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Client:
Hallam Brothers

Preliminary Contamination Risk Assessment

GRADE A
NEW MILLS ROAD
HAYFIELD
SK22 2EU

Consultant:
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Consultant in Contaminated Land

Report Ref: 17CLR4051CW

Report Date: 22nd June 2017

Executive Summary

Reports 4 Planning have been commissioned by Mr Simon Jones on behalf of Hallam Brothers to undertake a Preliminary Risk Assessment of an industrial storage shed located off New Mills Road in Hayfield, SK22 2EU.

The property is located in the western end of Hayfield village with other residential property and light industrial units located nearby. The site is adjacent to the Hallam Brothers Land Rover dealership premises. The village is 3 miles (4.8 km) east of New Mills, 4.5 miles (7.2 km) south of Glossop and 10 miles (16 km) north of Buxton. The Sett Valley Trail, a former railway line, is located at depth to the north of the site.

It is proposed by the client that as the building requires some significant structural work to the roof to make it watertight, the opportunity is taken instead to build a new unit more fit for purpose. It is proposed that the existing unit is taken down and replaced with a more modern unit across roughly the same footprint. The new unit will be used by Hallam Brothers to store vehicles and undertake some bodywork activity.

In order to apply for planning permission for the development it is a requirement that any potential risks from contaminated land is explored and actioned if necessary. The first stage in identifying potential risks is the completion of a Phase I (Desktop Study) Contamination Risk Assessment. This report aims to fulfil this purpose by identifying and assessing any potential contamination affecting the site in accordance with DEFRA's and the Environment Agency's 'Model Procedures for the Management of Land Contamination (CLR 11)' and NPPF (particularly paragraphs 109 (fourth and fifth bullet points) and 120 of this document).

The purpose of the Preliminary Risk Assessment is to develop an initial conceptual model of the site and establish whether or not there are potentially unacceptable risks posed by contaminative sources from either historical or current, and either on-site or off-site previous land uses which may be affected by the proposed development. Using recognised national guidance, a Desktop Study has been undertaken on the site utilising many different information sources to gain an understanding of any historical or current risks to the site.

Site observations have been made to confirm to confirm the findings of the Desktop Study and also to observe any potential risks associated with the site or surrounding land that may not have been previously recorded. This information together with that collated during the Desk Study exercise has been used to gain an understanding of the site setting and potential risks to future land users. A Preliminary Environmental Risk Assessment has considered all the relevant Receptors, potential Pathways, and Sources of contamination and assessed these for the level of risk posed to the site and future site users. In accordance with current guidance this information has been used to develop a Conceptual Site Model (CSM) for the site.

By researching the site thoroughly and understanding the potential risks posed for the new development, the conceptual model of the site has been carefully developed. It has been determined that previously a reservoir was located on site (pre 1900's) to be later replaced with several residential lock-up garage units. In the 1980's this was replaced with a single industrial unit as we see today. Recently the unit was used as a breaking yard and to run a vehicle parts distribution business. Today the unit is used to store a number of vehicles awaiting repair.

After gaining a thorough understanding of the site and potential risks, it has been determined that there are no likely significant pollutant sources given the proposed continued use of the site for industrial purposes. A number of potential off-site sources have been identified but after considered for potential risk have been judged to not be significant in relation to proposed use of the site. Therefore, as no significant on-site sources have been identified, and the few off-site sources which have been identified are of a negligible risk, then no further assessment is recommended.

The client should take note of the historical use of the site (pre 1900's) as a reservoir. It is likely that some significant made ground material is located beneath the site. Although this is unlikely to have any significant impact from contamination given the proposed use of the site and hardstanding proposed, care should be given to protection for ground workers and full PPE should be work when excavating ground. The client would be advised to seek professional advice in relation to foundation matters given the potential for ground movement often associated with made ground.

Therefore in relation to potential contamination risk, this Preliminary Risk Assessment is sufficient on it's own to demonstrate with the required degree of certainty to the Local Planning Authority that the site is uncontaminated and that further investigative work at the site is not required.

The report is based on the assumption by the author that the Local Planning Authority will follow guidance detailed in the NPPF where for all development involving disturbance to land, the LPA would impose a Condition requiring the reporting of all other instances of contamination currently unreported found during the course of development. Should instances of previously unreported contamination be found then the submission for approval of an assessment of the risks and proposed remediation scheme will be submitted to the Local Planning Authority.

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1.0 INTRODUCTION

Reports 4 Planning have been commissioned by Mr Simon Jones on behalf of Hallam Brothers to undertake a Preliminary Risk Assessment of an industrial storage shed located off New Mills Road in Hayfield, SK22 2EU.

The property is located in the western end of Hayfield village with other residential property and light industrial units located nearby. The site is adjacent to the Hallam Brothers Land Rover dealership premises. The village is 3 miles (4.8 km) east of New Mills, 4.5 miles (7.2 km) south of Glossop and 10 miles (16 km) north of Buxton. The Sett Valley Trail, a former railway line, is located at depth to the north of the site. It is proposed by the client that as the building requires some significant structural work to the roof to make it watertight, the opportunity is taken instead to build a new unit more fit for purpose. It is proposed that the existing unit is taken down and replaced with a more modern unit across roughly the same footprint. The new unit will be used by Hallam Brothers to store vehicles and undertake some bodywork activity.

The purpose of this Preliminary Risk Assessment report is to gather information on the site to develop an initial conceptual site model (CSM) and establish whether or not there are any potentially unacceptable risks posed by either current or historical use of the land or the surrounding area which may affect the proposed development. The consultant who has prepared this report is a Contaminated Land Consultant with over twelve years' experience in Brownfield Development, Contaminated Land, Risk Assessment, and Land Condition Surveys. He is a member of the Institute of Environmental Management and Assessment. The Preliminary Risk Assessment report was undertaken based on Desk Study findings utilising publically available data, along with data sourced directly and indirectly from various providers including the Environment Agency, the Local Authority, the British Geological Survey, The Coal Authority and Ordnance Survey. This has allowed characterization of the site with respect to its Geology, Hydrology, Hydrogeology, History and Environmental Setting. The Site Characterisation has been undertaken in general accordance with the procedures identified within CLR11 – Model Procedures for the Management of Land Contamination (Environment Agency) and R & D Publication 66:2008. All site procedures are undertaken using the Code of Practice set out in BS 10175:2011.

Predominantly these procedures relate to 'past' contamination, and assume that legislative controls such as Pollution Prevention and Control authorisations control current potentially polluting activities. Emphasis is therefore upon historic site use and how this may affect potential future users of the site should the proposed development plans be realised. In accordance with CLR11 a Preliminary Environmental Risk Assessment contained in this report has considered all the relevant Receptors, potential Pathways, and Sources of contamination and assessed these for the level of risk posed to the site and future site users. In accordance with current guidance the information has been used to develop a Conceptual Site Model (CSM) for the site. All Pollutant Linkages must be present and the consequent linkage must be established in order to determine the requirement and scope of any future geo-environmental investigation.

This report has been prepared for Mr Simon Jones on behalf of Hallam Brothers in relation to the industrial storage shed located off New Mills Road in Hayfield, SK22 2EU. Reasonable skill and care has been exercised in preparation of this report in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking this contamination assessment, it is possible that ground conditions other than that potentially indicated by this report may exist at the site.

2.0 SOURCES OF INFORMATION

This report draws upon many different information sources in order to gain a full understanding of the environmental setting of the site. These are summarized below:

2.1 Internet Sources

- British Geological Survey Borehole Database
- Environment Agency Pollution Inventory Database
- Multi-Agency Geographic Information for the Countryside Database
- 1:50,000 British Geological Survey Digital Map of Great Britain
- www.old-maps.co.uk

2.2 Reports

- Groundsure Dataset Report, GS-4008110;
- Groundsure Historical Maps, GS-4008111;

2.3 Site Observations

- Site observations have been made on 15th May 2017 and photographic evidence is provided in Appendix B.

3.0 SITE RECONNAISSANCE

3.1 Site Location

The site is located on New Mills Road in Hayfield, SK22 2EU.

The property is located in the western end of Hayfield village with other residential property and light industrial units located nearby. Hayfield (SK037870) is a village and civil parish in High Peak, Derbyshire, England, with a population of around 2,700. The village is 3 miles (4.8 km) east of New Mills, 4.5 miles (7.2 km) south of Glossop and 10 miles (16 km) north of Buxton

The Sett Valley Trail, a former railway line, is located at depth to the north of the site.

The site is located at Grid Reference 403434, 386915.

Figure 1 and 2- Site Location Plan, and Figure 3 – Site Aerial Photograph shows the location of the site in relation to its surrounding land uses.

3.2 Site Access

There is good access into the site and the unit is easily accessible from New Mills Road to the west of the site.

3.3 Site Description

The site consists of a rectangular parcel of land measuring 0.1ha. The plot is located directly to the north of the Hallam Brothers car dealership.

