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**DESK STUDY /
PRELIMINARY RISK ASSESSMENT
REPORT**

**THE BULMERSHE SCHOOL
WOODLANDS AVENUE
WOODLEY
WOKINGHAM
RG5 3EU**



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EXECUTIVE SUMMARY

Rivington Street Studio ('The client') commissioned Jomas Associates Ltd to undertake a desk study and preliminary risk assessment at Bulmershe School, Woodlands Avenue, Woodley, Wokingham, RG5 3EU. The principal objectives of the study were as follows:

- To determine the nature and where possible the extent of contaminants potentially present at the site.
- To establish the presence of significant contaminant linkages, in accordance with the procedures set out within the Environment Agency (EA) land contamination risk management (LCRM) guidance and relevant guidance within the National Planning Policy Framework (NPPF).
- To assess whether the site is safe and suitable for the purpose for which it is intended or can be made so by remedial action.

It should be noted that the table below is an executive summary of the findings of this report and is for briefing purposes only. Reference should be made to the main report for detailed information and analysis.

Desk Study	
Current Site Use	Land associated with Bulmershe School, predominantly undeveloped with tennis courts encroaching from the west and car park in the south.
Proposed Site Use	The proposed development is to comprise the construction of a new building in the north of site to provide classrooms alongside associated landscaping.
Site History	A review of earliest available (1871) historical maps indicates that the site was undeveloped, possibly woodland. No significant changes are shown on the maps, beyond removal of the trees, throughout the mapped history however from 1963 the site appears to be associated with the neighbouring school. Aerial photography shows tennis courts and car parking on site from 2010, with small structures in the east. By 2019 the structures are no longer shown on site. The immediately surrounding areas were vacant until 1960s when the Bulmershe School structures are shown to the east, with residential development in the wider area also shown from this time. The only industrial use of note in the vicinity is a gasometer identified on the earliest 1871 map 150m southeast, identified as "disused" by 1897. Given the age of this feature and distance from site it is not considered to pose a significant risk to the site.
Site Setting	The British Geological Survey indicates that the site is directly underlain by solid deposits of the London Clay Formation. No artificial deposits are reported within the site. The solid deposits underlying the site are identified as a Secondary A Aquifer. A review of the Enviro+Geosight Report indicates that there are no source protection zones within 500m of the site. There are no active groundwater, surface water or potable water abstractions reported within 1km of the site. The nearest surface water feature is an inland river reported 245m south.

Desk Study	
	The is within Environment Agency Zone 2 and 3 floodplains.
Potential Sources	• Potential for Made Ground associated with previous development operations – on site (S1)
Potential Receptors	• Construction and maintenance workers • Neighbouring and future site users • Buried foundations and services
Preliminary Risk Assessment	The risk estimation matrix indicates a “low/moderate” to “low” risk. Due to a lack of identified sources, no further ground investigation is considered necessary at this stage. A watching brief should be maintained throughout all below ground works and any evidence of potential contamination should be reported to a suitably qualified environmental consultant. Such evidence could include (but not limited to) extensive Made Ground, unusual odours, colours, sheens, buried containers or evidence of household waste or other putrescible materials.
Potential Geological Hazards	The Groundsure data identifies only “very low” to “negligible” risks – for full details see Section 4 It is noted that the Groundsure report highlights a potential risk from chalk mining activities; however, review of the historical mapping has not highlighted any evidence of mining activities or features in the area, and therefore chalk mining is not considered to pose a significant risk to the site. Existing hardstanding and foundations will need to be removed and grubbed out ahead of the development. This may require the use of hydraulic breaking. The clearance of the site, including removal of foundations and services is likely to increase the depth of Made Ground on the site. Foundations should not be formed within Made Ground or organic rich material (e.g. topsoil) due to the unacceptable risk of total and differential settlement. The BGS notes disseminated pyrite within the London Clay Formation and as such may be a source of elevated sulphate results. If such levels are noted, sulphate resistant concrete may be required. The resultant thickness of Made Ground and the potential for clays beneath the proposed footprint means that a suspended floor slab may be required. A geotechnical investigation is recommended to inform foundation design.
Recommended Further Work	A geotechnical investigation is recommended to inform foundation design. Due to a lack of identified sources, no further geo-environmental ground investigation is considered necessary at this stage. A watching brief should be maintained throughout all below ground works and any evidence of potential contamination should be reported to a suitably qualified environmental consultant. Such evidence could include (but not limited to) extensive Made Ground, unusual odours, colours, sheens, buried containers or evidence of household waste or other putrescible materials.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Rivington Street Studio ("The Client") has commissioned Jomas Associates Ltd, to assess the risk of contamination posed by the ground conditions at a site referred to as Bulmershe School, Woodlands Avenue, Woodley, Wokingham, RG5 3EU, prior to redevelopment of the site.

