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GEOTECHNICAL ASSESSMENTS – ENVIRONMENTAL ASSESSMENT - DESKTOP STUDY – CONTAMINATED LAND

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Report For :

London Building Company.

Phase I DESK TOP STUDY REPORT

CAMDEN COUNCIL
PLANNING REF No. NONE

Site location :

Bird In The Hand PH
West End Lane
London
NW6 4NX

January 2022
Report No. 17185

CONTENTS

TABLES AND FIGURES

LIST OF ABBREVIATIONS

BGS	British Geological Society
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
GL	Ground Level
GW	Groundwater
HESI	Herts & Essex Site Investigations
LAPPC	Local Authority Pollution Prevention and Control
NOS	Not Otherwise Specified (waste material)
NHBC	National House-Building Council
OS	Ordnance Survey
PAH	Poly Aromatic Hydrocarbons
SPZ	Source Protection Zone
TPH	Total Petroleum Hydrocarbons
UFST	Underground Fuel Storage Tanks

DESK STUDY GENERAL NOTES

This report has been prepared based on the findings of investigations into the site conditions using current available data which has been recovered from Envirocheck to provide environmental data in relation to the site and surrounding area. Where possible, local sources have been researched to gain a better understanding of the site conditions. As part of this review, research has been undertaken with the Local Authority and the Environment Agency as to the site condition.

We can confirm that this report has been prepared based on the information gained and that this information is not exhaustive and that subsequent research may reveal additional facts that may influence the reporting. Where possible, this information has been researched.

All geological information has been researched using the British Geological Society website, (the geology viewer). The disclaimer associated with this portal confirms 'The British Geological Society accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from Non-BGS sources and may not represent current interpretation.

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The accuracy of map extracts cannot be guaranteed and it should be recognized that different conditions on site may have existed between subsequent to the various map surveys.

We can confirm that within the assessment of the site, various websites have been visited and as such, we cannot confirm the validity of these sites and as such, this information is accepted de facto and without prejudice. Anyone relying on these sources does so at their own risk, however, Herts & Essex Site Investigations does undertake all reasonable care to ensure this data is relevant and correct.

It should be confirmed that the extent of review of this report has undertaken a broad review of on site features which would promote a contamination ground risk, however, this does not include ecological features and in particular Japanese Knotweed which should be reviewed under separate cover.

A review of the site will be made to confirm the extent of obvious Asbestos product or sheet materials either on the surface of the site soils or evident above ground, however, does not constitute a full Asbestos Survey by any means. This should be sought under separate cover.

DOCUMENT INFORMATION AND CONTROL SHEET

Client

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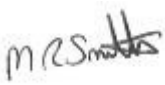
- ONC - Civil Engineering
- HNC – Civil Engineering
- P.G. Certificate – Geotechnical Engineering, (Inc. Environmental Engineering)
- P.G. Diploma – Geotechnical Engineering, (Inc. Environmental Engineering),
- Master of Science, (Geotechnical Engineering), (Inc. Environmental Engineering)
- SNIFFER modelling course
- CONSIM Groundwater Assessment Course.
- (30 Years in Geotechnical and Environmental Engineering)
- Asbestos Awareness Course;
- Non-Licensed Work with Asbestos Including NNLW.
- Site Supervisors Safety Training Scheme, (SSSTS).
- First Aid Course in Construction – 3 Day Course – 3 years
- CSCS Labourer Card

Document Status and Approval Schedule

Issue No	Status	Date	***Prepared by :*** Rebecca Chamberlain Signature / Date	***Technical review by :*** Chris Gray Martyn Smith Signature / Date	***Checked By :*** Chris Gray Martyn Smith Signature / Date
1	Final	January 2022			

REPORT ISSUE RECORD

As part of Herts & Essex Site Investigations approved Quality Management System, the company is required to document the issue of all reports to provide the client with a traceable control mechanism to prevent the issue of unauthorised copies.