The site is accessed via a single gateway which provides access to the large hardstanding area across the front of the site. This surfacing appears to be relatively recent and in a good condition. A small number of cars are parked again the northern boundary wall however the space is used more to for access to the unit.

The storage unit is located back from the front of the site against the eastern boundary. The building is square measuring approximately 15m by 20m. The building has a steel frame, concrete block walls with a pitched steel supported roof. The roof of the building is surfaced with corrugated cement sheet which may contain asbestos materials.

The unit is surfaced throughout with a concrete floor which has evidence of being painted in the past. The quality of the paint is now fair and is worn in places. There are a significant number of vehicles stored in the building. A close inspection of the floor revealed it to largely be in a good condition with no obvious and significant staining. A room located to the rear of the building is used to store tyres. Although the roof is leaking in this area and some water is on the floor, no significant evidence of staining was noted.

An aerial photograph showing the site is provided as Figure 3 with photographs taken during the site reconnaissance visit provided in Appendix A.

3.3.1 Site Topography

The site is relatively flat with only a minor fall in topography noted to the west across the site. The site is located at a significant depth below the Hallam Brothers garage to the south.

The Sett Valley Trail is located, again below the level of the site, to the north.

3.3.2 Structures

The building is constructed of traditional concrete block steel internal support and corrugated roof. The structure of the building was not closely inspected but appeared to be sound and fit for purpose. The roof in places is in a poor condition and some rainwater is able to access the building.

3.3.3 Surfacing

All internal and external areas of the proposed development site have been inspected. No evidence of any staining or stored materials which could lead to significant staining were noted across external and internal areas of the site.

3.3.4 Vegetation

There is no vegetation present at the site.

No evidence of Japanese Knotweed or other invasive species was recorded.

3.3.5 Underground and Aboveground Storage Tanks

No evidence was observed which would suggest that any above or below ground fuel tanks are present on the site.

3.3.6 Raw Material and Chemical Use and Storage

No evidence of potentially harmful raw material or chemical use and/or storage was observed at the site at the time of the survey. Some small amounts of containerised oils are kept in the adjacent workshop facility but these pose no wider risk to surrounding environs.

3.3.7 Solid Wastes

No materials were observed which may be potentially harmful to the environment of other users of the site.

3.3.8 Hazardous and Industrial Waste

No potentially hazardous industrial wastes have been observed. The site does not operate any process which is likely to use or generate hazardous substances.

3.3.9 Air Emissions

No evidence of significant air emission sources was observed.

3.3.10 Wastewater / Sewers

Wastewater from the site currently connects to main drainage.

3.3.11 Stormwater

Stormwater from the site building appears to be directed to drains beneath the site. These likely flow to the north and River Sett.

3.3.12 Asbestos Containing Materials (ACM)

No certified asbestos survey was undertaken as part of this assessment. No discarded materials suspected of containing asbestos were observed within the proposed

development area. It is however noted that asbestos may be present within the building structure, in particular within the corrugated roof structure of the building.

3.3.13 Polychlorinated Biphenyls (PCBs)

PCBs were historically used as a dielectric filler liquid in some types of transformers, switchgear, capacitors and the starter units in some fluorescent lights and fractional horsepower motors. Typically these are large pieces of electrical equipment commonly found on power lines. They were used because of their good electrical insulation properties, fire resistance and chemical stability. An international agreement in 1986 (EU Directive 96/59/EC) banned most of these uses and agreement was also reached to phase out remaining uses and safely dispose of PCBs by the end of 2010. It should be assumed that any capacitor or transformer made before 1976 contains PCBs unless it is known otherwise. PCBs are known to harm the environment and can damage health.

The site is a relatively modern premise, and therefore it is expected that the probability of PCBs being found is negligible.

3.3.14 Ionising Radiation

No evidence of Ionising Radiation sources were made at the site.

3.3.15 Spills and Releases

No direct evidence of recent evidence of any spills or releases has been observed.

3.4 Surrounding Land Use

3.4.1 North

The site is bordered to the north at a lower level by the Sett Valley Trail which is a former railway line.

3.4.2 East

The site is bordered to the east by a garage and the garden space of a number of residential properties.

3.4.3 South

The site is located adjacent to the Hallam Brothers Land Rover garage dealership and further by the A6015.

3.4.4 West

The site is bordered to the west by a parcel of land used for parking and further by open field.

A selection of photographs showing the property is provided in Appendix A.

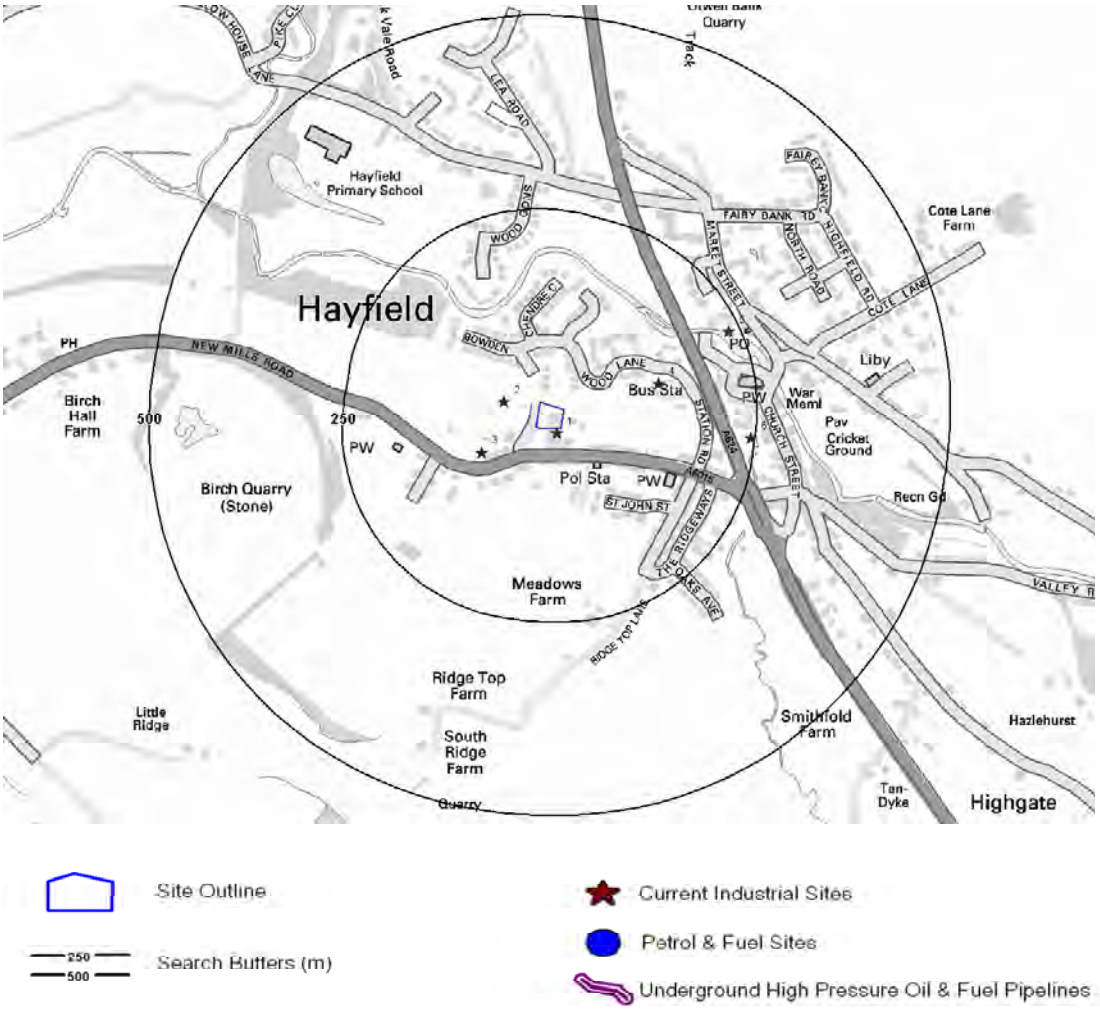
4.0 CURRENT LAND USES

4.1 Current Site Use

The site is currently used as a storage and refitting facility for second hand Land Rover cars. There are numerous vehicles stored within the unit as well as some car parts. A large area of land located outside the unit is laid to hardstanding and used for parking for a small number of cars.

4.2 Potentially Contaminative Current Surrounding Land Use

The following records of current potentially contaminative land uses are located within 250m of the site:



Those industrial sites which are located within 100m of the site (and thus have the most potential to cause a direct impact) are listed below, a full reference is provided in Appendix B:

Table 1: Potentially Contaminative Current Surrounding Land Use

Reference	Distance m	Company	Activity
1	5	Hallam Brothers	Second hand Vehicles
2	45 W	Electricity Sub Station	Electrical Feature
3	77 SW	Cox Electrics	Electrical and Electronic Engineers
4	127 E	Bus Station	Bus and Coach Stations
5	236 NE	Big Exposure Print	Plate Makers
6	244m E	Electricity Sub Station	Electrical Feature

4.3 Petrol and Fuel Sites

There are no records of any petrol or fuel sites located within 500m of the site.