1.1.2 To this end a desk-based assessment has been undertaken in accordance with Jomas Associates Limited's email proposal dated 16th December 2025.

1.2 Proposed Development

1.2.1 The proposed development is to comprise the construction of a new building in the north of site to provide classrooms alongside associated landscaping.

1.2.2 A plan of the proposed development is included in Figure 4.

1.2.3 For the purposes of the contamination risk assessment, the proposed development is classified as 'public open space - residential' (POS-resi) as there is not a specific "school" end use with published guidance, and POS-resi is considered the most appropriate.

1.2.4 For the purpose of geotechnical assessment, it is considered that the project could be classified as a Geotechnical Category (GC) 2 site in accordance with BS EN 1997 Part 1. GC 2 projects are defined as involving:

- Conventional structures.
- Quantitative investigation and analysis.
- Normal risk.
- No difficult soil and site conditions.
- No difficult loading conditions.
- Routine design and construction methods.

1.2.5 This will be reviewed at each stage of the project.

1.3 Objectives

1.3.1 The objectives of Jomas Associates Limited's investigation were as follows:

- To present a description of the present site status, based upon the published geology, hydrogeology and hydrology of the site and surrounding area.
- To review readily available historical information (i.e., Ordnance Survey maps and database search information) for the site and surrounding areas, with respect to potentially contaminative land uses.

- To provide an assessment of the environmental sensitivity at the site and the surrounding area, in relation to any suspected or known contamination which may significantly affect the site and the proposed development.
- To assess the potential presence of significant pollutant linkages, in accordance with the procedures set out within Part IIA of the Environmental Protection Act 1990, associated statutory guidance and current best practice including the EA land contamination risk management (LCRM) guidance.
- To identify and assess geotechnical issues that may affect the site.

1.4 Scope of Works

1.4.1 The following tasks were undertaken to achieve the objectives listed above:

- A walkover survey of the site.
- A desk study, which included the review of third party historical Ordnance Survey maps and an environmental database report (attached in Appendix 2 and Appendix 3).
- The compilation of this report, which collects and discusses the above data, and presents an assessment of the site conditions, conclusions and recommendations.

1.5 Supplied Documentation

1.5.1 Jomas Associates have not been supplied with any previously produced reports at the time of writing this report.

1.6 Limitations

1.6.1 Jomas Associates Ltd has prepared this report for the sole use of Rivington Street Studio in accordance with the generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of Jomas Associates Limited. No other third-party warranty, expressed or implied, is made as to the professional advice included in this report. This report must be used in its entirety.

1.6.2 The records search was limited to information available from public sources; this information is changing continually and frequently incomplete. Unless Jomas Associates Limited has actual knowledge to the contrary, information obtained from public sources or provided to Jomas Associates Limited by site personnel and other information sources, have been assumed to be correct. Jomas Associates Limited does not assume any liability for the misinterpretation of information or for items not visible, accessible, or present on the subject property at the time of this study.

1.6.3 Whilst effort has been made to ensure the accuracy of the data supplied, and analysis derived from it, there may be conditions at the site that have not been disclosed by

the investigation and could not therefore be taken into account. As with any site, there may be differences in soil conditions between exploratory hole positions. Furthermore, it should be noted that groundwater conditions may vary due to seasonal and other effects and may at times be significantly different from those measured by the investigation. No liability can be accepted for any such variations in these conditions.

- 1.6.4 Any reports provided to Jomas Associates Limited have been reviewed in good faith. Jomas Associates Limited cannot be held liable for any errors or omissions in these reports, or for any incorrect interpretation contained within them.
- 1.6.5 This investigation and report have been carried out in accordance with the relevant standards and guidance in place at the time of the works. Future changes to these may require a re-assessment of the recommendations made within this report.
- 1.6.6 *Our investigations exclude surveys to identify the presence of injurious and invasive weeds.*
- 1.6.7 ***This report is not an engineering design and the figures and calculations contained in the report should be used by the Structural Engineer, taking note that variations may apply, depending on variations in design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.***

2 SITE SETTING

2.1 Site Information

2.1.1 The site location plan is appended to this report in Figure 1, Appendix 1.

Table 2.1: Site Information

Name of Site	Bulmershe School
Address of Site	Woodlands Avenue Woodley Wokingham RG5 3EU
Approx. National Grid Ref.	475251,1743338
Site Area (Approx)	0.3ha
Site Occupation	School
Local Authority	Wokingham Borough Council

