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GEOSPHERE ENVIRONMENTAL

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SITE: 2 School House, Straight Road, Battsford, IP14 2HR

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EXECUTIVE SUMMARY

Introduction	<p>Geosphere Environmental Ltd was commissioned by the Client, EJB Property Management Ltd to undertake a Phase 1 Desk Study and Preliminary Risk Assessment, without site walkover, for a proposed residential development at 2 School House, Straight Road, Battisford, IP14 2HR.</p> <p>It was understood that the site is to be developed into two residential properties with associated areas of private garden and infrastructure.</p>
Site Location	<p>The subject site was situated at 2 School House, Straight Road, Battisford, IP14 2HR and may be located by National Grid Reference (NGR) TM 03947 54053.</p>
Site Description	<p>Based on historical aerial imagery, the site is understood to comprise a partially wooded area of disused land/garden and a residential property.</p>
History	<p>The earliest available mapping showed the site to comprise part of a larger field. By 1904 the semi-detached residential property 2 School House had been established at the site along with several smaller outbuildings. These features remained until at least 1975 but may have subsequently been demolished.</p> <p>The site has neighboured a school building/community centre/shelter since earliest available mapping. Residential development along Straight Road increased between 1905 and 1968. In the plot of land to the immediate north of the site there were several outbuildings that appeared to be demolished between 1975 and 1999.</p>
Preliminary Conceptual Site Model and Conclusions	<p>Based upon the findings of the Preliminary Risk Assessment, a number of potential contaminant sources and pathways to potential receptors have been identified. These are:</p> <ul style="list-style-type: none"> • Historical construction/demolition activities (on and offsite) – Low to Medium Risk. • Historical use of onsite structures – Low Risk.

This Executive Summary only provides a summary of the site data and its assessment. It does not provide a definitive engineering analysis and is for guidance only. It is recommended that the reader reviews the report in its entirety and any material referenced therein.

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1. INTRODUCTION

Geosphere Environmental Ltd was commissioned by the Client, EJB Property Management Ltd, to undertake a Phase 1 Desk Study and Preliminary Risk Assessment for a proposed residential development at 2 School House, Straight Road, Battisford, IP14 2HR.

It was understood that the site is to be developed into two residential properties with associated areas of private garden and infrastructure.

At the request of the Client no site walkover was undertaken as part of this preliminary contamination assessment. It is understood (from the Planning Consultant – James Bailey Planning Ltd) that no site walkover is required for this preliminary contamination assessment, **in line with Babergh and Mid Suffolk's** planning application validation criteria, for proposals of 1 or 2 dwellings on infill garden land.

The primary objectives of the Preliminary Risk Assessment were to:

- Provide an assessment of 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; and
- Indicate whether further works are required, and the nature of the works, to enable a more complete assessment of the site.

These were achieved by:

- Researching and assessing the available information regarding the current site status, including recorded geology, hydrogeology and hydrology of the site and surrounding area and the history of the site; and
- Developing a Preliminary Conceptual Site Model.

The following report has been based solely on information contained within the Envirocheck Report.

No proposed development plan has been provided at this stage.

2. SITE SETTINGS

2.1 Site Location

The subject site was situated at 2 School House, Straight Road, Battisford, IP14 2HR and may be located by National Grid Reference (NGR) TM 03947 54053.

A Site Location Plan is included within Appendix 6 as Drawing reference 7883,DS/001/Rev0.

2.2 Site Description

In lieu of a site walkover, the below description has been solely based on information contained within the Envirocheck Report.

Based on the most recent Envirocheck Aerial image (dated 1999), the site comprised an assumed residential property at the eastern end (2 School House), with several shed-like structures to the north of this. The remainder of the site appeared to be disused land/garden and was partially wooded along the western and southern boundaries.

The site was bordered to the south by Straight Road. Land to the east and west of the site comprised other properties (inferred to be residential), with assumed arable land to the north and south (beyond Straight Road).

2.3 Geological Setting

Details of the geology underlying the site have been obtained from the British Geological Survey (BGS) digital mapping at a scale of 1:50,000, which is provided within the Envirocheck Report included in Appendix 4.

2.3.1 Superficial Deposits

The geological map indicated the site to be underlain by superficial deposits of the Lowestoft Formation (diamicton).

The site has historically been partially developed and although not indicated as present upon the site, the possibility that Made Ground is present cannot be discounted.

2.3.2 Bedrock Geology

The geological map indicated bedrock Geology underlying the site comprised Red Crag Formation (sand).

2.3.3 Geohazards and Ground Workings

Table 1 below summarises the factors that may have a potential impact upon the engineering of the proposed development:

Table 1 – Geohazards and Ground Workings			
Potential Hazard	Recorded Risk [m] / [Direction]		Comments
	Onsite	Within 250m	
Non-Coal Mining Areas of Great Britain	No Hazard	-	
Collapsible Ground	Very Low	-	
Compressible Ground	No Hazard	-	
Ground Dissolution	No Hazard	-	
Landslide	Very Low	-	
Running Sand	Very Low	-	
Shrinking or Swelling Clay	Low	-	

2.4 Hydrogeological Setting

2.4.1 Underlying Aquifers

The hydrogeological data provided within the Envirocheck Report indicate Secondary Undifferentiated Aquifer overlying a bedrock Principal Aquifer.