4.4 Underground High Pressure Oil and Gas Pipelines

There are no records of Underground High Pressure Oil and Gas Pipelines within 500m of the site.

5.0 HISTORICAL LAND USES

5.1 Site and Surrounding Area Historical Land Use

5.1.1 Site Observational Evidence

The site currently comprises of a single industrial storage unit typical of a 1970's construction. The remainder of the site is laid to hardstanding. Site observations reveal that the site is likely to have only been used for storage and research of the most recent occupants (Grade A) reveal them to be a breaker and distributor of Subaru vehicle parts. No inspection pits, fuel tanks or similar is present to indicate that repair work is carried out.

The current use of the building concerns the storage of Land Rover vehicles. Here some refitting of vehicles takes place.

Outside the boundary of the site and to the north at depth is a woodland path. It was evidence solely from site inspection that this would have previously been a former railway line. This was backed up with sight of an old photograph of the area (see Appendix A) showing a railway station and sidings some years ago.

No other evidence was presented to give any information on previous use of the site.

5.1.2 Historical Maps Assessment

A number of historical maps have been reviewed for the site and reviewed for potential evidence which may indicate potentially contaminative land uses for either the site or surrounding land within 250m of the site. Copies of the historical maps are provided in Appendix B and are discussed below:

Table 2: Historical Land Use

Map Year (Scale)	Site Use	Surrounding Land Use
1880 (1:2,500)	The site is shown to have within its boundary a mill pond. The pond takes 70% of the total site area and is sunk to land immediately surrounding it.	The following notable features / changes are observed: **North:** Large Calico Print Works located 30m north. Consists of numerous buildings and at least three mill ponds. Two gasometers also present. Railway line located immediately adjacent to the site to the north. Station located 120m north east with numerous sidings. **East:** Railway station located 120m east with three goods sheds and numerous sidings. **South:** Some terraced residential property located within 100m south on New Mills Road.

1898 (1:2,500)	No changes to the site observed	The following notable features / changes are observed: **North:** Filter beds located 140m north west. **East:** Tank located 130m east. **West:** Cemetery located 170m west.
1922 (1:2,500)	Site appears to have been reengineered and the pond now filled in. The site would now appear to be flat with a single building associated with the site just outside the current site boundary to the east.	The following notable features / changes are observed: **North:** Allotment gardens located 180m north. **South:** Hayfield gas works located 240m south east. Allotment gardens 160m south east.
1938 (1:2,500)	No changes to the site observed	The following notable features / changes are observed: **North:** Railway line immediately to the north from the site not shown on mapping fully possibly indicating disused status.
1959 (1:2,500)	Site area not shown	The following notable features / changes are observed: **North:** Former reservoir located adjacent to mill not shown.
1971/72 (1:2,500)	Site now shown to have a row of residential garages on site.	The following notable features / changes are observed: **North:** Railway to the north now clearly shown as dismantled. Settling tanks 230m north west. Reservoir still located 150m and 80m north. Calico Print works still present. Coal yard located 140m north east. **South:** Site immediately to the south shown as a garage.
1982/83 (1:2,500)	Previous lock-up garages removed and replaced with a large rectangular shed as is seen in present day.	The following notable features / changes are observed: **East:** New large A624 roadway built 150m east resulting in changes to local road layout. Coal Yard moved slightly further north. Bus Station and Car Park located on former railway

		station site.
1993/95 (1:2,500)	No changes to the site observed	The following notable features / changes are observed: **North:** Works site remains north of former railway line.
2017 (Google Imagery)	No changes to the site observed	The following notable features / changes are observed: **North:** It is noted that the former Calco Print Works site has been redeveloped for housing consisting of Wood Lane and a number of closes off it.

Historical maps of the area show that during the 1800's and for some time before used to house a reservoir. The reservoir was wholly contained within the boundary of the site and was dismantled by 1938. Sometime later and into the 1970's the site was redeveloped to include a number of residential lock-up garage units. These were present until the late 1970's when they were demolished to make way for the single storage unit we see today.

The surrounding land, particularly to the north, has seen some considerable change throughout time. The land was dominated by the Calco Print Works which remained a short distance to the north until the early 1990's. This was then replaced with housing stock. A railway line was located adjacent to the site to the north from pre1880 to the 1960's (most likely as a result of the Beeching cuts) and replaced with a nature walk. The area where the station was located to the north east was replaced with a bus station and car park.

5.1.3 Potentially Contaminative Historical Uses

The following records of potentially contaminative historical land uses within 250m of the site are shown:

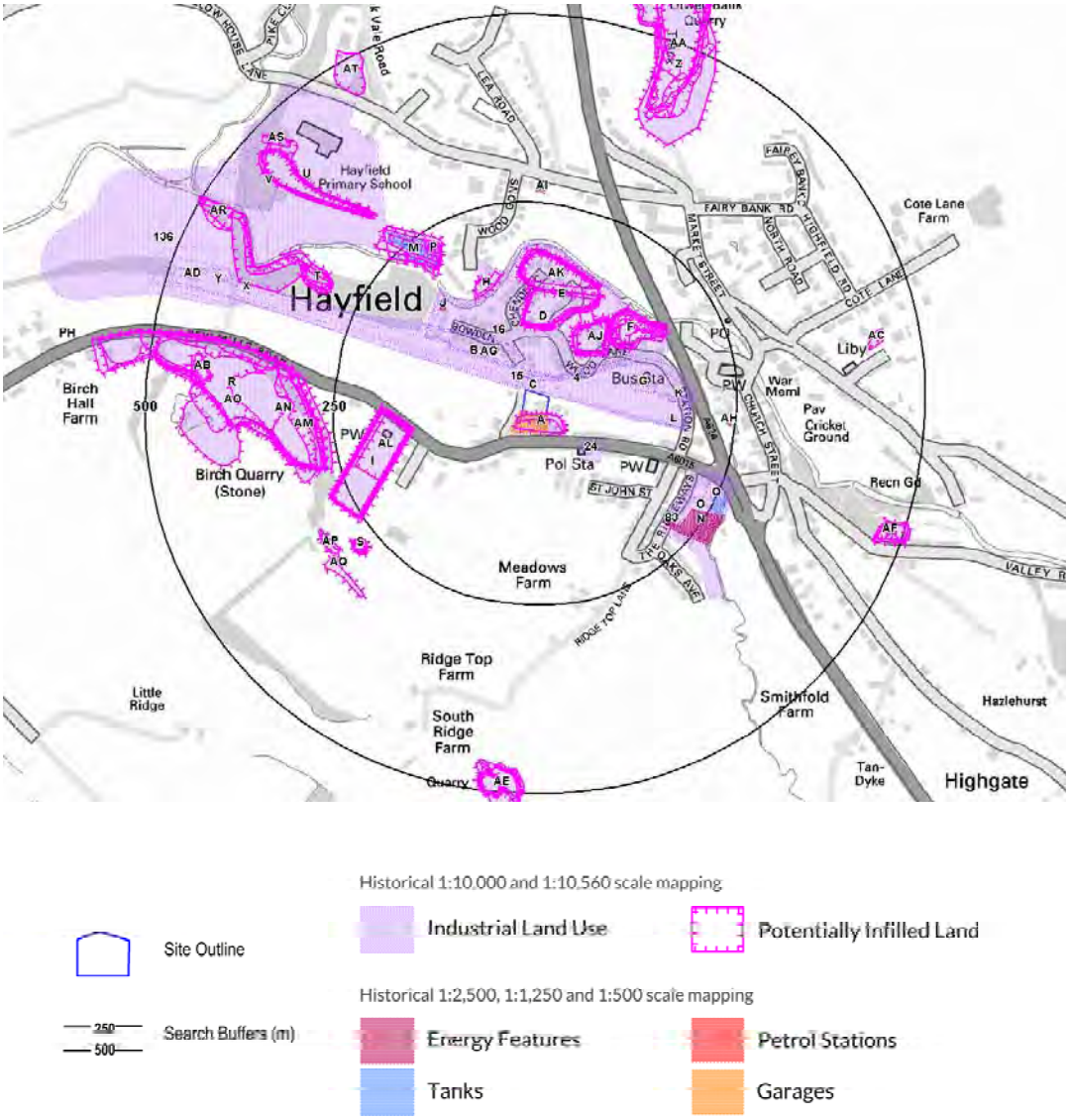


Table 3: Potentially Contaminative Historical Land Uses

Distance (m)	Direction	Activity	Date
On site		Ground Workings	1924
2 - 15	North	Railway Sidings and Buildings	1871 - 1951
15 - 27	North	Print Works	1896 - 1951
83	North	Mill Pond	1896 - 1938
107	North East	Unspecified Heap	1938
111	East	Railway Building	1896 - 1938
111	North East	Unspecified Heap	1951
114	East	Railway Station	1879
139	North west	Filter Beds	1896 - 1938
144	West	Cemetery	1879 - 1951
153	North west	Gasometer	1896 - 1938
155	North west	Gasometer	1919
157 - 162	East	Railway Station, Tank, Buildings	1896 - 1951
191	North west	Filter Beds	1919 - 1938
206 - 242	East	Gas Works	1919

Further detail is provided in Appendix B.