2.2 Walkover Survey

2.2.1 A site walkover survey was undertaken by Jomas Associates on 26th January 2026.

Table 2.2: Site Description

Area	Item	Details
On-site:	Current Uses:	Site is predominantly vacant land associated with Bulmershe School. Car parking and a small electrical substation were identified in southeast of site. A tennis court encroaches into the west of site.
	Evidence of historic uses:	There was no evidence of historic uses of the site.
	Surfaces:	Majority of the site is soft cover. Car parking in south and tennis court in west are asphalt hardstanding.
	Vegetation:	Vegetation on site is predominantly grass, with trees and small bushes in the south.
	Topography/Slope Stability:	Slight ascending slope from south to north when approaching the site from Star Road.
	Drainage:	Manholes observed in the south of site. No obvious evidence of drainage issues.
	Services:	Electricity substation noted in the south of site, and floodlights serving adjacent sports courts.
	Controlled waters:	No controlled waters were noted on site.
	Tanks:	No tanks were noted on site.
	North:	Field

Area	Item	Details
Neighbouring land:	East:	Basketball court, Bulmershe School
	South:	Star Road, Addlington School
	West:	Sports pitches.

- 2.2.2 Key features noted during the walkover are shown on a site walkover plan in Figure 2, together with site photos, in Figure 3.

2.3 Historical Mapping Information

- 2.3.1 The historical development of the site and its surrounding areas was evaluated following the review of a number of Ordnance Survey historic maps, procured from Groundsure, and provided in Appendix 3 of this report.

- 2.3.2 A summary produced from the review of the historical map is given in Table 2.3 below. Distances are taken from the site boundary.

Table 2.3: Historical Development

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1871-72 1:2,500	Site appears to be undeveloped, possibly woodland.	Surrounding areas appear to be predominantly undeveloped woodland, with agricultural land to the north. Several structures are shown from 150m southeast including gasometer .
1897-1900 1:10,560/2,500	No significant changes.	Gasometer is identified as "disused". Railways shown 750m north and 1km southwest, with residential style development beyond. Surrounding areas predominantly undeveloped with occasional farm and residential style structures.
1910-13 1:2,500/10,560	No significant changes.	No significant changes.
1932-38 1:2,500/10,560	No significant changes.	Allotment gardens shown from 100m north. Extensive developments underway, predominantly residential in appearance, from 250m northwest and 500m east and west.
1956-62 1:1,250/10,560	Site appears completely vacant, woodlands no longer shown.	Trees/woodland no longer shown on surrounding land. Gasometer structure no longer shown. Extensive residential developments shown in the wider surroundings.

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1963-68 1:1,250	Site remains vacant but appears to be playing fields associated with neighbouring school.	Structures identified as "The Bulmershe School" shown immediately east of site. Residential structures shown from 100m east.
1972-79 1:1,250/10,000	No significant changes.	Extensive residential style developments shown from 10m east. Bulmershe Centre with tennis courts shown 150m southeast. Works shown ~1km northwest, identified as power station by 1979.
1986-93 1:10,000/1,250	No significant changes.	No significant changes.
2001/03 1:1,250/10,000	No significant changes.	No significant changes.
2010/15 1:10,000	No significant changes.	Two new structures shown adjacent the east and west of the south of the site, assumed associated with the school. Large structure shown 25m south of site identified as New Addington School.
2025 1:10,000	No significant changes.	New structure shown adjacent to the east of the centre of site, assumed associated with the school. New structures shown south of site, assumed associated with the New Addington School.

Potentially polluting/contaminating uses/activities shown in **bold**

- 2.3.3 Aerial photographs supplied as part of the Groundsure Enviro+GeoInsight report range from 1999 to 2022. These show the site vacant in 1999 but encroaching into the school grounds to the east. By 2010, a tennis court is shown encroaching into site from the west, with small structures in the east and car parking is shown in the south. Sports pitches are also shown adjacent to the west. By 2019 the structures are no longer shown in the east, and a structure is shown adjacent to the eastern boundary.

2.4 Past Land Use

- 2.4.1 Groundsure provide some information on past land use on and in the vicinity of the site. Table 2.4 below summarises the information provided, which is presented in further detail in the Enviro+Geoinsight in Appendix 2. Where the identified features have appeared on more than one map they have been counted multiple times and therefore the reported numbers may be higher than the actual count.

Table 2.4: Past Land Use

Type of Use	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Historical Industrial Land Uses	None reported	8No reported; nearest 154m southwest for a disused gasometer (1932)	✓
Historical Tanks	None reported	9No reported; nearest 138m southeast as an unspecified tank	✓
Historical Energy Features	None reported	11No reported; nearest 51m northeast as an electricity substation	X
Historical Petrol Stations	None reported	None reported	X
Historical Garages	None reported	5No reported; nearest 447m north	X
Historical Military Land	None reported	None reported	X

* From a land contamination/site development perspective

2.5 Landfill, Waste and Potentially Infilled Surface Ground Workings

2.5.1 The Groundsure Enviro+Geoinsight Report provides information on active and historical landfills and waste sites. It also provides information on historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface; these features may or may not have been subsequently infilled. The following section summarises the information collected from the available sources.

