REPORTS 4 PLANNING

A DIVISION OF BROWN FISHER ENVIRONMENTAL LLP

Head Office
Barley House
Cedar Drive
Snitterfield
Stratford-upon-Avon
Warwickshire
CV37 OLJ

tel: 0845 680 1723
e: enquiries@reports4planning.co.uk

Client:
Cornerstone Hampshire Ltd
Langstone Gate
Solent Road
Havant
PO9 1TR

Preliminary Contamination Risk Assessment

THE DAIRY
ROADS HILL
CATHERINGTON
WATERLOOVILLE
PO8 0TG

Consultant:
Mr Wood BEng. MSc. IEMA.

Consultant in Contaminated Land

Report Ref: 20CLR5028CW

Report Date: 4th December 2020

Executive Summary

Reports 4 Planning have been commissioned by Cornerstone Hampshire Ltd to undertake a Preliminary Risk Assessment of a property known as The Dairy and located at Roads Hill, Catherington, Waterlooville, PO8 0TG.

The plot of land is located in Catherington with development noted to be both north and south of the site. To the north along Catherington Lane there are numerous residential dwellings, a school and church. To the south a number of farms are located including Lucky Lite Farm which houses a number of mobile homes. A commercial yard is located off Roads Hill to the west.

It is proposed that the brownfield area of the site is developed for housing with the existing paddocks left and allocated in sections to each plot. The south western corner of the site is to be used for community uses.

To potentially satisfy any future planning request, an assessment of potential contamination risk has been requested. In considering any future applications the Local Planning Authority has to determine 'whether, as a result of the proposed change of use, taking into account any proposed mitigation, the site will be contaminated land as described in Part 2A of the Environmental Protection Act 1990 , and in doing so have regard to the Contaminated Land Statutory Guidance issued by the Secretary of State for the Environment, Food and Rural Affairs in April 2012. The client should also take note and abide by the requirements of the new LCRM regulations which is the latest guidelines issued by Government Environment Agency Published on 08/10/2020.

The process of assessing any risk from potential contamination is begun with the preparation of a Phase I Desk study and Preliminary Risk Assessment. This report aims to fulfil this purpose by identifying and assessing any potential contamination affecting the site. 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.

After a thorough analysis of the potential impacts at the site and careful consideration of the potential risks involved, a number of potential significant risks have been identified. This relates to the historical use of the site for agriculture (dairy farming) and the legacy of contamination that this may have left. Also, current uses of the site may have given rise to made ground at the site and it is known that spoils of soils of an unknown nature are present in at least two locations. Current site use includes use of a workshop and garage (which was inaccessible during the site walkover visit). The use of oils and fuels in this area cannot be currently discounted. The north eastern corner of the site

has been used as a commercial storage yard where miscellaneous materials are stored. The historical use of this area and the materials which may have been stored are unknown.

As the proposed use of the site is residential (and thus more sensitive than historical uses) which will include the provision of private gardens, then further assessment is required to determine the contamination status of the site in general terms and in those specific areas where new dwellings are proposed. It is recommended that the known soil stockpiles are sampled and assessed for level of contamination risk. Areas where activities involving oils and fuels should be targeted as well as areas proposed for future garden space.

This will take the form of an intrusive investigation and further generic or detailed risk assessment. If the pollutant linkages are confirmed as unacceptable then some form of remediation will be required. Should this be required, we believe that the level of remediation should be viable, being relatively simple and low key.

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.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

Reports 4 Planning have been commissioned by Cornerstone Hampshire Ltd to undertake a Preliminary Risk Assessment of a property known as The Dairy and located at Roads Hill, Catherington, Waterlooville, PO8 0TG.

The plot of land is located in Catherington with development noted to be both north and south of the site. To the north along Catherington Lane there are numerous residential dwellings, a school and church. To the south a number of farms are located including Lucky Lite Farm which houses a number of mobile homes. A commercial yard is located off Roads Hill to the west

It is proposed that the brownfield area of the site is developed for housing with the existing paddocks left and allocated in sections to each plot. The south western corner of the site is to be used for community uses.

To satisfy a validation requirement for the forthcoming planning application, an assessment of potential contamination risk has been requested. In considering any future applications the Local Planning Authority has to determine 'whether, as a result of the proposed change of use, taking into account any proposed mitigation, the site will be contaminated land as described in Part 2A of the Environmental Protection Act 1990 , and in doing so have regard to the Contaminated Land Statutory Guidance issued by the Secretary of State for the Environment, Food and Rural Affairs in April 2012. The client should also take note and abide by the requirements of the new LCRM regulations which is the latest guidelines issued by Government Environment Agency Published on 08/10/2020.

The purpose of this Phase I Deskstudy and 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 twenty 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 publicly 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 of the new LCRM methods as released in October 2020.

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. 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.

Reasonable skill and care have 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-7201414
- Groundsure Historical Maps, GS-7201413;

2.3 Site Observations

- Site observations have been made during 30th October 2020 and photographic evidence is provided in Appendix B.

3.0 SITE RECONNAISSANCE

3.1 Site Location

The site known as The Dairy and is located on Roads Hill, Catherington, Waterlooville, PO8 0TG.

The plot of land is located in Catherington with development noted to be both north and south of the site. To the north along Catherington Lane there are numerous residential dwellings, a school and church. To the south a number of farms are located including Lucky Lite Farm which houses a number of mobile homes. A commercial yard is located off Roads Hill to the west.

The site is located at Grid Reference 469273, 114103.

Figure 1 and 2- Site Location Plan Small and Large, Figure 3 – Site Block Plan and Figure 4 - 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 from Roads Hill on the northern boundary of the site.

3.3 Site Description

The site consists of areas of undeveloped pasture which is used as paddocks for a small number of horses and a smaller section described as 'brownfield' which is located in the north eastern corner of the site.

The site is accessed from Roads Hill road on the northern boundary which brings you close to a collection of buildings. Perhaps the largest building on site is located in front of the main gateway and is used as a small workshop for the general maintenance. The building has a concrete floor and sheet metal wall sides. The concrete is generally in a good condition, although some small areas of staining can be seen. Some small amounts of containerised oils and fuels are likely to be stored in this area.

Centrally located within the developed area there is a brick-built garage structure which is leased as a vehicle servicing garage. An internal inspection of this building was not possible during the visit. A number of old cars and other tools and machinery are located outside this building in the vicinity in what is a hardstanding surface.

A small stable block and a mobile home caravan is located towards the rear of the brownfield area with a large menage' located to the south.

The eastern corner of the site is leased as a contractor's yard and is used by a small number of firms for storage. Here materials of topsoil and UPVC windows are seen as well as a burger van. Miscellaneous materials are left on the edge of this gravelled area. Located around the southern perimeter of the contractors yard is a bund of earth which contains materials such as brick, concrete, plastic, glass and other. A similar example of such material is located close to the northern boundary of the site.

The western section of the site is open and used for parking in the main. Located around the western boundary of this area are a number of small trailers and other materials deposited whilst they await disposal.

The paddocks located centrally and in the southern section of the site are unremarkable and without concern.

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 plot and surrounding land is noted to be generally level with no notable site-wide significant changes in topography across the site. Raised earth mounds are located in the eastern section of the site along the contractors yard boundary and also along the northern boundary of the site.