The Environment Agency defines a **Principal Aquifer** as 'layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale'.

Secondary Undifferentiated Aquifer - 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.

2.4.2 Source Protection Zones

The site and surrounding area were **located within a 'Zone III' (Total Catchment) groundwater source protection zone (SPZ)** i.e., it was within the total area required to support the discharge from a protected groundwater source.

There were no groundwater abstraction licences located within 500m of the site. The closest identified groundwater abstraction was located 736m southwest for general farming and domestic purposes.

2.4.3 Groundwater

The Envirocheck data indicates the site is in an area with limited potential for groundwater flooding to occur.

2.5 Hydrological Setting

The nearest surface watercourse or feature was the River Gipping, located approximately 334m to the northeast of the site.

There was one surface water abstraction within 500m of the site, located 462m to the northeast of the site. It was used for general agriculture.

2.6 Radon

The site is indicated to lie within an area where there is a probability of <1% of present or future homes being above the action level of 200Bq/m³. As such, the site is not classified as a Radon Affected Area.

2.7 Nitrate Vulnerable Zone

The site was located within an area designated as a Nitrate Vulnerable Zone (NVZ). Specifically, the Sandlings and Chelmsford for groundwater and the River Gipping for surface water.

The Nitrates Directive, (ref. R.1) defines a nitrate vulnerable zone as:

- Surface freshwater which contains or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l;
- Groundwater which contains or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l; and/or
- Natural freshwater lakes or other freshwater bodies, estuaries, coastal waters and marine waters, which are eutrophic or may become so in the near future if protective action is not taken.

3. ENVIRONMENTAL SEARCHES

3.1 Environmental Searches Summary

The environmental searches are detailed fully within the Envirocheck Report presented within Appendix 3. Table 2 shown below summarises the most relevant findings:

Table 2 - Environmental Searches Summary				
Activity	Distance From the Site			Comments [m]/[direction]
	Onsite	Within 250m	250m to 500m	
1. Incidents and Registers				
Discharge Consents	-	2	6	Closest: 146m/SE – Sewage treated effluent discharge to stream.
2. Contemporary Trade Entries of Concern				
Contemporary Trade Directory Entries	-	-	1	418m/E – Freight Forwarders (inactive).

Where no relevant or significant data records exist for an activity, it is removed from the summary table. All data is included within Appendix 4.

4. SITE HISTORY

4.1 Historical Maps

A review of the history of the site has been conducted based upon the historical maps included within the Envirocheck report included in Appendix 4.

The relevant changes of the subject site and immediate surrounding area from the mapping are detailed in Table 3 below:

Table 3 - Historical Summary		
Date	Potentially Contaminative Land Uses / Significant Changes	
	Onsite [Direction]	Offsite [Distance/Direction]
1885 (1:2,500) 1884 (1:10,000)	<ul style="list-style-type: none"> The site comprised part of a larger undeveloped plot of land immediately north of Straight Road. 	<ul style="list-style-type: none"> The surrounding area largely comprised agricultural fields interspersed with farms and access tracks. 30m/E: School building. 60m/E: Assumed residential properties.
1904 (1:2,500) 1905 (1:10,000)	<ul style="list-style-type: none"> A semi-detached structure (present-day 2 School House) has been established at the eastern end of the site, which was shown as being separate from the wider plot of land to the north. Two small structures were present towards the northeast corner. 	<ul style="list-style-type: none"> 0m/E: 2 School House was the western property of a semi-detached structure. The other property was offsite. 0m/E: Outbuilding established in rear garden of adjoining residence. 30m/E: Additional structures built at the school.
1968 - 1975 (1:2,500) 1958 (1:10,000)	<ul style="list-style-type: none"> No Significant Changes. 	<ul style="list-style-type: none"> 0m/NE: Three additional structures established associated with wider plot of land to the north. 10-30m/E: Addition structures established at neighbouring residence. 30/E: School was identified as a Community Centre. 5-80m/W and 30-100m/E: Additional residential properties established.
1995 – partial mapping (1:2,500)	<ul style="list-style-type: none"> Site Not Shown. 	<ul style="list-style-type: none"> 50m/E: A structure, inferred to be associated with the Community Centre (not shown on the partial mapping) was labelled "shelter".
1999 (aerial) (1:2,500)	<ul style="list-style-type: none"> The western third and southern boundary of the site were shown to be wooded. 	<ul style="list-style-type: none"> 0m/NE: Offsite structures no longer evident.
2000 (1:10,000)	<ul style="list-style-type: none"> No Significant Changes. 	<ul style="list-style-type: none"> No Significant Changes.
2023 (1:10,000)	<ul style="list-style-type: none"> No Significant Changes. 	<ul style="list-style-type: none"> No Significant Changes.
<p><i>Notes:</i></p> <ul style="list-style-type: none"> The dates of the maps do not always correspond with the time of the surveys. Where no significant factors or changes occur within a map edition(s) it is summarised with "No significant changes". The alignment and extent of the detailed site area in early map editions is often mis-aligned compared to modern mapping due to variation in mapping/digitisation processes; this is compensated for where possible within the interpretation. 		