Table 2.5: Landfill, Waste and Potentially Infilled Ground Surface Workings

Type of Consent/Authorisation	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Active or Recent Landfill	None reported	None reported	X
Historical Landfill	None reported	None reported	X
Historical Waste Sites	None reported	None reported	X
Licensed Waste Sites	None reported	None reported	X
Waste Exemptions	None reported	3No reported; nearest 418m northeast for use of waste in construction	X
Potentially Infilled Surface Ground Workings	None reported	Worked ground reported 208m south.	X

* From a land contamination/site development perspective

2.6 Current Industrial Land Use

2.6.1 The Groundsure Enviro+Geoinsight Report also provides information on various records relating to current industrial land use on and in the vicinity of the site. The following section summarises the information collected from the available sources.

Table 2.6: Current Industrial Land Use

Type of Consent/Authorisation	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Recent Industrial Land Uses	None reported	7No. reported; nearest 44m northeast for chimneys. Other uses include electricity substations, and pylons.	X
Current or Recent Tanks	None reported	1No reported as a roofed storage tank 32m southwest.	X
Current or Recent Petrol Stations	None reported	None reported	X
High Voltage Electricity Cables	None reported	None reported	X
High Pressure Gas Pipelines	None reported	None reported	X
Sites Determined as Contaminated Land	None reported	None reported	X
Control of Major Accident Hazards (COMAH) and Notification of Installations Handling Hazardous Substances (NIHHS) Sites	None reported	None reported	X
Regulated Explosive Sites	None reported	None reported	X
Hazardous Substance Storage/Usage	None reported	None reported	X
Historical Licensed Industrial Activities	None reported	None reported	X
Licensed Industrial Activities	None reported	None reported	X
Licensed Pollutant Release	None reported	None reported	X
Radioactive Substance Authorisations	None reported	None reported	X
Licensed Discharge to Controlled Waters	None reported	None reported	X
Pollutant Release to Surface Waters (Red List)	None reported	None reported	X
Pollutant Release to Public Sewer	None reported	None reported	X
List 1 and List 2 Dangerous Substances	None reported	None reported	X
Pollution Incidents	None reported	None reported	X
Pollution Inventory Substances	None reported	None reported	X
Pollution Inventory Waste Transfers	None reported	None reported	X
Pollution Inventory Radioactive Waste	None reported	None reported	X

* From a land contamination/site development perspective

2.7 Tunnels and Railways

2.7.1 The Groundsure Enviro+Geosight Report provides information on railway tunnels and railways on and within the vicinity of the site, as summarised in the table below.

Table 2.7: Tunnels and Railways

Feature	On site	Off-site (within 250m of site, unless stated otherwise)	Potential to Impact Site*
Underground Railways (London)	None reported	None reported	X
Underground Railways (Non-London)	None reported	None reported	X
Railway Tunnels	None reported	None reported	X
Historical Railway and Tunnel Features	None reported	None reported	X
Royal Mail Tunnels	None reported	None reported	X
Railways, Crossrail and HS2	None reported	None reported	X

* From a land contamination/site development perspective

2.8 Previous Site Investigations

2.8.1 Jomas Associates are not aware of any previous site investigations undertaken at the site prior to the writing of this report.

2.9 Planning Information

2.9.1 A review of the local authority's planning portal was undertaken on xxx at Insert link.

2.9.2 A ground investigation report was found that relates to a planning application approximately 50m southwest of site (report ref. LA18001 CL 001, by Subadra Consulting Ltd dated November 2018). This relates to planning application number 190881.

2.9.3 The reader is referred to the report for full details but the following salient information was recorded.

Table 2.8: Salient Report Information

Summary Information	
Brief scope	4No boreholes to 13.8mbgl 1No return gas and groundwater monitoring visit. Laboratory testing,
Ground conditions	Made Ground to a maximum depth of 1.4mbgl, overlying clay and sand of the Boyn Hill Gravel Member to a maximum depth of 8.0mbgl, overlying clay and clayey sand of the Lambeth Group to the base of the deepest borehole at 13.8mbgl. Groundwater strikes were recorded at depths ranging between 2.7-3.0mbgl Groundwater was recorded at depths ranging between 3.237-4.621mbgl during return monitoring.