3.3.2 Structures

There is only one main permeant building on site which is the brick-built garage building. This building was inaccessible during the site walkover visit. All other buildings are either of a more temporary nature or moveable.

3.3.3 Surfacing

The site includes areas of soft and hard landscaping. The buildings of the brownfield area are surfaced in concrete which on the whole are of a good condition with only minor staining of an oily nature. The main yard area has some tarmac with other areas of soft landscaping consisting of hardcore and gravel. The area around the site buildings is largely of a hardstanding tarmac construction which is in a fair condition.

No significant areas of staining were observed except minor staining seen to the workshop.

3.3.4 Vegetation

There is significant vegetation located at the site which was observed and appeared to not be impacted by distress.

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. Please note however that the main garage unit was not inspected.

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 quantities of containerised oils and possibly fuels are located in the workshop.

3.3.7 Solid Wastes

Stockpiles of materials of an unknown nature are present along the southern edge of the external contactors yard, and also along the northern boundary of the site. It is intended that these materials will be removed in due course.

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

It is understood that there is currently no mains drainage network on site.

3.3.11 Stormwater

Stormwater from the site building appears to be directed underground to an unknown destination.

3.3.12 Asbestos Containing Materials (ACM)

No certified asbestos survey was undertaken as part of this assessment.

It is now illegal to use asbestos in the construction of buildings in the UK. However, it is not illegal for properties to contain asbestos that was installed prior to the introduction of the 1999 regulations.

It is possible that the roofing materials and other building fabric of the workshop and/or garage building may contain such materials. As the building was constructed prior to 1999 it is possible that asbestos may be present within the building structure as part of internal changes to the building over time. Prior to any major refurbishment or demolition, a full certified asbestos survey should be undertaken.

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 was made at the site.

3.3.15 Spills and Releases

In those external and internal areas of the site which were inspected no significant areas of staining associated with spills and/or releases could be seen. Some minor staining could be seen upon the concrete in the workshop building.

3.4 Surrounding Land Use

3.4.1 North

The site is bordered to the north by Roads Hill road and further by a small light industrial building which appears to be used by Cannon Car Audio. Other buildings are residential.

3.4.2 East

The site is bordered to the east by Catherington Lane and further by a small wooded area and then open field.

3.4.3 South

The site is bordered to the south by a former farm of which only one protected building remains. Residential dwellings and a caravan storage park are located further to the south.

3.4.4 West

The site is bordered to the west by a commercial vehicle yard and further by woodland and open field.

A selection of photographs is provided in Appendix A.

4.0 CURRENT LAND USES

4.1 Current Site Use

The site is known as The Dairy, however no activity commonly associated with a dairy is currently undertaken at the site.

The site is used for activities including stabling (the site has sizeable paddocks) as well as some vehicle maintenance in a garage on site. There is also a corner of the site (north east) which is leased and lightly used as a storage yard for a number of local businesses.

4.2 Potentially Contaminative Current Surrounding Land Use

The following records of potentially contaminative sites are made within 250m of the site:

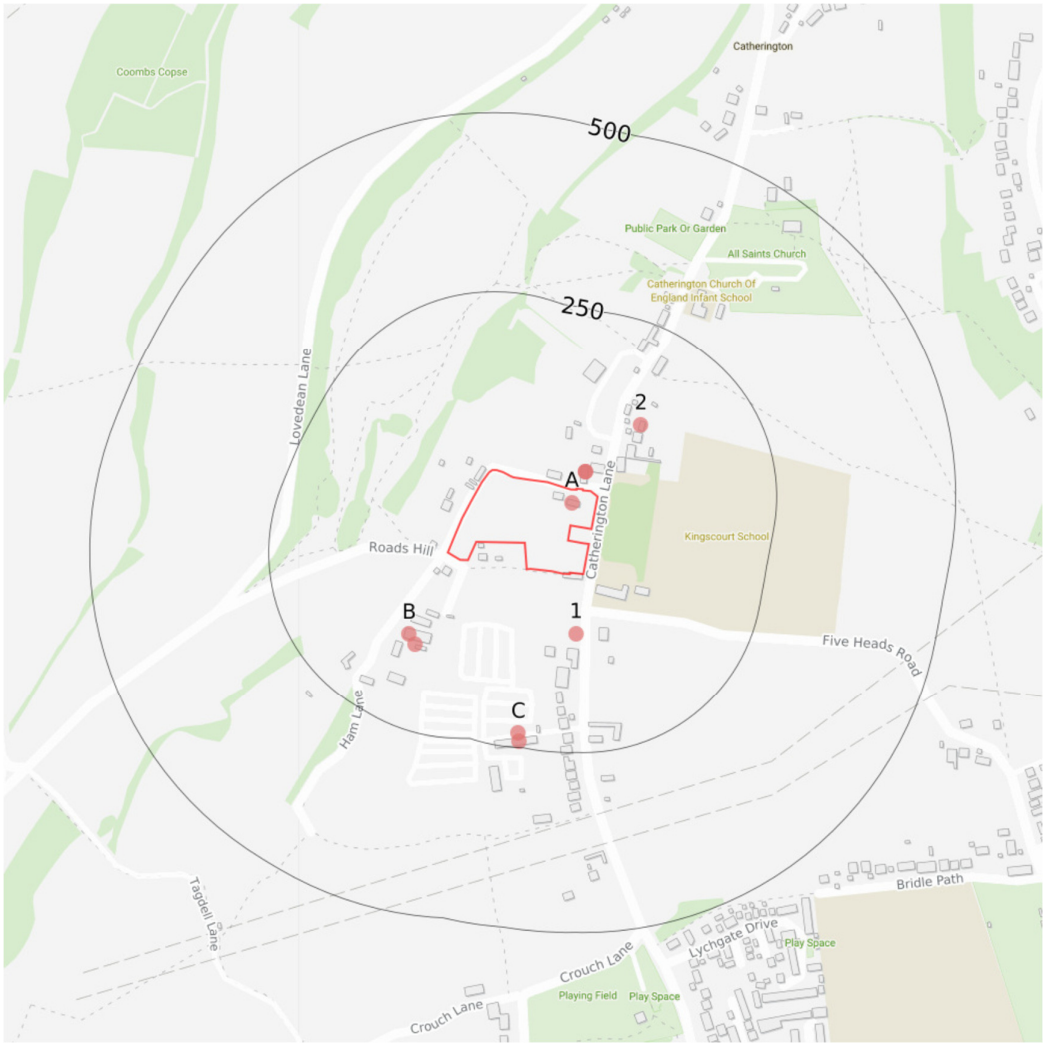


Table 1: Potentially Contaminative Current Surrounding Land Use

Reference	Distance m	Company	Activity
A	On site	M K Motors	Vehicle Repair, Testing and Servicing
A	25m N	Express Tooling Co and Cannon Car Audio	Engineers and Vehicle Parts
1	83m S	Electricity Sub Station	Electrical Feature
2	116m NE	P M Trading	New Vehicles
B	126SW	Pete's Airlink	Vehicle Hire
B	134m SW	FD Metal Works	Metal Workers
C	230m S	Catherington Business Park	Business Parks
C	241m S	A&G Caravans	Sports and Leisure

4.3 Petrol and Fuel Sites

There are no records of any petrol and/or fuel sites within 250m of the site.

