine water treatment.

There is no future underground mining activity in the vicinity, no licences recorded within the search area of 200m surrounding the property and no risk of subsidence has been identified.

The coal board has not identified any potential risks to the site.

Coal Mining Issue	Site Affected (Yes/No)	Recommended Mitigation
Underground coal mining (recorded at shallow depths)	No	N/A
Underground coal mining (probable at shallow depths)	No	N/A
Mine entries (shafts and adits)	No	N/A
Coal mining geology (fissures)	No	N/A
Record of past mine gas emissions or potential	No	N/A
Recorded coal mining surface hazard	No	N/A
Surface mining (opencast workings)	No	N/A

Site Walkover

A site walkover was undertaken on the 23rd August 2023 and confirmed much of what had already been identified from the information obtained on the site. The photographs in Appendix 3 provide some indication of the current layout and condition of the site.

The site is accessed from Ingham Road and consists of a roughly rectangular plot which at the time of the walkover was slightly overgrown.

Evidence of the identified drive was present in the form of hard standing from the entrance gates.

The current owners have confirmed the use of the site as a garden since there ownership.

No signs of contamination, discoloration, or olfactory evidence, dead or dying vegetation were seen during the walkover.

Risk Assessments

Contaminated Land

Potential Contaminants

Following a review of the information gathered on the history of the site, the surrounding area and following the site walk-over survey historically the site the site has been used as a garden to the adjacent residential properties since there construction. Two small buildings were present on site a garage and a shed used for domestic purposes; these have since been demolished. While unlikely, without further information there is slim chance of asbestos fibres from the former garage structure and the presence of hydrocarbons from any oil leakage into the ground.

There are no contaminants identified off site that are likely to present a significant possibility of significant harm to any identified receptor, however the levels of natural Radon gas are high in the area and mitigation measures are required.

Receptors and Pathways

Potential receptors which may be affected by any unknown contamination on site will include:

- Construction workers who are likely to be affected by any potential contamination as they will initially be working in the ground and are likely to be the ones who unearth any potential contaminants.
- Future users of the site, including residents, staff, and visitors to the site. For the purpose of evaluating any effects from any contamination found during any intrusive investigation future users/visitors to the site should be regarded as the 0-6-year-old female child.
- Any building on site e.g., foundations which may be attacked by any contaminants in the ground or services.
- The underlying groundwater which may be contaminated by migrating pollutants present on the site. There is also the potential for further pollution of the groundwater or the watercourse from disturbing any potential contaminants on site.

The pathways by which these receptors may be exposed to any unforeseen potential contamination will include:

Construction workers

- Inhalation, of gases or vapours released during groundwork or fine particles.
- Ingestion of the contaminants, principally from cross contamination with contaminated soil and inadequate hand washing before smoking and eating.
- Absorption through the skin following contact with contaminated soil.

Future users and visitors

- Inhalations of gas/vapours or fibres, particularly if these are allowed to enter the new structures through the ground and build up in an enclosed area.
- Ingestion of contaminants, through the ingestion of contaminated soil from the garden area via direct contact, e.g., playing in the garden.
- Absorption of contaminants from dermal contact with contaminated soil.

Buildings

Contaminants on site have the potential to affect the foundations to the new building or the services supplying it.

Watercourses

As discussed above, if they exist on site, there is a potential for any contaminants to migrate through the ground into the groundwater and aquifer or via run-off into the watercourse.

Neighbouring sites

If present on site contaminates have the potential to migrate to neighbouring sites through ground water or air blown transfer.

Conceptual Model

The table represents a basic conceptual model. It highlights the potential sources of pollutants identified from the gathered information, and potential pathways in which any contaminants could reach the identified receptors.

Pathway	Description	Identified sources	Receptor at risk	Likelihood
1	Run off and seepage into groundwater from any spillages	Former garage building	Watercourse/ Environment	Low
2	Migration of gases into the building.	Radon	Future users	Medium,
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	V. Low
4	Inhalation of fine particles	Former garage building	Construction workers/future users	Low
5	Direct ingestion of contaminated soil	Former garage building	Construction workers	Low
6	In-direct ingestion of contaminated soil	Former garage building	Future users	Low
7	Absorption via direct dermal contact with contaminated soil	Former garage building	Construction workers/future users	Low

Coal Risk Assessment

Historic underground coal mining has been identified in the area; however this was deeper than 53m and 150 years ago, with another seam mined at 266m over 100 years ago.

Purchased data and review of the coal authority maps has not identified any mine entries within the vicinity of the development site, no shallow coal workings, outcrops, faults or fissures or coal related hazards have been identified. No probably shallow coal mining has been identified.

Given the above information and the depth of the historic mining activity the risk to the property is considered to be minimal.