Summary Information	
Geo-environmental findings	It was concluded that contaminants in soil were unlikely to pose a significant risk to human health receptors. Some marginal exceedances of groundwater assessment criteria were reported; however given a lack of identified sources, the risk was considered to be low and no further action was considered necessary.
Geotechnical findings	Specific foundation recommendations were not provided.
Recommended additional work	Watching brief during site works.

3 GEOLOGICAL & ENVIRONMENTAL SETTING

3.1 Introduction

- 3.1.1 The following section summarises the principal environmental resources (geological, hydrogeological and hydrological) of the site and its surroundings.
- 3.1.2 The data discussed herein is generally based on the information given within the Enviro+Geoin sight Report and published information provided by the Environment Agency and British Geological Survey.

3.2 Superficial and Solid Geology

- 3.2.1 The British Geological Survey indicates that the site is directly underlain by solid deposits of the London Clay Formation. The Boyn Hill Gravel Member is reported 38m northwest and 179m southwest of site and therefore may encroach onto site.

- 3.2.2 The BGS describes the London Clay Formation as consisting of:

“bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions (‘cementstone nodules’) and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occurs in places.”

- 3.2.3 The BGS describes the Boyn Hill Gravel member as:

Sand and gravel, with possible lenses of silt, clay or peat. [Generic description]. Poorly sorted, stratified gravel and locally tabular cross-bedded sand beds. Gravel assemblage is characterised by abundant angular flint (77-81%), sparse rounded flint (5-10%), sparse vein quartz (4-7%), sparse quartzite (1.5-5%), sparse Greensand chert (2.5-4%) and less than 1% of other types.

- 3.2.4 Although artificial deposits are not reported within the site given the identified site history a thickness of Made Ground should be expected.
- 3.2.5 BS5930:2015 defines Made Ground as anthropogenic ground in which the material has been placed without engineering control and/or manufactured in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur.
- 3.2.6 No bedrock faults or other linear features are reported within 500m at 1:10,000 scale.

3.3 British Geological Survey (BGS) Borehole Data

- 3.3.1 As part of the assessment, publicly available BGS borehole records were obtained and reviewed from the surrounding area. The local records obtained are presented in Appendix 5.
- 3.3.2 The nearest such record was located approximately 224m northeast of the site, from July 1999.
- 3.3.3 This showed the underlying ground conditions to comprise tarmac over *“Gravel and brick fill”* and *“firm dark brown/black sandy silty fill”* to a depth of 0.45mbgl, overlying *“medium dense grey brown gravelly silty SAND”* to a depth of 0.95mbgl, overlying *“medium dense orange/brown silty sandy GRAVEL”* to the base of the borehole at 2.30mbgl.
- 3.3.4 No groundwater was reported.
- 3.3.5 All depths and measurements should be viewed as approximate.

3.4 Hydrogeology & Hydrology

- 3.4.1 General information about the hydrogeology of the site was obtained from the Enviro+GeoInsight and / or the DEFRA “MAGIC” website.

Groundwater Vulnerability

- 3.4.2 The EA operates a classification system to categorise the importance of groundwater resources (aquifers) and their sensitivity to contamination. Aquifers were formerly classified as major, minor and non-aquifers, based on the amenity value of the resource. A major aquifer is a significant resource capable of producing large quantities of water suitable for potable supply. Minor aquifers produce water in varying quantities or qualities, and if utilised are of local importance. Non aquifers are low permeability strata, which contain no significant exploitable groundwater and have very limited capacity to transmit contaminants.
- 3.4.3 Since 1 April 2010, the EA’s Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. These comprise:

- **Secondary A** - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
- **Secondary B** - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- **Secondary Undifferentiated** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- **Principal Aquifer** – this is a formation with a high primary permeability, supplying large quantities of water for public supply abstraction.
- **Unproductive Strata** - These are rock layers or superficial deposits with low permeability that have negligible significance for water supply or river base flow.

Source Protection Zones (SPZ)

3.4.4 In terms of aquifer protection, the EA generally adopts a three-fold classification of SPZs for public water supply abstraction wells.

- Zone I - or 'Inner Protection Zone' is located immediately adjacent to the groundwater source and is based on a 50-day travel time. It is designed to protect against the effects of human activity and biological/chemical contaminants that may have an immediate effect on the source.
- Zone II - or 'Outer Protection Zone' is defined by a 400-day travel time to the source. The travel time is designed to provide delay and attenuation of slowly degrading pollutants.
- Zone III - or 'Total Catchment' is the total area needed to support removal of water from the borehole, and to support any discharge from the borehole.

Hydrology

3.4.5 The hydrology of the site and the area covers water abstractions, rivers, streams, other water bodies and flooding.