4.4 Underground High Voltage Electricity Cables and High Pressure Gas Transmission Pipelines

There are no records of any such feature within 500m of the site.

4.5 Sites Determined as Contaminated Land

There are no records of any sites which are contained on the Contaminated Land Register under the Part2a Environmental Protection Act 1990.

4.6 Control of Major Accident Hazards

There are no records of any Control of Major Accident Hazards (COMAH) sites at or within 250m of the site.

4.7 Regulated Explosive Sites

There are no records of any Regulated Explosive Sites at or within 500m of the site.

4.8 Hazardous Substance Storage/Usage Sites

There are no records of any Hazardous Substance Storage/Usage Sites at or within 250m of the site.

4.9 Historical Licensed Industrial Activities

There are no records of any sites holding historical Integrated Pollution Control (IPC) permits. This regime has now been superseded.

4.10 Licensed Industrial Activities

There are no records of Part A(1) installation sites at or within 500m of the site.

4.11 Licensed Pollutant Release

There are no records of any licensed pollution releases within 500m of the site.

4.12 Radioactive Substance Authorisation

There are no records of any permits relating to any premise 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 has a varied current site use which includes a paddock and stabling on a fairly small scale, with a garage (servicing) and commercial yard used for storage. It would appear that the site has naturally developed in this way over a period of time. It is noted that the site is called 'The Dairy' so it is assumed that historically a farm was present. However, there is no real evidence currently of livestock barns, pens, milking parlours etc.

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

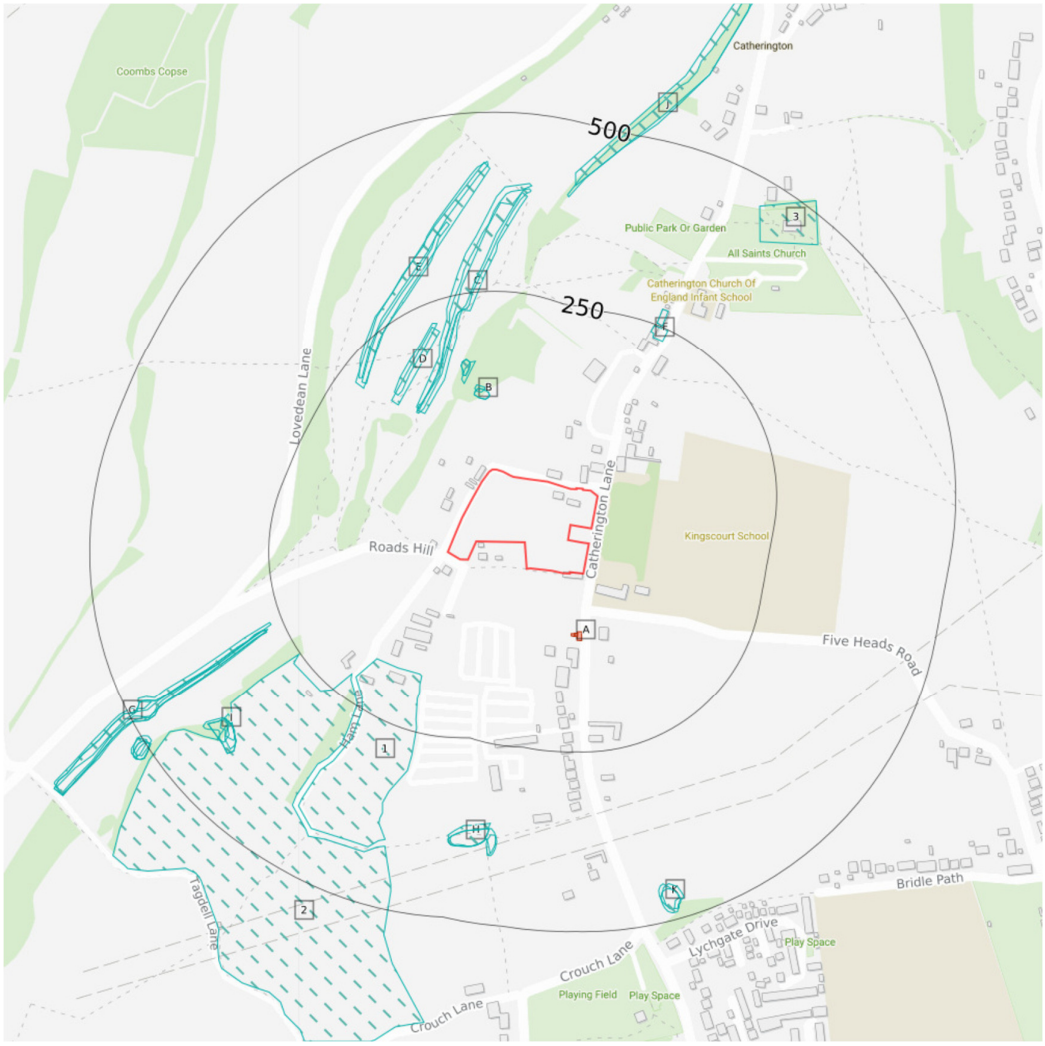
Map Year (Scale)	Site Use	Surrounding Land Use
1868 (1:2,500)	The site is shown as undeveloped and shown as an open field. There are no notable features shown on site.	The following notable features / changes are observed: **North:** There are some detached houses at the settlement of Catherington. There is a possible small pond located a short distance to the north east. Some apparent groundworks are shown to the north west in excess of 100m from the site. **East:** Woodland and open field. **South:** Parsonage Farm are located to the south of the site. Pond located 20m south west of the site boundary.
1897 (1:2,500)	Small building shown in the north eastern corner of the site.	The following notable features / changes are observed: **North:** Old Chalk Pit located 110m north west of the site. Smithy located 240m north east.
1909 (1:2,500)	No significant changes shown.	No significant changes to the surrounding area observed.
1932 (1:2,500)	No significant changes shown.	No significant changes to the surrounding area observed.

1968/69 (1:2,500)	Small building shown in the north eastern corner no longer shown. However one larger and three smaller units are now shown near the same north eastern corner.	The following notable features / changes are observed: **South:** Poultry Houses shown 140m south.
1974/76 (1:2,500)	Site area not shown	The following notable features / changes are observed: **South:** Small electrical substation site shown 90m south.
1993 (1:2,500)	Possible removal of two smaller buildings and replacement with a single unit. Unclear mapping.	The following notable features / changes are observed: **South:** White Gate Farm shown 100m south west.
2003 (1:1,250)	Site shown as containing three buildings	No significant changes to the surrounding area observed.

Prior to the late 1800's the site consisted of open field. Mapping of 1897 shows a small building in the north eastern corner of the site. By the 1960's a small collection of buildings are noted near the northern boundary. From this time to the current day a small number of buildings are shown in this same area, although the size, number and orientation is noted to change. On some mapping this is however unclear.

5.1.3 Potentially Contaminative Historical Uses

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



The following records are made of potentially contaminative historical industrial sites within 500m of the property.