All final copy reports are issued to the client on paper headed with Herts & Essex Site Investigations to assist in the identification of copied reports. Additionally, final copies are printed 'Velum' coloured paper for easy identification of final copy reports.

Notwithstanding the above, clients are at liberty to make copies of full or parts of these reports as they see fit, should they wish to do so. Additional controlled copies of documents may be supplied upon request, although, may be charged for, dependent upon the number of copies.

Please note, this reports has not been sent to the Local Authority, NHBC or Environment Agency with only the below issues made. Should copies be required for sending the relevant authorities, this can be undertaken upon request.

Controlled copies of this report have been issued according to the following schedule :-

Issue No	Recipient	Type	No. of copies	Date
1	HESI, (File Copy)	Electronic Copy	1	January 2022
2	The London Building Company	Electronic Copy	1	January 2022
3				
4				
5				
6				
7				
8				

SUMMARY

PHASE 1 DESK TOP STUDY REPORT

Client	London Building Company
Site Location	The site at the Bird In The Hand Public House, West End Lane, London NW6 4NX
Existing Development	Public house and small parking area to the rear
Proposed Development	No proposed plans are available.
Site Settings and Previous Uses	The site is recorded as open land from the earliest map record until 1870 when residential land is identified in place. This remains as residential until 1951 when the public house is noted on site. This remains in place until present day. Surrounding the site, open land is in place from 1850 until the 1870's when residential land was developed around the general area. Railway land is in place from 1870 some 120 metres to the south of the site. Works are present from 1935 to 1951 some 30 metres to the east and west and 80 metres to the south of the site. Residential flats are shown in place from 1951 to present day surrounding the site and garages are present to the south from 1991 to present day.
Nearest Surface Water Feature	The nearest surface water feature is recorded as 794 metres to the south of the site which has no appreciable water feature in place.

Geological and Hydrological Profile	***Geology***		***Aquifer Classification***
	Made Ground	Shallow Made Ground Anticipated	Not Classified
	London Clay	Clay	Unproductive Stratum

Groundwater Abstractions	The nearest abstraction well is located 1376 metres to the east of the site which is recorded as for Municipal Grounds : Spray and Irrigation.
Source Protection Zone	The site does not lie within a Source Protection Zone.

Potential Sources of Contamination	***On Site***	***Off Site***
	• Parking Areas. • Public House.	• Garages, Off Site, 5m, S. • Railway Land, Off Site, 120m, S. • Works, Off Site, 30m, E & W, 80m, S.

Previous Investigations	No reports relating to contaminated land are known to us at the time of writing this report relating to the site.

Human Health Risk	We would suggest that there is potential sources of contamination relating to the historical land use of the site that, may be in place within the upper subsoil which will require assessment. Potential pathways in place within the site area recorded as : - • Dermal Contact. • Inhalation of dust and fibres. • Ingestion of home grown produce. • Ingestion of dust and fibres. • Ingestion of contaminated water through water main pipework. • Inhalation of vapours from soils. • Inhalation Asbestos dust and fibres (from Asbestos within the building). • Inhalation Asbestos dust and fibres (from asbestos within the soil).
Ground Water Risk	Risk to the ground water is reduced due to the London Clay, an Unproductive Strata recorded in place within the site and no abstractions wells are recorded close to the site area. A watching brief should be maintained throughout the development, should any significant pollution or suspect materials be encountered reassessment to the risk should be undertaken.
Surface water Risk	Considering the nature of the feature surrounding the site area and the London Clay risk to the feature is reduced. A watching brief should be maintained throughout the development, should any significant pollution or suspect materials be encountered reassessment to the risk should be undertaken.
Vapour Risk	Sources of contamination that may promote a vapour risk are recorded in place as such risk maybe in place. Potential pathways in place within the site area recorded as: - • Inhalation of vapours from soils - Visual and chemical tests to be completed initially;
Land Gas Risk	No sources of land gases are in place for the site area, should significant made ground or organic matter be encountered within the site area reassessment may be required, although for the information collect to date the risk of this is low.
Recommendations	***Next Steps*** • Intrusive shallow based excavation using window sampler to assess the geological conditions and recover samples. • Initially assess soils for presence / absence of fuels and if encountered :- ○ Install standpipe for the monitoring of both groundwater and land gas / vapour risks; • Targeted sampling to assess on site source risk. • Spatial sampling. • Consideration through the site assessment as to the presence of Asbestos product within the site and subsoil within the site. • Visual observations of the subsoil encountered to make initial assessment of the potential risk from contamination. • Watching brief to record assess and report on unexpected contamination. Based on the above, a risk assessment should be completed when the findings of the investigation have been completed. This will result in a revised conceptual model based on actual site conditions and confirm the risks in place.