3.4.6 The Environment Agency defines a floodplain as the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

3.4.7 There are two different kinds of area shown on the Flood Map for Planning. They can be described as follows:

Areas that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year;
- or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.

(For planning and development purposes, this is the same as Flood Zone 3, in England only.)

- The additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.

(For planning and development purposes, this is the same as Flood Zone 2, in England only.)

- 3.4.8 These two areas show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.
- 3.4.9 Outside of these areas flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The majority of England and Wales falls within this area. (For planning and development purposes, this is the same as Flood Zone 1, in England only.)
- 3.4.10 Some areas benefit from flood defences, and these are detailed on Environment Agency mapping.
- 3.4.11 Flood defences do not completely remove the chance of flooding, however, and can be overtopped or fail in extreme weather conditions.

Table 3.1: Summary of Hydrogeology & Hydrology

Feature	On Site	Off Site	Potential Receptor?	
Aquifer	Superficial:	None	Secondary A – 38m northwest	X
	Solid:	Unproductive	Unproductive Secondary A – 493m north	X
Abstractions	Groundwater	None	18No reported; nearest 1258m northwest for an historical abstraction for make-up or top up water. No active abstractions.	X
	Surface water	None	2No reported; nearest 1517m north for an historical spray irrigation abstraction. No active abstractions.	X

Feature	On Site	Off Site	Potential Receptor?
Potable	None	4No reported; nearest 1712m east for an historical abstraction. No active abstractions.	X
Source Protection Zone	-	-	X
Surface Water Features	None	Inland river not influenced by normal tidal actions reported 245m south.	X
Flood Risk	EA Flood Zone 2	Yes	-
	EA Flood Zone 3	Yes	-
	RoFRaS	Low	-
	Historical Flood Events	None reported within 250m of the site.	-
	Flood Defences	There are no areas benefiting from flood defences within 250m of the study site.	-
	Groundwater Flooding	The highest risk onsite is reported as “negligible” with the highest risk within 50m of the site reported as “low”.	-

3.5 Sensitive Land Uses

- 3.5.1 The site is located within a SSSI Impact Risk Zone; the proposed development is unlikely to require consultation.
- 3.5.2 8No Designated Ancient Woodlands are reported within 1km of the site; the nearest 92m north.
- 3.5.3 Deciduous woodland priority habitat is reported 92m north.
- 3.5.4 Highwood local nature reserve is reported 549mn south.
- 3.5.5 Sheeplands nitrate vulnerable zone is reported 743m north.
- 3.5.6 The site lies within a SSSI Impact Risk Zone. The proposed development is unlikely to require consultation.
- 3.5.7 No other sensitive land use was identified within 1km of the site.

3.6 Radon

- 3.6.1 As reported, the site is not within a radon affected area, as less than 1% of properties are above the action level.
- 3.6.2 Consequently, no radon protective measures are necessary in the construction of new dwellings or extensions as described in publication BR211 (BRE, 2023).

4 POSSIBLE GEOLOGICAL HAZARDS

4.1 Database Information Review

4.1.1 The following are brief findings extracted from the Groundsure Enviro+Geosight Report, that relate to factors that may have a potential impact upon the engineering of the proposed development.

Table 4.1: Geological Hazards

Potential Hazard	Site check Hazard Rating	Details	Further Action Required?
Shrink swell clays	Low	Ground conditions predominantly medium plasticity.	No
Running sands	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.	No
Compressible deposits	Negligible	Compressible strata are not thought to occur.	No
Collapsible deposits	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.	No
Landslides	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.	No
Ground dissolution soluble rocks	Very low	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.	No
Coal mining	None	The study site is not located within the specified search distance of an identified coal mining area.	No
Non-coal mining	Chalk	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.	No

4.1.2 In addition, the Enviro+GeolInsight report notes the following:

- 4No. historical surface ground working features within 250m of the site. All are reported 239-240m south for canals.
- No historical underground working features within 1km of the site.
No BGS BritPits reported within 500m of the site.

4.1.3 It is noted that the Groundsure report highlights a potential risk from chalk mining activities; however, review of the historical mapping has not highlighted any evidence of mining activities or features in the area, and therefore chalk mining is not considered to pose a significant risk to the site.

4.1.4 Existing hardstanding and foundations will need to be removed and grubbed out ahead of the development. This may require the use of hydraulic breaking.

-
- 4.1.5 The clearance of the site, including removal of foundations and services is likely to increase the depth of Made Ground on the site.
- 4.1.6 Foundations should not be formed within Made Ground or organic rich material (e.g. topsoil) due to the unacceptable risk of total and differential settlement.
- 4.1.7 The BGS notes disseminated pyrite within the London Clay Formation and as such may be a source of elevated sulphate results. If such levels are noted, sulphate resistant concrete may be required.
- 4.1.8 The resultant thickness of Made Ground and the potential for clays beneath the proposed footprint means that a suspended floor slab may be required.
- 4.1.9 A geotechnical investigation is recommended to inform foundation design.