Table 3: Potentially Contaminative Historical Land Uses

Distance (m)	Direction	Activity	Date
99 - 109	N	Old Chalk Pits	1908
121	NW	Unspecified Ground Workings	1895
126 - 166	N, NW	Old Chalk Pit	1895 - 1959
170	S	Nursery	1992
210	NW	Unspecified Ground Workings	1908 - 1933
217	SW	Nursery	1992
232	NE	Smithy	1895

Further detail is provided in Appendix B.

5.1.4 Historical Tank Database

There are no records of any historical tanks within 500m of the property.

5.1.5 Historical Energy Features Database

The following records of sites with historical energy features are known within 250m of the property.

Table 4: Historical Energy Features Database

Distance (m)	Direction	Activity	Date
81m	S	Electricity Substation	1993

5.1.6 Historical Petrol and Fuel Sites

There are no records of any historical petrol and/or fuel sites within 250m of the property.

5.1.7 Historical Garage and Motor Vehicle Sites

There are no records of historical garage and motor vehicle sites within 500m of the property.

5.1.8 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

There are no records of artificial and/or made ground shown at the site.

6.2 Superficial and Drift Geology

The British Geological Survey 1:50,000 Geological Map of Great Britain shows that there are recorded deposits of clay with flint formation also consisting of clay, silt, sand and gravel at the site. The superficial geology has a high to very low permeability rating.

6.3 Solid Geology

The British Geological Survey 1:10,000 Geological Map of Great Britain shows that the solid geology beneath, or within 50m, of the site is recorded as being of the Tarrant Chalk Member consisting of chalk. The bedrock has a very high permeability.

6.4 Mining

Information provided by the Coal Authority indicates that the site does not lies in or in proximity to a coal mining reporting area as defined by the Coal Authority.

No entries of any natural cavities are recorded for any site within 500m of the site.

A record of a ceased brit pit is made 89m north west of the site.

There is a record of a surface ground working recorded 20m north east and 21m south of the site referenced as pond. A unspecified pit is recorded 99m north.

There are no records of any underground workings located within 1000m of the site.

6.5 Non-coal Mining

There are records of potential non-coal mining features within 1000m of the site. On site, some sporadic underground mining of restricted extent may have occurred. However the potential for difficult ground conditions are unlikely.

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 Low.

6.8 Landslip/Slide

There are no records of any landslip event located within 500m of the site. Risk is Very Low.

6.9 Soluble Rocks

There is a high risk from soluble rocks at the site. Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.

6.10 Compressible Ground

The maximum Compressible Ground Hazard for the site has been rated by the BGS as Negligible. Compressibility and uneven settlement hazards are unlikely to be present.

6.11 Collapsible Rocks

The maximum Collapsible Rocks Hazard for the site has been rated by the BGS as Very Low.

6.12 Running Sand

There is a negligible 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 located in a radon area as between 1-3% of properties are above the Action Level. However no radon protection measures are necessary.

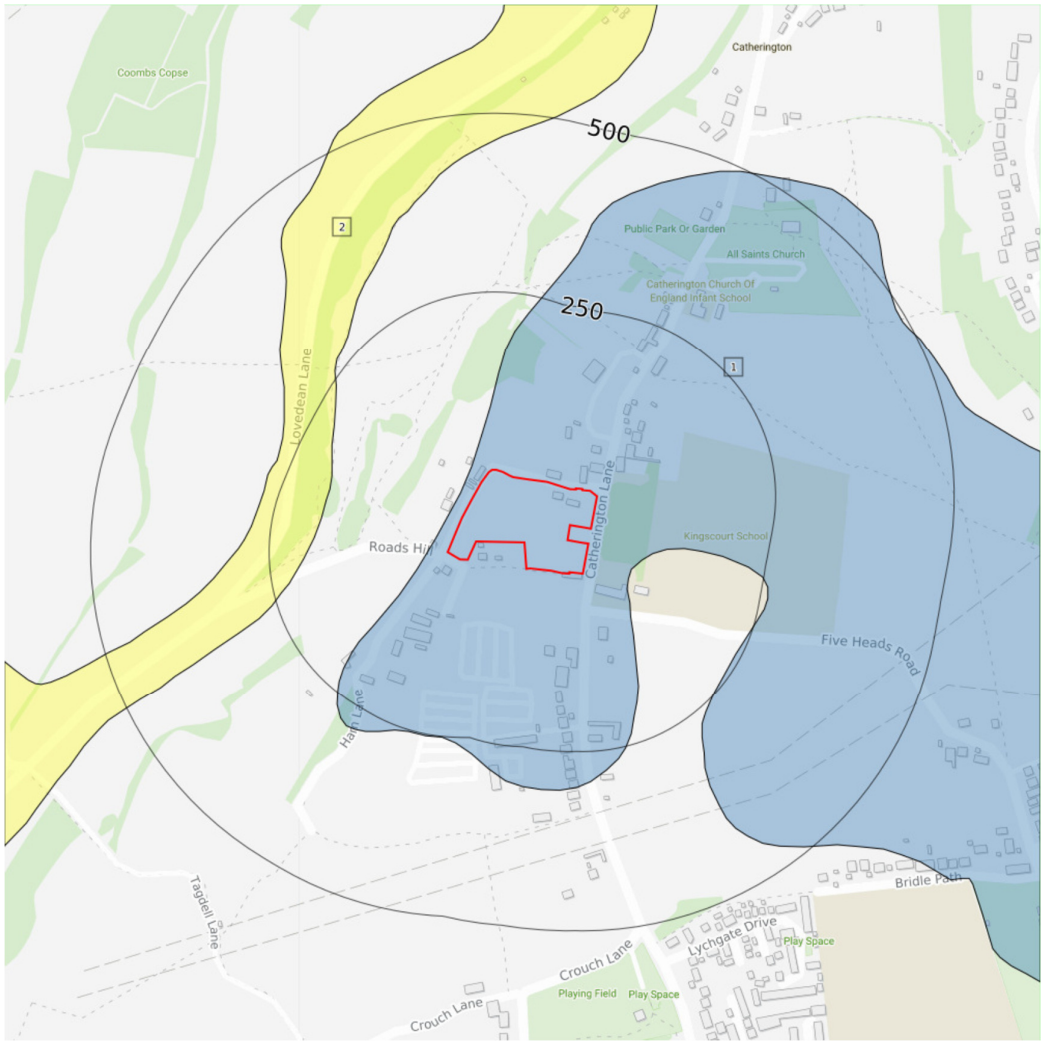
6.14 Background Soil Chemistry

It is recorded by the BGS that on site there is the potential for the following natural contaminants to be present: Arsenic 15mg/kg, Lead 100-200mg/kg, cadmium 1.8mg/kg, chromium 90-120mg/kg, nickel 15-30mg/kg.