5.1.4 Historical Tank Database

The following records of historical tanks are made for sites located within 250m of the site:

Table 4: Historical Tank Database

Distance (m)	Direction	Activity	Date
71	NW	Unspecified Tank	1800
145	E	Unspecified Tank	1898 – 1922
151	NW	Gasometer	1880 – 1938
200	NW	Settling Tanks	1959 – 1995
210	NW	Settling Tanks	1971
214	SE	Gas Works	1880 – 1971
223	SE	Gas Works	1922
247	SE	Tanks	1938

5.1.5 Historical Energy Features Database

The following records of historical energy features are made for sites located within 250m of the site:

Table 5: Historical Energy Features Database

Distance (m)	Direction	Activity	Date
151	NW	Gasometer	1922
214 - 223	SE	Gas Works	1898 - 1922
237	E	Electricity Sub Station	1957 - 1993

5.1.6 Historical Petrol and Fuel Sites

There are no site located within 250m of the site where records of historic petrol and or fuel sites are located.

5.1.7 Historical Garage and Motor Vehicle Sites

The following records of historical garage and fuel sites are made within 500m of the site:

Table 6: Historical Garage and Motor Vehicle Sites

Distance (m)	Direction	Activity	Date
0	On site	Garage	1957 - 1993

5.1.8 Historical Potentially Infilled Land

The following records of potentially infilled land are made for sites located within 250m of the site in the last 50 years:

Table 7: Potentially Infilled Land

Distance	Direction	Activity	Date
On site		Unspecified Heap	1938
66	NE	Mill Pond	1879
83 - 87	N	Mill Pond	1896 - 1978
107 - 112	NE	Unspecified Heap	1919 - 1938
139	NW	Filter Beds	1896 - 1938
144 - 151	W	Cemetery	1879
191 - 199	NW	Filter Beds	1919 - 1938
199	NW	Filter Beds	1924
202 - 216	NW	Filter Beds	1919 - 1978

Further detail is provided in Appendix B.

5.1.9 Department of Environment (DEFRA) Industry Profiles

The old Department of Environment (now DEFRA) Profiles provide information on the processes, materials and waste associated with individual industries with regard to land contamination. DOE Industry Profiles provide information on the processes, materials and wastes associated with individuals industries. They are not definitive studies but they introduce some of the technical considerations that need to be borne in mind at the start of an investigation for possible contamination.

6.0 GEOLOGY

6.1 Artificial and Made Ground

BGS records show that there are no deposits of made ground located at or within 50m of the site.

6.2 Superficial and Drift Geology

The British Geological Survey 1:50,000 Geological Map of Great Britain shows that there are deposits of Till, a diamicton rock, at or within close proximity to the site.

6.3 Solid Geology

The British Geological Survey 1:50,000 Geological Map of Great Britain shows that the solid geology beneath, or within 50m, of the site is recorded as being of the Millstone Grit consisting of siltstone, mudstone and sandstone.

6.4 Mining

Information provided by the Coal Authority indicates that the site is located within 75m of a coal mining area.

6.5 Non-coal Mining

The site is located in an area where localised small scale underground mining may have occurred in the past. Potential for difficult ground conditions are unlikely or localised and are at least at a level where they need not be considered.

6.6 Brine Affected Areas

There are no brine affected areas within 75m of the site.

6.7 Shrink Swell

The maximum Shrink Swell Hazard for the site has been rated by the BGS as Very Low. Ground conditions are predominantly low plasticity and no special actions are required to avoid problems due to shrink-swell clays.

6.8 Landslides

The maximum Landslide Hazard for the site has been rated by the BGS as Very Low. Slope instability problems are unlikely to be present.

6.9 Soluble Rocks

The maximum Soluble Rocks Hazard for the site has been rated by the BGS as Negligible. Soluble rocks are present, but unlikely to cause problems except under exceptional circumstances.

6.10 Compressible Ground

The maximum Compressible Ground Hazard for the site has been rated by the BGS as Negligible. No special actions are required.

6.11 Collapsible Rocks

The maximum Collapsible Rocks Hazard for the site has been rated by the BGS as Very Low. Deposits with the potential to collapse when loaded and saturated are unlikely to be present.

6.12 Running Sand

There is a very low potential for running sand problems if the water table rises or if sandy strata is exposed to water. No special actions are required.

6.13 Radon

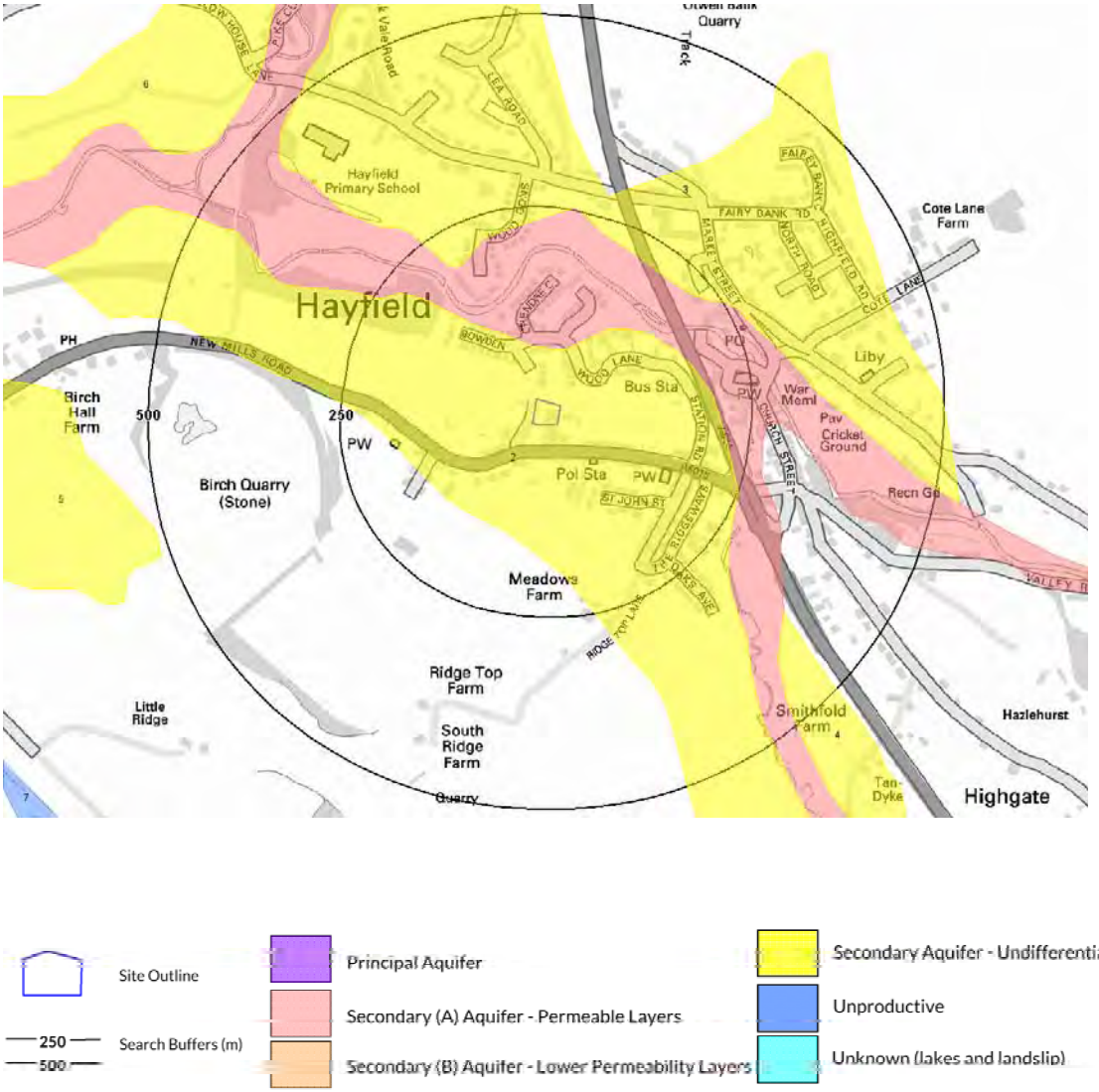
The Indicative Atlas of Radon in England and Wales as prepared by both the Health Protection Agency and the British Geological Survey shows that the site is not located in a radon area as less than 1% of properties are above the Action Level. No radon protection measures are necessary.