5 QUALITATIVE RISK ASSESSMENT

5.1 Legislative Framework

5.1.1 A qualitative risk assessment has been prepared for the site, based on the information collated. This highlights the potential sources, pathways and receptors. Intrusive investigations will be required to confirm the actual site conditions and risks.

5.1.2 Under Part IIA of the Environmental Protection Act 1990, the statutory definition of contaminated land is:

"land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) significant pollution of controlled waters is being caused, or there is significant possibility of such pollution being caused."

5.1.3 The Statutory Guidance provided in the DEFRA Circular 04/2012 lists the following categories of significant harm to **human health**:

- death; life threatening diseases (e.g. cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions.

5.1.4 Other health effects may also be considered by the local authority to constitute significant harm with a wide range of conditions that may or may not constitute significant harm (alone or in combination) including: physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts.

5.1.5 In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health there are four categories to be considered. Categories 1 and 2 would encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health. Categories 3 and 4 would encompass land which is not capable of being determined on such grounds.

5.1.6 For non-human receptors the following types of harm should be considered to be significant harm:

Ecological System Effects

- Harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or

- Harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location.
- In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010.

Property Effects

- Crops: A substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.
- Buildings: Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should also be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.

5.1.7 Contaminated land will only be identified when a 'pollutant linkage' has been established.

5.1.8 A 'pollutant linkage' is defined in Part IIA as:

"A linkage between a contaminant Source and a Receptor by means of a Pathway".

5.1.9 Therefore, this report presents an assessment of the potential pollutant linkages that may be associated with the site, in order to determine whether additional investigations are required to assess their significance.

5.1.10 In accordance with the National Planning Policy Framework, where development is proposed, the developer is responsible for ensuring that the development is safe and suitable for use for the purpose for which it is intended, or can be made so by remedial action. In particular, the developer should carry out an adequate investigation to inform a risk assessment to determine:

- whether the land in question is already affected by contamination through source – pathway – receptor pollutant linkages and how those linkages are represented in a conceptual model;

- whether the development proposed will create new linkages, e.g. new pathways by which existing contaminants might reach existing or proposed receptors and whether it will introduce new vulnerable receptors; and
- what action is needed to break those linkages and avoid new ones, deal with any unacceptable risks and enable development and future occupancy of the site and neighbouring land.

5.1.11 A potential developer will need to satisfy the Local Authority that unacceptable risk from contamination will be successfully addressed through remediation without undue environmental impact during and following the development.

5.2 Conceptual Site Model

5.2.1 On the basis of the information summarised above, a conceptual site model (CSM) has been developed for the site. The CSM is used to guide the investigation activities at the site and identifies potential contamination sources, receptors (both on and off-site) and exposure pathways that may be present. The identification of such potential “pollutant linkages” is a key aspect of the evaluation of potentially contaminated land.

5.2.2 The site investigation is then undertaken in order to prove or disprove the presence of these potential source-pathway-receptor linkages. Under current legislation an environmental risk is only deemed to exist if there are proven linkages between all three elements (source, pathway and receptor).

5.2.3 This part of the report lists the potential sources, pathways and receptors at the site, and assesses based on current and future land use, whether pollution linkages are possible.

5.2.4 Potential pollutant linkages identified at the site are detailed below:

Table 5.1: Potential Sources, Pathways and Receptors

Source(s)	Pathway(s)	Receptor(s)
Potential for Made Ground associated with previous development operations – on site (S1)	- Ingestion and dermal contact with contaminated soil (P1) - Inhalation or contact with potentially contaminated dust and vapours (P2) - Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff (P3) - Horizontal and vertical migration of contaminants within groundwater (P4) - Accumulation and Migration of Soil Gases (P5) - Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)	- Construction workers (R1) - Maintenance workers (R2) - Neighbouring site users (R3) - Future site users (R4) - Building foundations and on site buried services (water mains, electricity and sewer) (R5)

5.3 Qualitative Risk Estimation

5.3.1 Based on information previously presented in this report, a qualitative risk estimation was undertaken.

5.3.2 For each potential pollutant linkage identified in the conceptual model, the potential risk can be evaluated, based on the following principle:

Overall contamination risk = Probability of event occurring x Consequence of event occurring

5.3.3 In accordance with CIRIA C552, the consequence of a risk occurring has been classified into the following categories:

- Severe
- Medium
- Mild
- Minor

5.3.4 The probability of a risk occurring has been classified into the following categories:

- High Likelihood

- Likely
- Low Likelihood
- Unlikely

5.3.5 This relationship can be represented graphically as a matrix (Table 5.2).

Table 5.2: Overall Contamination Risk Matrix

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

5.3.6 The risk assessment process is based on guidance provided in CIRIA C552 (2001) *Contaminated Land Risk Assessment – A Guide to Good Practice*. Further information including definitions of descriptive terms used in the risk assessment process is included in Appendix 4.