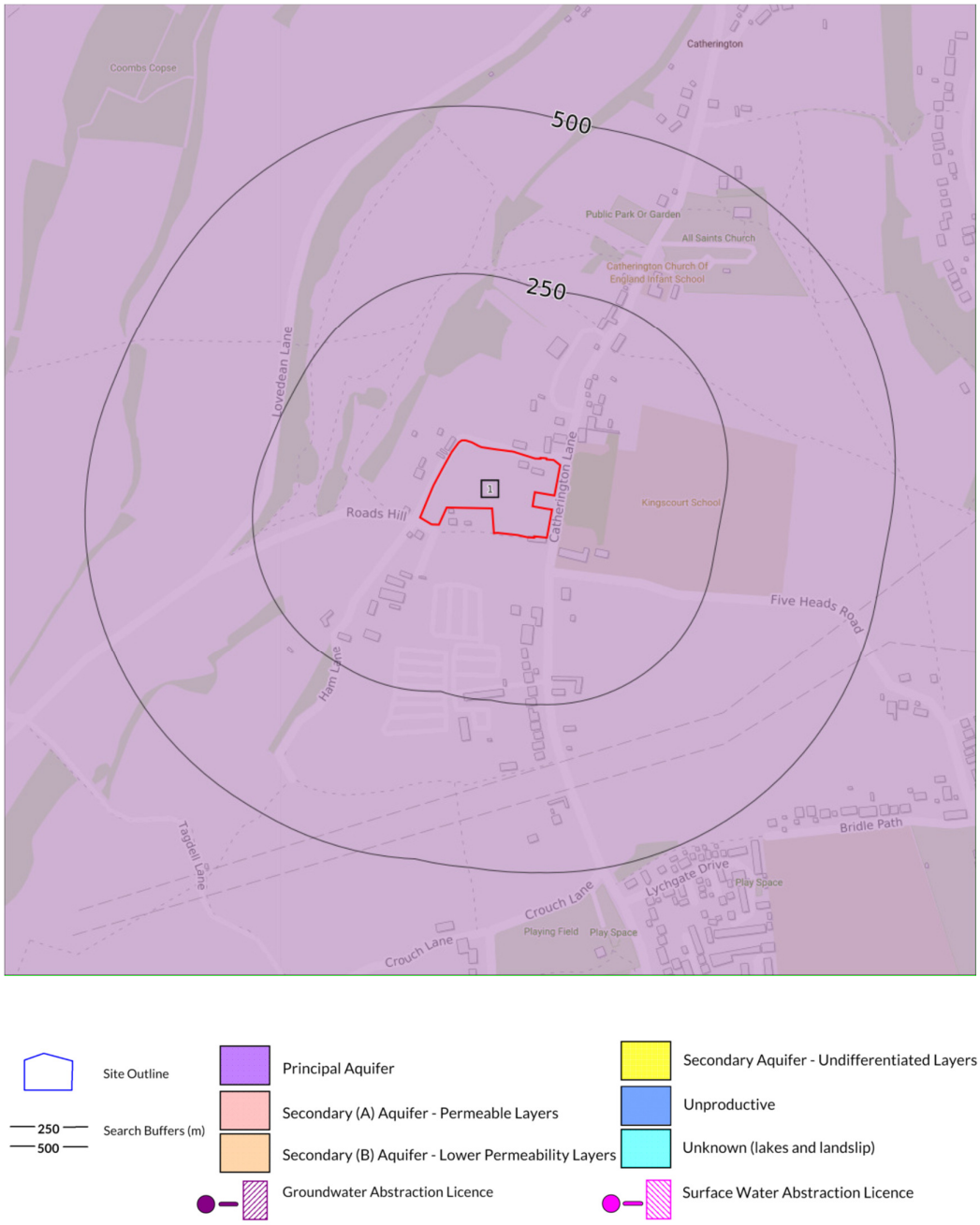
7.0 HYDROGEOLOGY

7.1 Groundwater Vulnerability and Soil Classification

The site is located on ground where the superficial aquifer is reported to be unproductive. The vulnerability of this aquifer is therefore negligible.



The aquifer within the bedrock at the site is classed as a principal aquifer which has a geology of a high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water/supply/river base flow on a strategic scale. The vulnerability of the bedrock aquifer is high through well connected fractures.



7.2 Groundwater Abstraction Licences

There are no groundwater abstraction licences issued within 1,000m of the site. The nearest active abstraction is 1,068m SW of the site.

7.3 Licensed Discharges to Controlled Waters

There are no records of any licensed discharges within 500m of the site.

7.4 Pollutant Release to Surface Waters (Red List)

There are no records of any licenses issued to sites at or within 500m of the site for a pollutant release to a surface water (Red List).

7.5 Pollutant Release to a Public Sewer

There are no records of any licenses issued to sites at or within 250m of the site for a discharge of special category effluent to the public sewer.

7.6 List 1 and List 2 Dangerous Substances

There are no records of any discharges of substances as identified on List 1 Dangerous Substance discharge as identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015 within 500m of the site.

7.7 Pollution Incidents

There are no records of any pollution incidents for any site within 250m of the property.

7.8 Pollution Inventory Substances

There are no records of any pollution inventory (substances) including reporting on annual emission of certain regulated substances to air, controlled waters and land at or within 500m of the site.

7.9 Pollution Inventory Waste Transfers

There are no records of pollution inventory (waste transfers) including includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given.

7.10 Pollution Inventory Radioactive Waste

There are no records of any pollution inventory (radioactive wastes) including reporting on annual releases of radioactive substances from a site.

7.11 Source Protection Zones

The site is located within a Zone 1 Inner Catchment Source Protection Zone.