7.0 HYDROGEOLOGY

7.1 Groundwater Vulnerability and Soil Classification

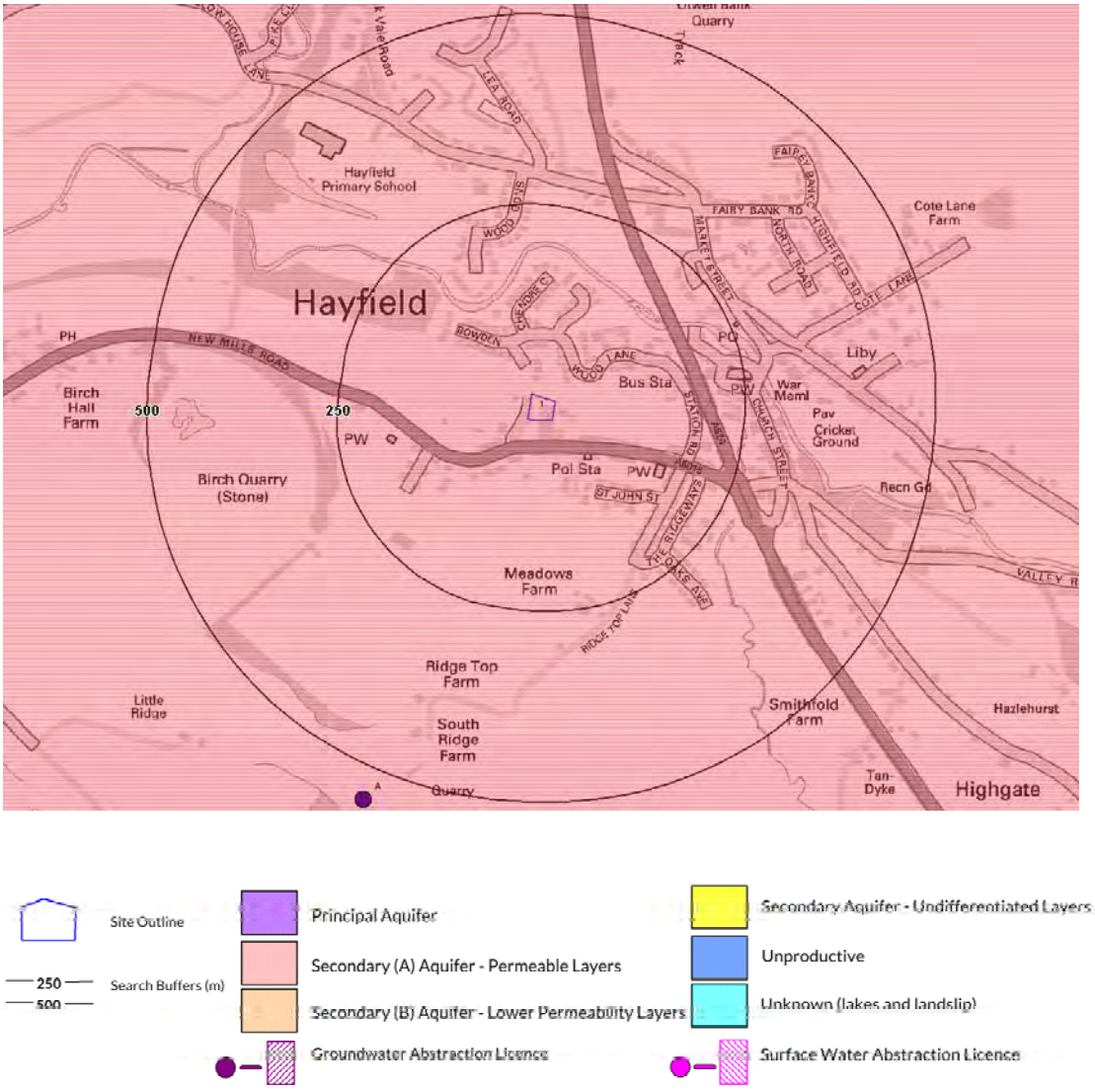
The site is shown to be located on a secondary aquifer with undifferentiated layers. This is assigned where it is not possible to attribute either a category A or B to a rock type. These are minor and non-aquifers. The soils have a low leachability which are soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal or they have the ability to attenuate diffuse pollutants.

This is shown below:



The bedrock at the site is classed as a secondary aquifer (A) which have permeable layers capable of supporting water-supplies at a local rather than a strategic scale. In some cases this forms an important source of base flow to rivers.

This is shown below:



7.2 Groundwater Abstraction Licences

There no active groundwater abstraction licences issued for sites located within 2000m of the site.

7.3 Discharge Consents

There are no Red List Discharge Consents recorded in the Groundsure Report within 500m of the site.

There are five licensed Discharge Consents recorded in the Groundsure Report for sites located within 250m of the site. The nearest record is for a site located 182m N of the site in relation to a pumping station.

7.4 Source Protection Zones

The site is not located within a Zone II or III Source Protection Zone.

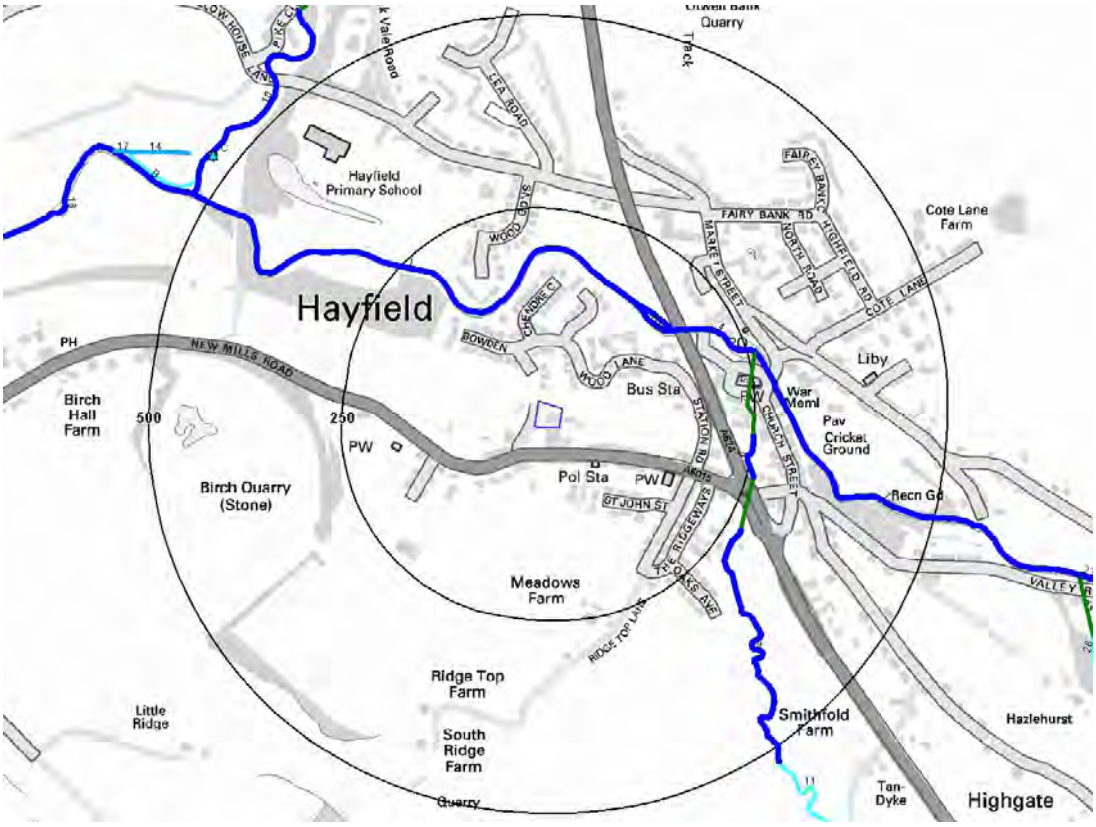
8.0 HYDROLOGY

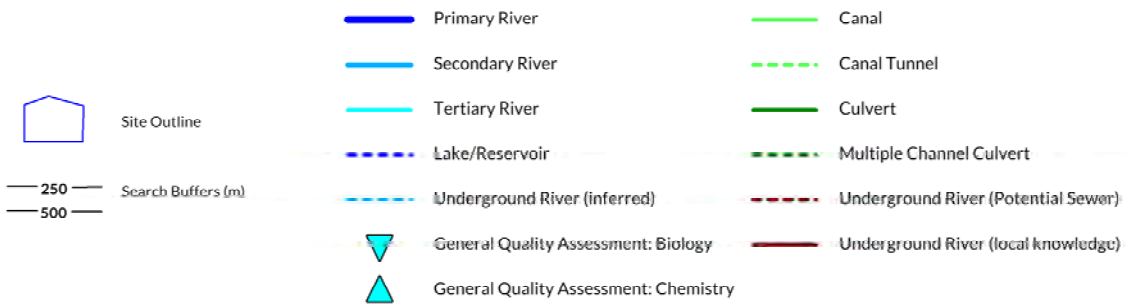
8.1 Surface Waters

The nearest surface water feature is the River Sett located at its nearest point some 129m north west of the site.