Conclusions & Recommendations

Contaminated Land

As a result of the investigation into the historical use of the site no sources of contamination likely to affect the site have been identified off-site. However the previous use of the site with the presence of a former residential garage has the potential to result in contamination from leaks or asbestos within the structure of the building. Further information/ evidence is required to clarify this risk, if no further evidence is available then a preliminary intrusive investigation of the rea around the former garage is recommended to identify the presence of hydrocarbon contamination from leaks and asbestos from the garage structure.

Radon levels have also been identified as being high in the area and as such basic radon protection is required as part of the development.

It is further recommended that a watching brief is maintained throughout the construction of the new building and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary and the local planning authority informed of the findings.

Coal Assessment

The coal risk assessment has not identified any risks to the development. Historic deep underground mining has been identified in the area. The above radon risk requires basic mitigation measures in the form of a radon barrier. This barrier can also be installed to form a barrier to any ground/mine gas as well as radon providing an additional protection to the property.

Figure 1 – Aerial Photograph

Appendix 1 – Groundsure Data

Appendix 2 – Historical Mapping

Appendix 3 – Site Walkover Photographs

Northern boundary with 52 looking east then west.


Western boundary looking south and north


Southern boundary looking east then west

eastern boundary looking south then north

The former garage/drive

Appendix 4 – Consultants Coal Mining Report

Appendix 5 Report limitations and exclusions

Basis of Risk Assessment

The methods used follow a risk-based approach with the potential risk assessed using the 'Source – pathway – receptor pollution linkage concept.

Limitations and Exceptions of this Report

This report was undertaken for at the request of MP Planning and as such should not be entrusted to any third party without written permission of ***Martin Environmental Solutions***. No other third parties may rely upon or reproduce the contents of this report without the written permission of ***Martin Environmental Solutions***. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors do not owe them any duty of care or skill.

This report has been compiled from a number of sources, within the time constraints of the programme, which ***Martin Environmental Solutions*** believes to be trustworthy. However, ***Martin Environmental Solutions*** is unable to guarantee the accuracy of information provided by third parties.

The findings and opinions provided in this document are made in good faith and are based on data provided by third parties (Groundsure, Environment Agency, The Coal Authority, and Regulatory Bodies) and the report should be read in conjunction with the limitations on the document control form. The accuracy of map extracts cannot be guaranteed, and it should be recognised that different conditions on /adjacent to the site may have existed between and subsequent to the various map surveys.

This report is prepared and written in the context of the purposes stated above and should not be used in a different context. Furthermore, new information, improved practices and legislation may necessitate an alteration to this report in whole or in part after its submission.

The conclusions and recommendations of this report are based on the development described, for any other development the report may require revision.

All of the comments and opinions contained in this report, including any conclusions, are based on the information obtained by ***Martin Environmental Solutions***. The conclusions

drawn by ***Martin Environmental Solutions*** could therefore differ if the information obtained is found to be misrepresentative, inaccurate, or misleading. ***Martin Environmental Solutions*** reserves the right to amend their conclusions and recommendations in the light of further information that may become available.

The report should be read in its entirety, including all associated drawings and appendices.

Martin Environmental Solutions cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

This report does not comprise a geotechnical assessment of the strata underlying the site.

Any borehole data from the British Geological Survey sources is included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation'.

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Complete copies of this report may be made and distributed by the Client as an expedient way in dealing with matters related to its commission.

Any risks identified in a Phase I Desk Study Report are perceived risks. Actual risks can only be assessed following a physical investigation of the site.

The findings of this report are based on finite information obtained from research and consultations. Martin Environmental Solutions cannot guarantee the reliability of all such information and the searches should not be considered exhaustive. The findings of the report may need to be reviewed as any future exploratory investigations progress and in the event that additional archive information becomes available.

Notwithstanding the findings of this study (and any subsequent investigations), if any indication of contaminated soil (visual or olfactory) is encountered at any stage of the development further investigation may be required.

Arboricultural Survey and advice on arboricultural issues are considered to be outside the scope of this report except for their effect on the foundations to the proposed buildings.

Where identification of any species is made, especially invasive plants such as Japanese Knotweed, Himalayan Balsam, or Giant Hogweed, this should only be considered as a preliminary assessment and subject to confirmation by a professional Arboriculturist. Martin Environmental Solutions takes no responsibility for failing to identify, or the incorrect identification of, any tree or plant species on site.

Our investigations exclude surveys to identify the presence or indeed absence of asbestos in buildings/infrastructure on site. If asbestos is suspected to be present, we recommend specialists in the identification and control / disposal of asbestos are appointed prior to commencement of any works on site or, if appropriate, purchase of the site. The presence of asbestos on site may have considerable effects on the cost / timescale in developing the site. There is good guidance in relation to Asbestos available on the Health and Safety Executive (HSE) web site.

Whilst a site walkover has been undertaken as part of this report, the survey does not constitute either an asbestos or structural survey and all areas of the site may not have been visited / inspected.