PRELIMINARY RISK ASSESSMENT – DESK TOP STUDY - PHASE 1 REPORT

1 Context and Objectives of this report

1.1 Introduction

We have been asked by The London Building Company to undertake an investigation of the above site in order to assess the potential environmental impact of the existing and historical use of the site on the proposed development sufficient to document the level of risk and impact on future users and the environment.

The London Building Company are proposing to develop two new dwellings. The standard we will use in the derivation of risk has therefore been assigned as a 'Residential Land Use with Home Grown Produce'.

1.2 Reference to the Current Planning Application Details

This report has been prepared with the pre-commencement condition at Camden Council in mind.

Application Number : None – No current applications are in place.

1.3 Decision Notice Relating to Contaminated Land

No current applications are in place.

1.4 Report Objectives

The objectives of the project were as follows:-

A review of the geological, hydrological and hydrogeological setting of the Site, and public domain environmental information to build up an understanding of the Site and its environmental setting/sensitivity.

- Review of historical land uses for the Site and surrounds with a particular emphasis on identifying potential ground hazards and on-site and off-site contamination sources.
- A visual walkover inspection of the Site to review current and recent Site activities, the condition of the Site, potential ground related hazards and activities or areas that might have the potential to cause ground contamination as well as possible indicators of contamination; and
- Preparation of a Conceptual Site Model (CSM) with a view to identifying potentially significant source-pathway-receptor linkages followed by a qualitative risk assessment.

1.5 Timescales of the Assessment

The timescales for the site investigation process are based on immediate site investigation data and the assessment of the site conditions based on this report at present. The scope of this report which define the following:-

- Any immediate risks identified within the site that may promote a high risk to the immediate site conditions.
- Any current site use features that would promote a risk that required 'quick' action.
- Any construction or medium term risks within the site which may be present during the construction process within the site.
- Any long-term risks within the site that may require long term assessments or interim monitoring;
- Any risks within the site that may change upon the change in use of the site to form the proposed development.

1.6 Level of Technical Confidence Expected

The scope of this report has been prepared in order to assess the historical impact of the site and any previous site uses on the existing and proposed development scheme. The level of risk will be prepared and assessed based on historical mapping and environmental information which has been gained to support the development of this report.

Whilst this is the case, gaps in map records and information will be in place that would reduce the readers confidence of the information sought. As such, this report has been prepared as a preliminary or Indicative Report with a Medium Confidence Level.

1.7 Management Constraints

The site investigation has been prepared based on a budget and time scales which has been agreed with the client. The desk top study fees have been agreed at this time which will dictate a way forward.

2 Broad Characteristics of the site

2.1 The Site

The site is located within a commercial and residential area of Camden, the details of which are summarised in Table 1 with the location plan of the site shown in Appendix 2, Sheet 1.

Table 1 Site Detail

Site Address :	Bird in Hand West End Lane London NW6 4NX
Site assessed under	Site Owners Request - Aid as part of planning
Current use of land :	Public house and car park
Previous use of site, (if known)	As above
Grid Reference	NGR 525450, 183770
Site Area	0.05 Hectares
Local Authority	Camden Council
Gradient of the site	The site and the surrounding area forms a level area of land.
Proximity of Controlled Waters, (if known)	The nearest surface water feature is recorded as 794 metres to the south of the site which is recorded as no specific feature.