8.1.1 Main Rivers

The River Sett characterised as a primary river is located 134m NW of the site.





8.1.2 River Quality

The River Sett at a location some 524m NW of the site has most recently in 2009 been given a B grade for biological quality.

The River Sett at a location some 524m NW of the site has most recently in 2009 been given a B grade for chemical quality.

8.2 Surface Water Abstraction Licenses

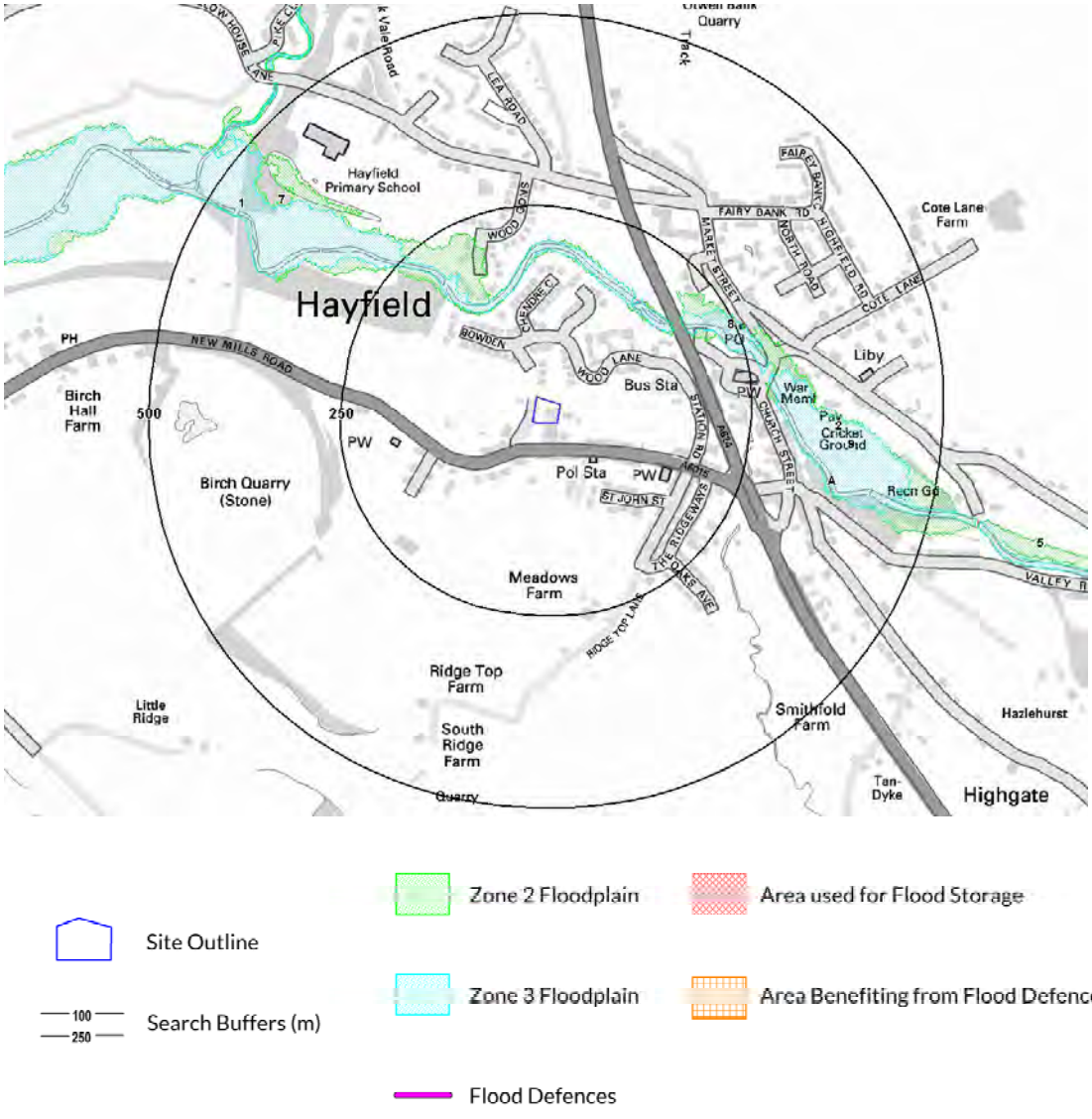
No Surface Water Abstraction Licences have been issued for any site located within 1000m of the site. The nearest active permit is for a site located 1018m west of the site which relates to general cooling for existing licenses.

8.3 Potable Water Abstraction Licenses

There are no known potable water abstraction licences in relation to sites located within 2000m of the site.

8.4 Flooding

8.4.1 Environment Agency Flood Protection Zones



The Environment Agency Flood map (from rivers and the sea) shows that the site is not located within a Zone 2 and Zone 3 flood risk zone for fluvial (rivers) model. However such a zone is located within 250m of the site to the north. RoFRaS data for the study site indicates the property has a 1 in a 1000 chance of flooding from rivers in any given year.

For information, Zone 3 floodplains estimate the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

For information, Zone 2 floodplains estimate the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

8.4.2 Flood Defences

There are Flood Defences protecting the site and wider area as recorded in 2017.

There are areas shown as benefiting from flood defences within 250m of the site.

There are no areas which are shown to benefit from flood storage within 250m of the site.

8.4.3 Groundwater Flooding Susceptibility Areas

British Geological Survey shows that the site may be affected by Groundwater flooding from superficial deposits. This is associated with associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers.

There is a potential for surface groundwater flooding which means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding. There is a moderate confidence level in this judgement.

9.0 AUTHORISATIONS, INCIDENTS AND REGISTERS

9.1 Industrial Sites Holding Licenses / Authorisations

There are no sites located within 500m of the site where records of historic IPC authorisations have been made.

There are no sites located within 500m of the site where records of Part A(1) and IPPC authorisations have been made.

There are no sites located within 500m of the site where records of List 1 Dangerous Substances Inventory Sites have been made.

There are no sites located within 500m of the site where records of List 2 Dangerous Substances Inventory Sites have been made.

There are no Part B permits issued for sites located within 250m of the site.

9.2 Dangerous or Hazardous Sites

There are no COMAH or NIHHS site located within 500m of the site.

9.3 Environment Agency Recorded Pollution Incidents

There are no records of any List 1 Environment Agency Recorded Pollution Incidents within 250m of the site.

There are three records of List 2 Environment Agency Recorded Pollution Incidents located within 250m of the site. The nearest incident occurred 16m west of the site when contaminated water from a vehicle and plant washings was discharged to land causing a minor incident. Minor impact was also caused 141m north of the site from discharge of organic material.

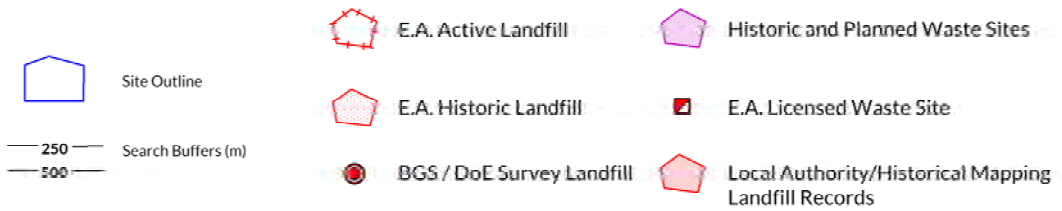
9.4 Sites Determined as Contaminated Under Part IIa EPA 1990

No sites have been determined as Contaminated Land under Part IIa EPA 1990 within 500m of the site.

10.0 WASTE

10.1 Landfill Sites

There following records of BGS Recorded Landfill Sites, Local Authority Landfill Sites or other Registered Landfill sites are made for sites located within 250m of the site.