5.3.7 The degree of risk is based on a combination of the potential sources and the sensitivity of the environment. The risk classifications can be cross checked with reference to Table A4.4 in Appendix 4.

5.3.8 Hazard assessment was also carried out, the outcome of which could be:

- Urgent Action (UA) required to break existing source-pathway-receptor link.
- Ground Investigation (GI) required to gather more information
- Watching Brief there is no evidence of potential contamination but the possibility of it exists and so the site should be monitored for local and olfactory evidence of contamination.
- No action required (NA)

5.3.9 The preliminary risk assessment for the site is presented in Table 5.3 overleaf.

SECTION 5

QUALITATIVE RISK ASSESSMENT

Table 5.3: Preliminary Risk Assessment for the Site

Sources	Pathways (P)	Receptors	Consequence of Impact	Probability of Impact	Risk Estimation	Hazard Assessment
Potential for Made Ground associated with previous development operations – on site (S1)	- Ingestion and dermal contact with contaminated soil (P1) - Inhalation or contact with potentially contaminated dust and vapours (P2) - Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)	- Construction workers (R1) - Maintenance workers (R2) - Neighbouring site users (R3) - Future site users (R4) - Building foundations and on site buried services (water mains, electricity and sewer) (R5)	Medium	Unlikely	Low	Watching Brief
			Medium for Asbestos	Unlikely	Low for Asbestos	
	Accumulation and migration of soil gases (P5)		Severe	Unlikely	Moderate/low	
	- Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff (P3) - Horizontal and vertical migration of contaminants within groundwater (P4)	- Neighbouring site users (R3) - Building foundations and on site buried services (water mains, electricity and sewer) (R5)	Medium	Unlikely	Low	

- 5.3.10 It should be noted that the identification of potential pollutant linkages does not necessarily signify that the site is unsuitable for its current or proposed land use. It does however act as a way of focussing data collection at the site in accordance with regulatory guidance in LCRM.

5.4 Outcome of Risk Assessment

- 5.4.1 The risk estimation matrix indicates a “low/moderate” to “low” risk as defined above.
- 5.4.2 It is understood that the proposed development is to comprise the construction of a new building in the north of site to provide classrooms alongside associated landscaping.
- 5.4.3 A review of earliest available (1871) historical maps indicates that the site was undeveloped, possibly woodland. No significant changes are shown on the maps, beyond removal of the trees, throughout the mapped history however from 1963 the site appears to be associated with the neighbouring school. Aerial photography shows tennis courts and car parking on site from 2010, with small structures in the east. By 2019 the structures are no longer shown on site.
- 5.4.4 The immediately surrounding areas were vacant until 1960s when the Bulmershe School structures are shown to the east, with residential development in the wider area also shown from this time. The only industrial use of note in the vicinity is a gasometer identified on the earliest 1871 map 150m southeast, identified as “disused” by 1897. Given the age of this feature and distance from site it is not considered to pose a significant risk to the site.
- 5.4.5 Due to a lack of identified sources, no further ground investigation is considered necessary at this stage. A watching brief should be maintained throughout all below ground works and any evidence of potential contamination should be reported to a suitably qualified environmental consultant. Such evidence could include (but not limited to) extensive Made Ground, unusual odours, colours, sheens, buried containers or evidence of household waste or other putrescible materials.

6 REFERENCES

BRE Report BR211; Radon: Guidance on protective measures for new buildings, 2023

Code of Practice for Ground Investigations BS5930: 2015

CL:AIRE; Petroleum Hydrocarbons in Groundwater, 2017

Environment Agency (2020); *Land Contamination Risk Management (LCRM)*.
<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

Groundsure Enviro+Geoinsight Report Ref GS-X4W-44N-QKQ-PQE January 2026

Investigation of Potentially Contaminated Sites – Code of Practice BS10175: 2011

Ministry of Housing, Communities & Local Government: *National Planning Policy Framework*. February 2019

APPENDICES

APPENDIX 1 – FIGURES

APPENDIX 2 – GROUNDSURE REPORT

APPENDIX 3 – OS HISTORICAL MAPS

APPENDIX 4 – QUALITATIVE RISK ASSESSMENT METHODOLOGY

APPENDIX 5 – BGS BOREHOLE RECORDS

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