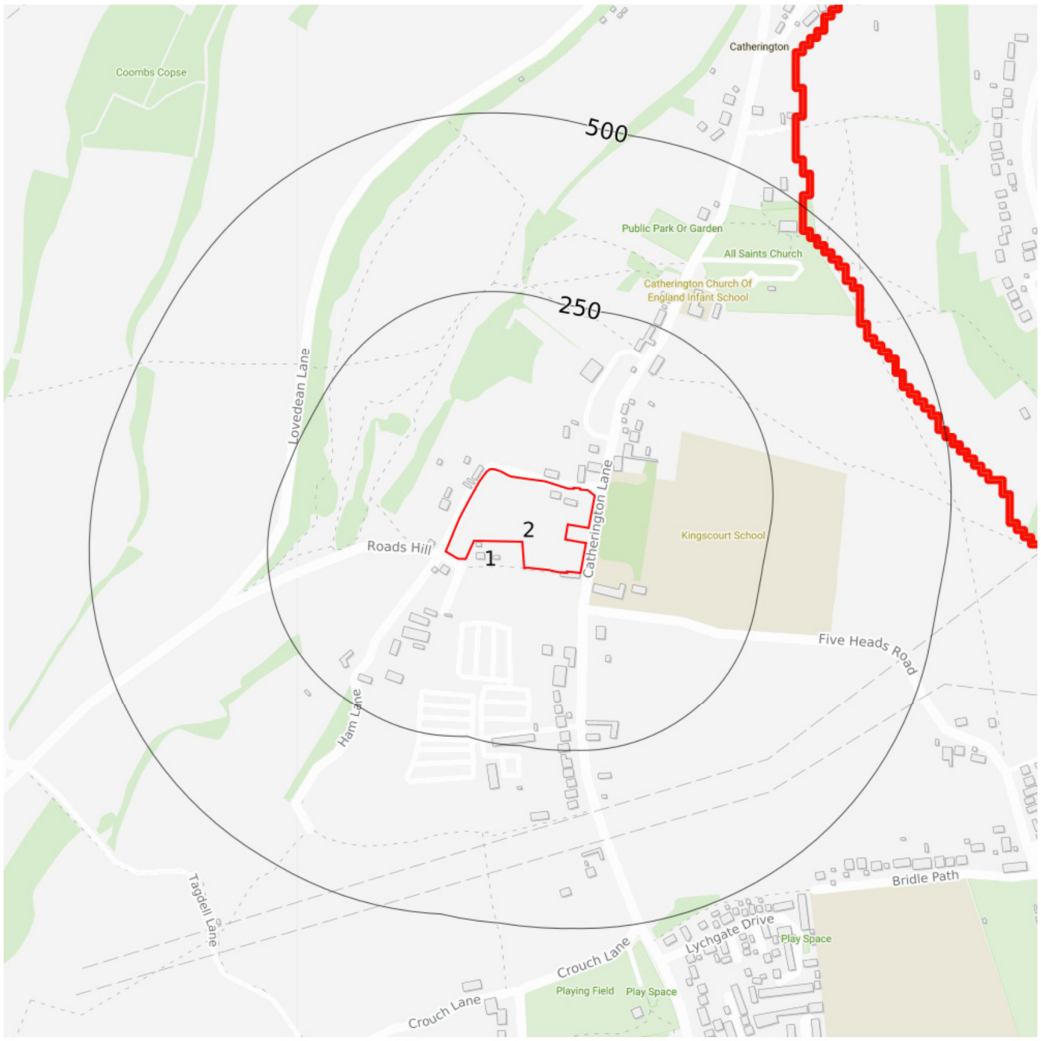
8.0 HYDROLOGY

8.1 Surface Waters

There are no reported surface water features located within 250m of the site.

8.1.1 Main Rivers

There are no records of any inland river not influenced by normal tidal actions within 250m of the site.



Site Outline
250
500
Search Buffers (m)

Watercourse type
Tidal River
Inland River
Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Foreshore
Drain or Transfer

Watercourse level
On ground surface
Underground or Elevated
Level unknown

General Quality Assessment: Biology
General Quality Assessment: Chemistry

8.2 Surface Water Abstraction Licenses

There are no active surface water abstraction licenses recorded for sites within 2,000m of the site.

8.3 Potable Water Abstraction Licenses

There are no active potable water abstraction licenses recorded for sites within 1,000m of the site. The nearest active licence relates to a site located 1,068m SW of the site.

8.4 Flooding

8.4.1 Risk of Flooding from Rivers and Seas (RoFRaS)

The site is not located on ground which is affected by flooding.

8.4.2 Historical Flood Events

There are no historical flooding events recorded within 250m of the site.

The Environment Agency Flood map (from rivers and the sea) shows that the site is not actually located within a Zone 2 and Zone 3 flood risk zone for fluvial (rivers).

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as less than 1 in 1000 (0.1%).

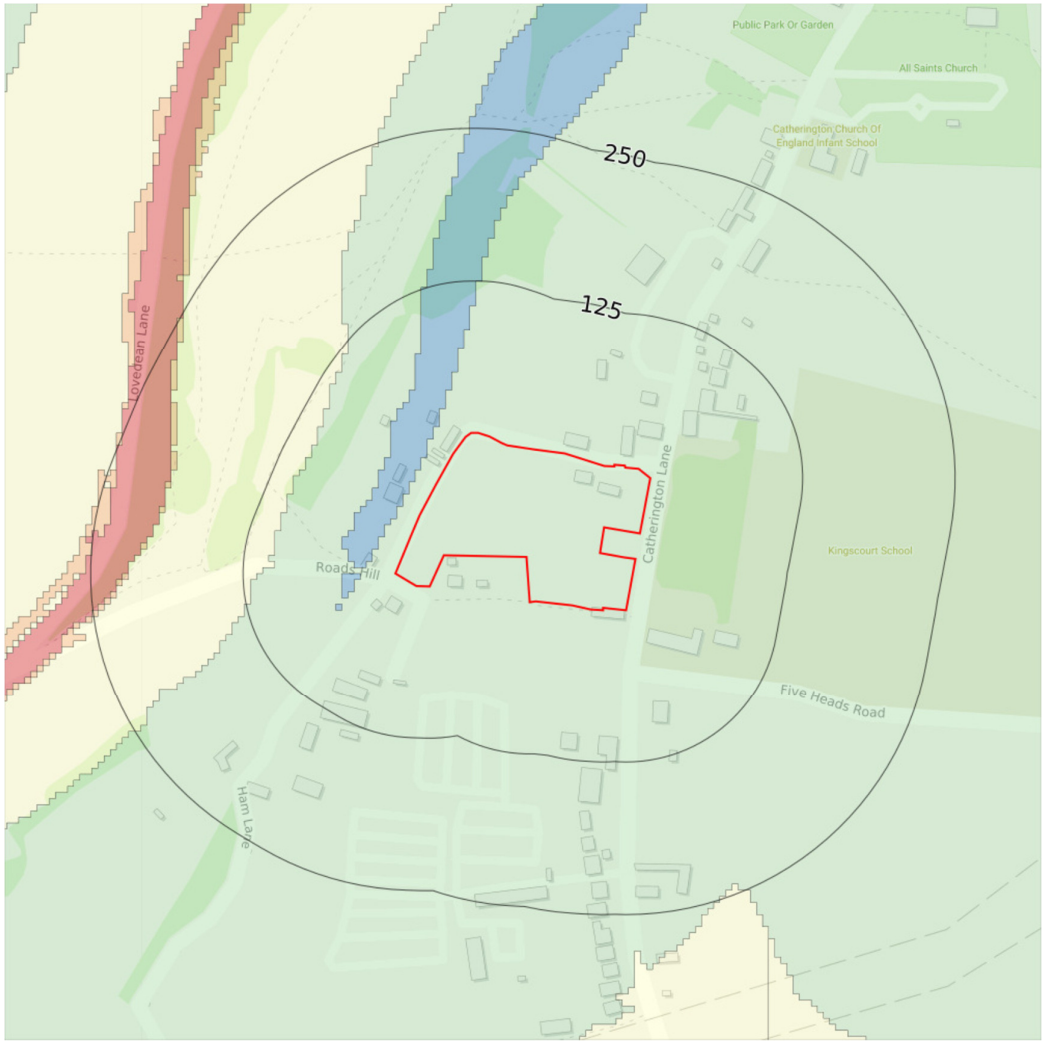
Environment Agency/Natural Resources Wales Zone 3 floodplains estimate the annual probability of flooding as less than 1 in 100 (1%).

8.4.3 Surface Water Flooding

There is a negligible risk of surface water flooding on site.

8.4.4 Groundwater Flooding

There is a low risk of groundwater flooding at the site.