10.1.1 Environment Agency Historic Landfill Sites

Table 8: Environment Agency Historic Landfill Data

Distance	Direction	Activity	Date
15m and 141m	North	Land adjacent to Calico Works was permitted for inert waste	1987 - 1988
585	NW	Land off swallow house Lane	
728	E	Rockhall Quarry	1970 - 1972

10.1.2 BGS/DoE Non-operational Landfill Site

Table 9: BGS/DoE Non-operational Landfill Site

Distance	Direction	Activity	Date
808m	E	Rockhall Quarry, Hayfield	Serious risk to aquifer

10.1.3 Local Authority Landfill Sites

Table 10: Local Authority Landfill Sites

Distance	Direction	Activity	Date
1393m	W	Refuse Tip	1971

10.2 Other Waste Sites

The following records of Licensed Waste Management Facilities or registered Waste Transfer or Treatment / Disposal Sites are made for sites within 1,000m of the site:

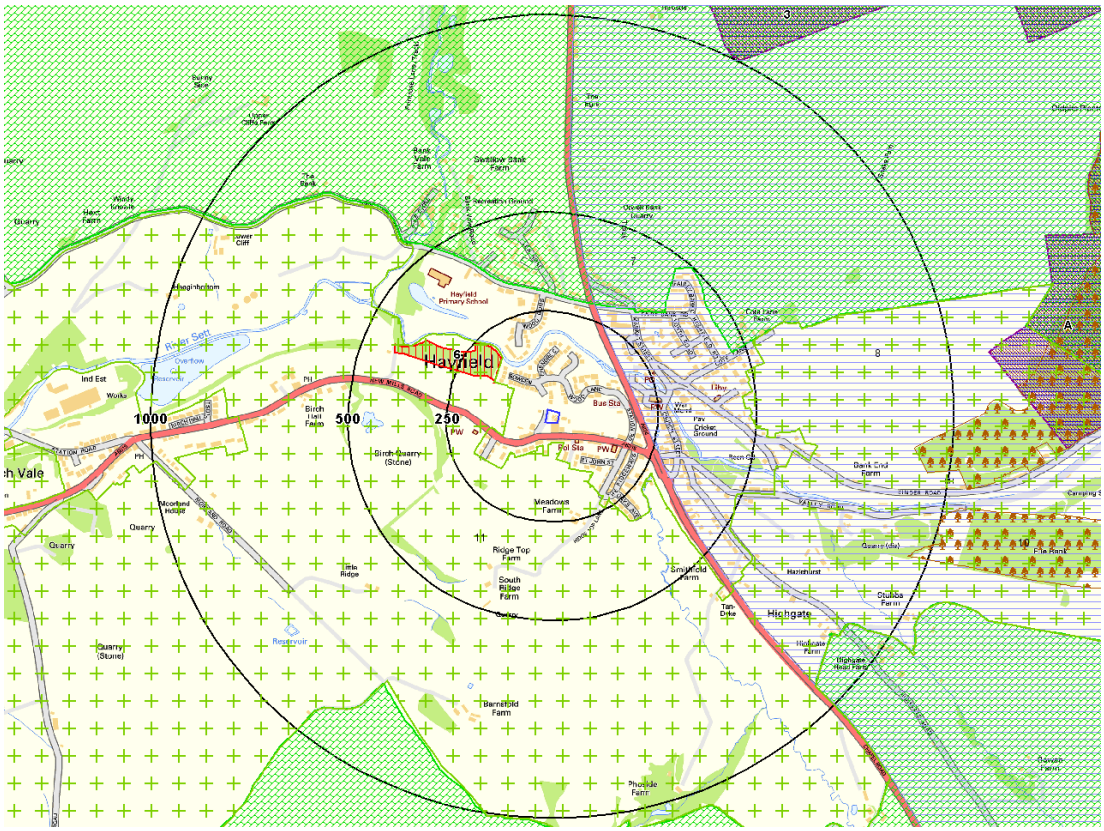
10.2.1 Waste Treatment, Transfer or Disposal Sites

Table 11: Waste Treatment, Transfer or Disposal Sites

Distance	Direction	Activity	Date
19	SW	Grade A Components held a licence for a ELV facility	2005 -
1047	W	Birch Vale Industrial Estate operated as a special waste transfer station	2003 - 2010
1056	SW	Arden Quarry Landfill Site composting of biodegradable waste	2015
1336	SW	Land at Oven Hill Road, Birch Vale household, commercial and industrial waste landfill	1997

11.0 DESIGNATED ENVIRONMENTALLY SENSITIVE SITES

The following designated environmentally sensitive sites are located within 250m of the sites:



11.1 Sites of Special Scientific Interest

Dark Peak located 1003m NE of the site has been designated as a SSSI by Natural England.

11.2 Special Areas of Conservation

South Pennine Moors located 1003m NE of the site has been designated as a special area of conservation.

11.3 Special Protection Areas

The Peak District Moors located 1003m north east of the site has been designated as a special protection areas.

11.4 Ancient Woodland

Woods located 904m and 948m east, are designated as ancient and semi-natural woodland.

11.5 Local Nature Reserves

Bluebell Woods (151m north west) is designated as Local Nature Reserve

11.6 Environmentally Sensitive Areas

North Peak located 191m north east of the site has been identified as an Environmentally Sensitive Site.

12.0 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

12.1 Introduction

The current contaminated land regime is explained in Part IIA of the Environmental Protection Act 1990 and was introduced on the 1st April 2000 in England. Also, this assessment has been completed taking into account the advice and guidance contained in the NPPF and particularly paragraphs 109 (fourth and fifth bullet points) and 120 of this document. In general, the purpose of these aspects of the legislation is to achieve the identification of contaminated land and the remediation of contaminated land to ensure the such land poses no significant risk to human health and/or the environment.

Contaminated Land is defined as:

'*any land which appear to the local authority in whose area it is situated, to be in such a condition, by reason or substances in, on, or under the land, that: significant harm is being caused or there is a significant possibility of such harm being caused; or pollution of controlled water is being or is likely to be caused.'*

For land to be classified as contaminated land a relevant Pollutant Linkage must be identified. A Pollutant Linkage will only be present where the Source-Pathway-Receptor factors are all present and where they are not all present, no risk assessment is possible. This is common with the Model Procedures as described in CLR-11.

Statutory Definitions	
Contaminant Source (Hazard)	A substance which is in, on or under the land and which has the potential to cause harm or cause pollution of controlled waters
Receptor (Target)	A living organism or group of organisms, an ecological system or property, controlled waters which are or could be polluted by a contaminant
Pathway (Route)	One or more routes or means which either allows the contaminant to cause significant harm to that receptor, or that there is a significant possibility of such harm being caused to the receptor, or that pollution of controlled waters is being or likely to be caused.

A Preliminary Environmental Risk Assessment involves assessing the likely probability and consequence of a Pollutant Linkage and determining a consequent level of risk.

The term 'risk' is widely used in different contexts and situation but a prescriptive definition is provided by the Guidelines for Environmental Risk Assessment and Management (DEFRA et al, 2000):

Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequence of the occurrence'.

A hazard is defined as '*a property or situation that in particular circumstance could lead to harm'*.

The risk category for a particular scenario can be assessed in terms of the consequences and probability of an occurrence which can be defined as follows:

Classification of a Consequence

Classification	Definition
Severe	1 – short term (acute) risk to human health likely to result in significant harm 2 – short term risk to controlled waters 3 – catastrophic damage to buildings / structures 4 – short term risk to an ecosystem or organism within the particular ecosystem.
Medium	1 – chromic damage to human health (long term risk) 2 – pollution of a sensitive water resource 3 – a significant change in an ecosystem or organism within the ecosystem
Mild	1 – pollution of non-sensitive water resources 2 – significant damage to buildings / structures
Negligible	1 – harm (not necessarily significant) which may result in financial loss; 2 – non permanent health effects to humans (easily prevented by PPE for example) 3 – easily repairable effects of structural (building damage).

Classification of a Probability

Classification	Definition
High	1 – there is a complete pollution linkage and an event appears very likely to occur in the short term and is inevitable in the long term 2 – evidence of harm to the receptor
Medium	1 – there is a complete pollution linkage which means that it is probable that an event will occur 2 – the event is not inevitable but possible in the short term and likely in the long term
Low	1 – there is a complete pollution linkage and circumstance are possible under which an event could occur 2 – it is not certain that an event will occur in the long term, and it is less likely to occur in the short term
Negligible	1 – there is a complete pollution linkage but circumstance are such that is improbable that an event would occur even in the long term.

The consequences of a risk and the probability of an event taking place can be assessed and the likely risk category can be determined as follows:

		Consequence			
Probability		*Severe*	*Medium*	*Mild*	*Negligible*
	High	High	High	Medium / Low	Negligible
	Medium	High	Medium	Low	Negligible
	Low	High / Medium	Medium	Low	Negligible
	Negligible	Medium / Low	Medium / Low	Low	Negligible

High Risk – there is a high probability that sever harm could risk a receptor, or there is evidence that a receptor is being harmed. The risk is realised is likely to result in liability and/or significant harm, and urgent investigation or remediation will be required.

Medium Risk - it is probable that harm will arise to a receptor. However it is relatively unlikely that such harm would be severe, or if harm does occur then the harm is likely to be relatively mild. Investigation will be required to determine the liability, and some remedial works may be required in the long term.

Low Risk – it is possible that harm may arise to a receptor, but it is likely that the harm would be mild.