4.2 Site History Summary

The earliest available mapping showed the site to comprised part of a larger field. By 1904 the semi-detached residential property 2 School House had been established at the site along with several smaller outbuildings. These features remained until at least 1975, after which time aerial imagery/mapping resolution meant that only the residential property was shown. However, this does not necessarily mean that the outbuildings were demolished.

The site has neighboured a school building/community centre/shelter since earliest available mapping. Residential development along Straight Road increased between 1905 and 1968. In the plot of land to the immediate north of the site there were several outbuildings that appeared to be demolished between 1975 and 1999.

5. PRELIMINARY CONCEPTUAL SITE MODEL

The risk assessment methodology is generally based upon current guidelines and legislation (refs. R.2, R.4 and R.6).

The Conceptual Site Model detailed below is based solely on the historical maps and site sensitivity data provided within the Envirocheck Report.

The current guidance requires that a Conceptual Site Model (CSM) be formulated, based upon the findings of the research. The CSM **aims to identify and assess potential 'hazards'; the potential 'receptors' that may be affected and the anticipated 'pathways' by which the hazard may negatively impact the receptors.** Where there is reasonable potential for all three components to be present at a site, then they constitute a potential pollutant linkage (PPL) and have been included in the CSM below. The CSM is limited at this **stage to the identification and assessment of potential 'hazards', identified or suspected from the results** of the research. The findings are summarised in the following subsections.

The guidance proposes a four-stage approach for the assessment of contamination and the associated risks. The four stages are listed below:

- Hazard Identification;
- Hazard Assessment;
- Risk Estimation; and
- Risk Evaluation.

Should a complete PPL be present which is deemed to pose a potential risk to identified receptors, then further investigation works are likely to be recommended.

5.1 Hazard Identification: Onsite

The desk-based research and historical review identified the following potential hazards on the site:

- Construction activities.
- Use of onsite structures including outbuildings.

5.2 Hazard Identification: Offsite

The desk-based research and historical review identified offsite construction and demolition activities as posing a potential hazard at the site.

5.3 Risk Assessment

The Preliminary Risk Assessment has identified potential sources of contamination that may pose a risk to human health and the Controlled Waters. Potential pollutant linkages that require further consideration are presented in Table 4 shown overleaf:

Table 4 – Preliminary Conceptual Site Model

Sources	PATHWAYS:					RECEPTORS:						Risk Rating	Comments
	Root Uptake	Direct Contact	Ingestion	Respiration	Gas Accumulation	Plants	End Users	Structures (Concrete)	Services/Utilities	Construction Workers	Controlled Waters (GW)		
Historical construction/demolition activities (on and offsite).	U	U	U	U	N	Mi	Mo	N	Mi	Mi	N	LR-MR	Historical construction materials including lead-based paints and asbestos have the potential to negatively impact the quality of onsite soils.
Historical use of on-site structures.	U	U	U	U	N	Mi	Mi	N	N	N	N	LR	Whilst the main onsite structure is presumed to have been residential since it's construction, the use of the smaller onsite structures (which may have been demolished) is unknown. Construction materials and storage of potentially contaminative materials may have impacted the quality of onsite soils.
Legend: - See Comparison of Consequence Against Probability within Appendix 5 for Key to Legend.	Probability:					Consequence (Severity):						Risk Rating:	
	Negligible (N)					Negligible (N)						Very High Risk	VH
	Unlikely (U)					Mild (Mi)						High Risk	HR
	Likely (L)					Moderate (Mo)						Moderate Risk	MR
	Highly Likely (HL)					Severe (S)						Low Risk	LR
												Negligible Risk	NR

6. CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of the Preliminary Risk Assessment a preliminary number of potential contaminant sources and pathways to potential receptors have been identified. These are:

- Historical construction/demolition activities (on and offsite) – Low to Medium Risk.
- Historical use of onsite structures – Low Risk.

It is likely that a limited intrusive ground investigation and walkover will need to be undertaken to confirm the findings of the Preliminary Conceptual Model.

Any ground investigation should be designed in general accordance with CLR 4, (ref. R.5) undertaken in compliance with BS 10175:2011+A2:2017, (ref. R.6) and BS 5930:2015+A1:2020, (ref. R.7).

It is recommended that this report be submitted to the Local Authority as part of the planning submission for the site.

While outside of the remit of this report, if demolition/refurbishment of the buildings is proposed it may be necessary to (a) fully update the building Asbestos Register, where present or (b) undertake a Refurbishment and Demolition (asbestos survey) of the buildings, in accordance with HSE guidance (ref. R.8) and in advance of any disturbance works.

6.1 Geotechnical Considerations and recommendations

As development of the site is proposed, it may be financially prudent to undertake a geotechnical investigation of the site at the same time as any environmental investigation, to enable foundation recommendations to be proposed.

The potential for Made Ground, cohesive ground conditions and the presence of mature trees or proposed planting should be taken into consideration.