8.4.5 Flood Defences

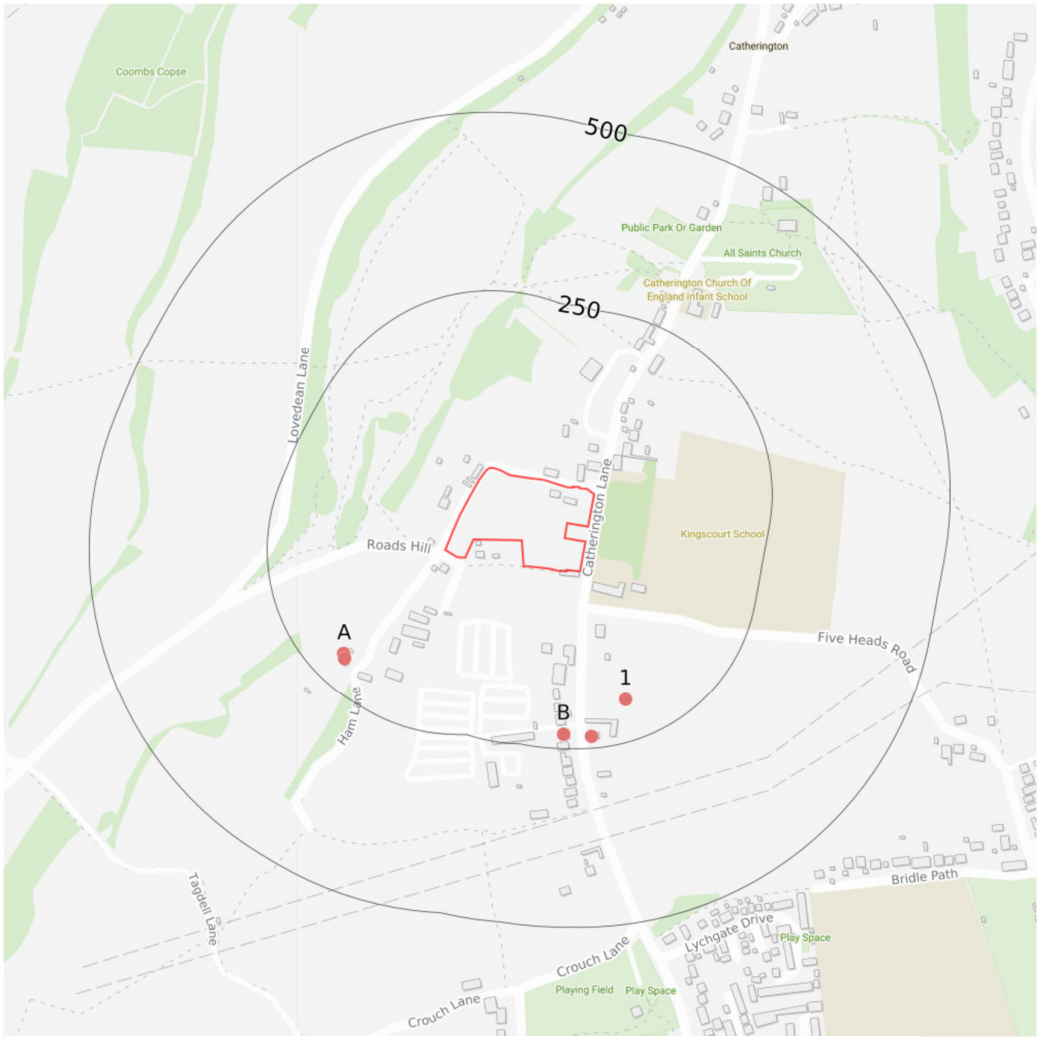
No Flood Defences are present within 250m of the site.

There are no areas benefitting 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.

9.0 WASTE

9.1 Landfill Sites



There are no records of any active or recent landfill site under Environment agency regulation within 500m of the site.

There are no records of any historical landfills sites as shown on data held by the DoE and / or BGS.

There are no records of any historical landfill sites as identified from Local Authority records within 500m of the site.

There are no records of any historical landfill sites as identified from Environment Agency records within 500m of the site.

There no records of Historical Waste Sites within 500m of the site.

There are no records of Licensed Waste Sites within 500m of the site.

There are a number of sites holding waste exemption notices within 500m of the site. The nearest, located 192m south of the site relating to the burning of waste in the open for agricultural purposes.

9.2 Pollution Inventory Substances

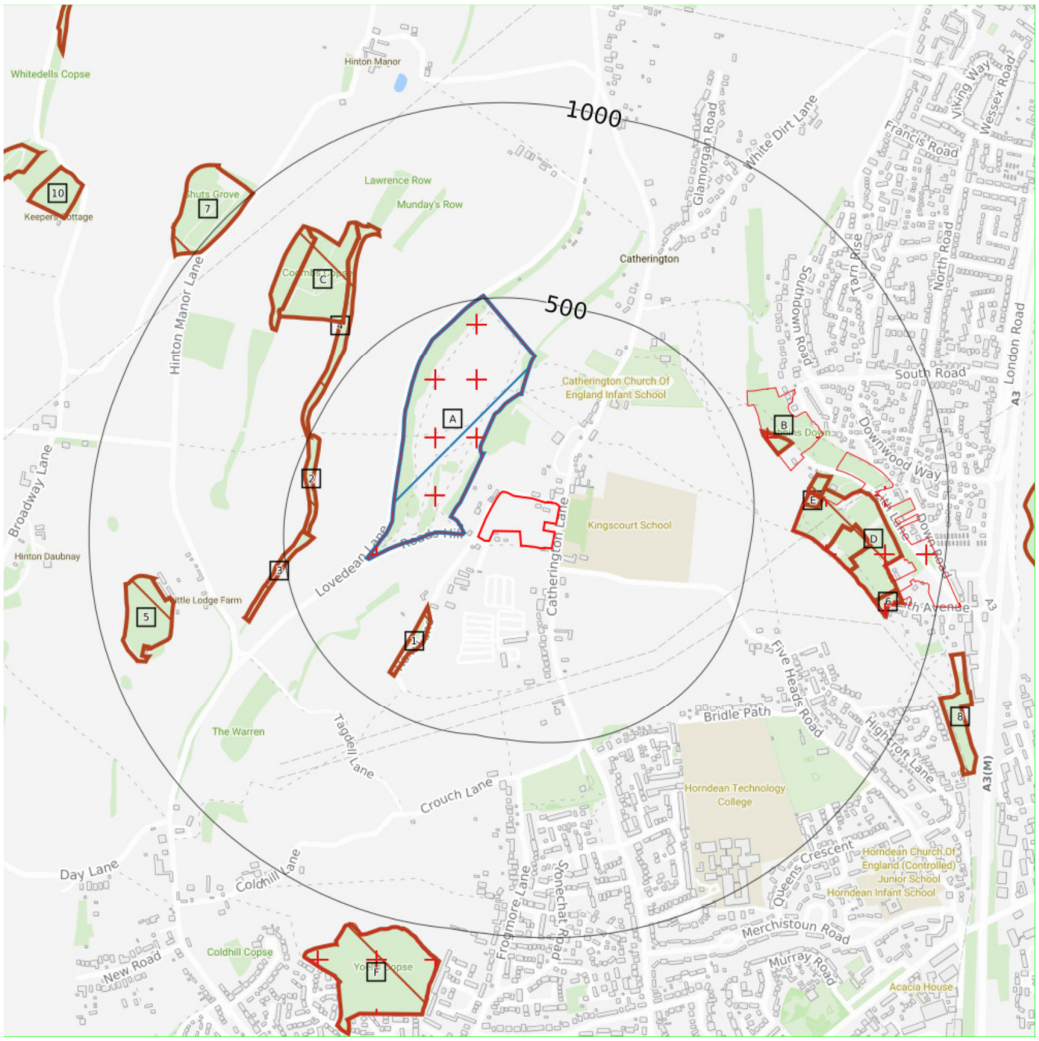
There are no records of any substances recorded on the pollution inventory for any site at or within 500m of the site.