Near Zero Risk – There is a very low risk of harm to the receptor. In the event of harm being realised the harm is not likely to be severe.

12.2 Potential Sources

The current and historical use of the site has been carefully assessed. All potential risks have been determined and assessed as part of this study.

A number of off-site sources are also recorded in the vicinity of the site and are discussed below.

12.3 Potential Pathways

Exposure pathways link any contamination to the receptor. All or any of the following potential pathways may apply:

<u>Future Site Workers, including Construction Workers</u>

Oral Pathway (W-O)	Indoor /outdoor ingestion of dust
	Indoor/outdoor ingestion of soil
	Indoor/outdoor ingestion of Flora/Fauna
	Ingestion of tainted mains water
Inhalation Pathway (W-I)	Indoor/outdoor inhalation of fugitive dust
	Indoor/outdoor inhalation of soil vapour
Dermal Pathway (W-D)	Indoor/Outdoor exposure to soil through dermal contact

<u>Future Site Users, Occasional Visitors and Neighbouring Residents including Children</u>

Oral Pathway (O-O)	Indoor ingestion of dust (post construction)
	Outdoor ingestion of soil (post construction)
	Indoor/outdoor ingestion of Flora/Fauna
Inhalation Pathway (O-I)	Outdoor inhalation of fugitive dust
	Indoor inhalation of fugitive dust (post construction)
	Outdoor inhalation of soil vapour
	Indoor inhalation of soil vapour (post construction)
Dermal Pathway (O-D)	Outdoor exposure to soil through dermal contact

	Indoor exposure to soil dust through dermal contact

Flora (potential new on-site or off-site flora affected by potential contamination on the site, or migrating onto or from the site).

Plant Uptake (Fl-PU)	General uptake of contaminants by plants growing in the vicinity of, or on, the site

Fauna (on-site or off-site affected by potential contamination on the site, or migrating from the site)

Oral Pathway (Fa-OP)	Consumption of contaminated Flora located on site

Water Resources

Surface Water Mobilisation (SWM)	Surface water run-off from site, migrating off site Also infiltration into the site from site.

Groundwater Mobilisation (Leaching Potential) (GWM)	Percolation and mobilisation of contaminants within the soil into waters held locally within pore space beneath the site.

12.4 Potential Receptors

The following potential receptors have been identified for the site:

Human Receptors (H)	Site workers, adults. .
Flora and Fauna (FL, FA)	Future, on and off-site Fauna and Flora (not likely to be applicable);
Water Resources (SW, GW)	bedrock secondary aquifer;
Site Infrastructure (SI)	Existing and future foundations and drainage services
Environmental	SSSI, LNR, SPA, SAC, ESA, Ancient Woodland

Under the proposals the site is to be developed for continued industrial purposes. The **Critical Receptor** for the site has therefore been identified as a female adult who may work at the site.

12.5 Qualitative Risk Assessment

A qualitative risk assessment has been undertake to provide an initial assessment of the potential risks caused by contaminant sources identified during this assessment to potential future users of the site, building structures, and the aquatic environment. **The assessment has been made on the understanding that the site is used for industrial uses.** This is detailed in the table below:

Table 13 Risk Assessment

Hazard Identification			Hazard Assessment		Risk Estimation			Risk Evaluation
Sources	**Location**	**Potential Contaminants**	**Pathway**	**Receptor**	**Magnitude of Consequence**	**Probability of Occurrence**	**Risk Appraisal**	**Rationale**
Current / Historical use of the site, Hallam Brothers Grade A	On site	Industrial – lubricants, oils, metals, paints	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild	Low to medium	Low	- Comprehensive concrete flooring - No landscaped area - No site staining observed - No fuel storage on site - No likely significant source materials - Receptor located significant distance and up and over hill - Unlikely to have significant source material capable of reaching underlying aquifer. - **No further assessment required.**
Asbestos	On site - roofing	Asbestos	W-I, O-I	H	Mild	Medium	Medium	- Presume material contains asbestos and therefore should be removed by competent persons and disposed of appropriately by licence.
Cox Electrics	77m SW	Metals	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Negligible	Low	Negligible	- No risk of impact - **No further assessment required.**
Bus Station	127m E	Fuel Oil (tank), Oils	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Negligible	Low	Negligible	- Site located below level of property - No evidence of leakage to ground during inspection - No significant source material expected - **No further assessment required.**

Calico Print Works	30m North	Various – dyes, inks, solvents?	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild to Negligible	Low	Low	- Site located down gradient of site so no direct linkage - Gas Vapour risk low. - Site now redeveloped for housing - Located next to river and river has good quality - **No further assessment required.**
Railway Line, station and tank (130m N)	Adjacent to north	Spilt oil / fuel	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Negligible to Low	Low	Low	- Located at depth below site - Now restored land - Little to no risk of gas vapour risk - **No further assessment required**
Cemetery	170m N	Metals, organics	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild to Negligible	Low	Low	- Located significant distance from site - No likely pathway relevant due to topography. - **No further assessment required.**
Coal Yard	140m NE	PAH	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild	Low	Low	- Located significant distance from site - Located downgradient of site – no direct pathway - **No further assessment required**
Electrical Sub Stations	Various – 45m W, 244m E	PCBs, made ground	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Negligible	Low	Negligible	- No likely pathway of contamination applicable to site - **No further assessment required**

13.0 CONCEPTUAL SITE MODEL

The model assessment has been made on the understanding that the site is continued to be used for Industrial Purposes. Those potential pathways which may give rise to unacceptable contaminative risk under this scheme have been brought forward and form part of the Model as discussed below.

Table 12: Conceptual Site Model

Conceptual Site Model			
Receptor	**Linkage**	Source	Risk
Demolition / Ground workers	Inhalation	Organic vapours arising from on-site sources	Low – general low risk no likely gas vapour source
	Ingestion and dermal contact	Organic or inorganic contaminants	Low acute risk – made ground may be present from 100 years ago – contamination risk is very low – but PPE should be worn.
Future site users	Inhalation	Organic vapours arising from on-site sources and off-site sources	Low – general low risk no likely gas vapour source No further assessment required.
	Ingestion and dermal contact	Shallow soil contamination from potential on-site and/or migratory off-site.	Low – continued industrial use with no landscaped areas No likely potential source material expected at site. Hardstanding comprises most of site covering. Low risk of viable pathway for off-site sources. No further assessment required.
	Direct	Radon	Low
Neighbouring Residents	Inhalation	Disturbed vapours arising from on-site development	Low – development not likely to result in new and increased pathways.

			No further assessment required.
	Ingestion and dermal contact	Shallow soil contamination from on-site sources being disturbed through development and transposed off-site through air.	Low –. Industrial sites with low risk of dermal exposure. **No further assessment required.**
Groundwater resources	Infiltration and leaching of potential wastes from spillages	Downward and lateral migration of mobile contaminants and possible disturbance and creation of new fractures result of development adversely affecting flow to other receptors	No new pathways to emerge from development and continued use of site. Little likelihood of risk. **No further assessment required.**
Surface waters	Possible mobilisation of shallow soil contaminants from site to east	Shallow soil contamination from off site and on site sources being mobilised through surface waters off site.	No direct linkage from source-pathway-receptor as result of development. No source material mobilised. **No further assessment required.**
Local flora and fauna	Uptake from soil and Ingestion	Shallow soil contamination from off site and on site sources	N / A

The Conceptual Site Model shows that after careful consideration and appreciation of the continued industrial use of the site, no viable source-pathway-receptor linkages have been identified as likely to occur from continued use of the existing building for industrial purposes.

13.0 CONCLUSIONS AND RECOMMENDATIONS

A full Preliminary Risk Assessment and shallow soil sampling assessment has been undertaken at the site to assess all potential contaminative sources and any applicable pollutant Pathways which may give rise to adverse impact to future users of the site.

Following a site walkover conducted on 15th May 2017 a conceptual model of the site was developed which demonstrates that after careful consideration there are no significant potential pollutant linkages present.

It is recommended that potential asbestos containing materials in the roof structure are dealt with in accordance to legislation, by approved contractor and disposed of to a licensed landfill centre.

Due to the presence of made ground at the site (infilled reservoir pre 1900) then an assessment should be made for structural stability of the new unit.

Given the industrial proposals for the site, expected users of the site should not be exposed to any significant undue risk from contamination as part of normal operation of the site.

The report is based on the assumption by the author that the Local Planning Authority will follow guidance detailed in the NPPF where for all development involving disturbance to land, the LPA would impose a Condition requiring the reporting of all instances of contamination found during the course of development, including removal of concrete floor slab. Should instances of previously unreported contamination be found then the submission for approval of an assessment of the risks and proposed remediation scheme will be submitted to the Local Planning Authority.

The report is supplied subject to our standard terms and conditions and these should be read alongside the report.