9.3 Pollution Inventory Radioactive Waste

There are no records of any radioactive substances recorded for any site at or within 500m of the site.

10.0 DESIGNATED ENVIRONMENTALLY SENSITIVE SITES

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



10.1 Site of Special Scientific Interest

Catherington Down located 38m west of the site is recorded as a SSSI.

10.2 Local Nature Reserve

Catherington Down located 38m west of recorded as a LNR.

10.3 Designated Ancient Woodland

222m south west of the site is an unknown ancient and semi-natural woodland.

10.4 Nitrate Vulnerable Zone

The site is located on ground which is susceptible to the application of nitrates.

11.0 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

11.1 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 the new LCRM regulations which is the latest guidelines issued by Government Environment Agency Published on 08/10/2020. 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.

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			
		Severe	***Medium***	***Mild***	***Negligible***
Probability	**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.

11.2 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.

11.3 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.

11.4 Potential Receptors

The following potential receptors have been identified for the site:

Human Receptors (H)	Site workers, adults. Child/Adult future site users.
Flora and Fauna (FL, FA)	Future, on and off-site Fauna and Flora
Water Resources (SW, GW)	Underlying bedrock aquifer,
Site Infrastructure (SI)	Existing and future foundations and drainage services
Environmental	Nitrate Vulnerable Zone.

Under the proposals the site is to be developed for industrial purposes. The Critical Human Receptor for this site will be a **young female child who may reside at the site.**

11.5 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 long term residential use.** This is detailed in the table below:

Table 5 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**
Historical use of the site, Farming	On site	Made Ground, Fuels/Oils Parking Fire Impacts (poss) Organic wastes	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Medium	Medium	Medium	- Long term use as a farm - dairy - Possible use of fuels, oils on site - Possible vehicle maintenance (tractors etc) - Probable made ground beneath, around buildings - Organic rich surface soils - **Further assessment required.**
Current use of the site, Soil Bunds	On site	Unknown material	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Medium	Medium	Medium	- Unknown materials, inert and possible organics wastes in granular soils - **Further assessment required.**
Current use of site Garage, workshop	On site	Oils, Fuels, Paints, Solvents	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild to Medium	Medium	Medium	- Located on hardstanding so some protection, but some minor staining seen - One garage not inspected - Possible asbestos on building roofs and elsewhere - **Further assessment required.**
Current use of site Made Ground	On site	Unknowns	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild to Medium	Medium	Medium	- Previous buildings on site; - Possibility of made ground around former structures - **Further assessment required.**
Current use of site Made Ground	On site	Organic animal wastes	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild	Medium	Medium	- Long standing generation of organic wastes from horses, cows et - **Further assessment required.**

Current use of site Asbestos	On site	Asbestos	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild	Medium	Medium	- Asbestos possible/likely on roof and building structure - **Further assessment required.**
Current use of site Commercial Yard	On site	Unknowns possible organic / inorganic	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Medium	Medium	Medium	- Use of industrial yard for storage of unknown materials - **Further assessment required.**
Express Tooling Co	25m N	Metals	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 to Medium	- Low risk - Tooling - storage - **No further assessment required.**
Electricity Sub Station	83m S	Made Ground, PCBs	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild	Medium	Low to Medium	- Located down gradient of site - Low risk of pathway - **No Further assessment required as part of required investigation above.**
FD Metal Works	134m SW	Metals, Made Ground	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 to Medium	- Located down gradient of site - Low risk of pathway - **No Further assessment required as part of required investigation above.**
Catherington Business Park	230m S	Organic and Inoranics	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 to Medium	- Located down gradient of site - Low risk of pathway - **No Further assessment required as part of required investigation above.**
Smithy	232m NE	Metals	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 to Medium	- Located at significant distance from site - Little risk of pathway; - **No further assessment required.**
Commercial Yard	Adjacent West	Oils, Fuels, Made Ground	W-O, W-I, W-D, O-O, O-I, O-D, FLPU, FaOP SWM, GWM	H, SW, GW, FL, FA	Mild to Medium	Medium	Low to Medium	- Located at distance sufficient to reduce pathway risk - Low risk of organic ground gas - **No further assessment required.**

12.0 CONCEPTUAL SITE MODEL

The model assessment has been made on the understanding that the site is used for <u>Residential Purposes</u>. 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 6: 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 of acute impact **No further assessment required.**
	Ingestion and dermal contact	Organic or inorganic contaminants	Medium – risk of unknown materials in above ground bunds, shallow soils **Further assessment required.**
Future site users	Inhalation	Organic vapours arising from on-site sources and off-site sources	Medium – Range of possible contamination sources with sensitive proposed land use. **Further assessment required.**
	Ingestion and dermal contact	Shallow soil contamination from potential on-site and/or migratory off-site.	Medium – Range of possible contamination sources with sensitive proposed land use. **Further assessment required.**
	Direct	Radon	Low
Neighbouring Residents	Inhalation	Disturbed vapours arising from on-site development	Low – no neighbours in locality likely to be impacted **No further assessment required.**
	Ingestion and dermal contact	Shallow soil contamination from on-site sources	Low – no neighbours in locality likely to be impacted

		being disturbed through development and transposed off-site through air.	**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	Possible excavation required (services) ; Principal bedrock aquifer. Possible made ground and shallow soil impacts **Assessment required to determine risk from shallow soils to deeper aquifer.**
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 close surface water source **No further assessment required.**
Local flora and fauna	Uptake from soil and Ingestion	Shallow soil contamination from off site and on site sources	Possible risks in shallow soils. **Further assessment required.**

The Conceptual Site Model shows that there are a possible number of significant sources of potential contamination expected and so further assessment will be required.

13.0 CONCLUSIONS AND RECOMMENDATIONS

Following a site walkover conducted on 30th October 2020 a conceptual model of the site was developed which demonstrates a number of significant potential pollutant linkages and through the risk assessment it has not been possible to prove at this stage with the required degree of certainty that the site is uncontaminated for the proposed end use. This relates to the historical use of the site for agriculture (dairy farming) and the legacy of contamination that this may have left. Also, current uses of the site may have given rise to made ground at the site and it is known that spoils of soils of an unknown nature are present in at least two locations. Current site use includes use of a workshop and garage (which was inaccessible during the site walkover visit). The use of oils and fuels in this area cannot be currently discounted. The north eastern corner of the site has been used as a commercial storage yard where miscellaneous materials are stored. The historical use of this area and the materials which may have been stored are unknown. Therefore further work is required in order to confirm and characterize the presence or otherwise of contamination on site.

This will take the form of an intrusive investigation and further generic or detailed risk assessment. The assessment should target those areas of the site where contamination is most likely (north eastern storage compound, workshop, garage block, above ground bunds etc) as well as obtain data from proposed garden and soft landscaped areas.

If the pollutant linkages are confirmed as unacceptable then some form of remediation will be required. Should this be required we believe that the level of remediation required should be viable, being relatively simple and low key. Any remediation will need to be undertaken to the satisfaction of the Local Authority and any other Regulatory Body involved in the development. This is normally undertaken by the formulation of an Options Appraisal (including Remediation Strategy), Implementation Plan, Verification Plan, Monitoring and Maintenance Plan, and Verification Report.

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.

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