2.2 Existing Site Use

The site area forms a vacant public house which has side access for a car park for the facility.

2.3 Surrounding Land Uses

The surrounding land uses are detailed below :-

- To the east of the site area, residential housing is in place.
- To the west of the site area, residential flats are in place.
- To the south of the site area, residential flats are in place.
- To the north of the site area, residential housing is in place.

2.4 Site Reconnaissance

The site walk over visit was undertaken in December 2021 on which the weather conditions were recorded cold, slightly overcast with some sun.

Access

The site is accessed off West End Lane and forms an existing two storey commercial public house with associated land. The access into the site is limited, although, this is mainly a product of the small size of the site. The main entrance into the site is via a steel gate which leads round the side of the existing public house and to the rear of the site where parking is in place. Pedestrian access through the public house is available via the front door.

Site Area

The site is a rectangular parcel of land which has a public house main building fronting directly onto the pavement at the front of the site and across the front boundary. This extends up to the side access area where approximately 2.00-2.50 metres of vehicle access is available into the site. This provide vehicle access to the rear section of the site which is for vehicle parking for patrons of the former public house.

The main public house is of brick construction and appears to have a dray entrance on the western section of the building which may be indicative of a semi basement or basement.

The rear section of the site is laid to a combination of concrete and tarmac, some of which is loose. The rear car park is bounded on all sides by a brick wall approximately 2 metres tall. An extension is present into the rear garden from the main building.

Vegetation

No plants and vegetation were identified in the site as the site is laid entirely to hard landscaping.

Above or below ground fuel or oil storage tanks

By examination of the site, no above ground tanks are in place, no feature are present to suggest that any below ground fuel tanks would be in place within the site area. No staining was seen in place.

Asbestos Containing Materials

No Asbestos containing materials were reviewed on site from our walk over inspection. We recommend that an asbestos survey of the building be carried out, if not done so already, prior to any demolished or works on site; A full Asbestos survey will be required in order to fully consider Asbestos within any fill material on site.

Surrounding Area

Generally, residential land uses are in place surrounding the site. Private vehicle garages are present behind the site, (to the south), which extend onto parkland associated with residential flats.

Site Levels and Ground Cover

The site area and the surrounding land is recorded as a generally level area of land with no obvious variations in level.

Current site activities

The current use of the site is recorded as public house.

Effluent, Site Drainage and Services

Drainage and services are in place within the site area these are recorded as entering the site along either side of the access driveway.

Gullies are in place within the concreted area which will cause any surface water to run off on to the grass land.

2.5 Site Reconnaissance – Photos

Print 1

Print 2

Print 3

Print 4

Print 5

Print 6

Print 7

Print 8

Print 9

Print 10

Print 11	Print 12
	

Table 2 Walk Over Inspection Risk

Feature	*Location*	*Elevation*	*Is Risk Present?*	*Location To Target*
Parking Areas		At GL.	✓	Rear
Private Vehicle Garages		At GL.	✓	Rear – Off Site

3 Details of Searches Undertaken

Within this report, various searches have been undertaken in order to assess the risk associated with the development of the site from the historical and current use of the site and surrounding area. These include:-

- Environmental Data Search 1:10,000.
- Environmental Data Search 1:2,500.
- Site Sensitivity Maps and Data Sheets.
- Historical Maps.
- Internet Search.
- Local Authority Search – Planning Files.
- Consultation with Site Owner / Architect.

4 Information on Historical and Current Activities on the Site and Surrounding Area

The history of the site's land-use and development from Victorian times onwards has been researched from Ordnance Survey, (O.S.) maps. Extracts of the O.S. Maps and plans are presented in Appendix 4. Reference to historical maps provides invaluable information regarding the land use/history of the site, but historical evidence may be incomplete for the period pre-dating the first edition and between successive map references.

4.1 Discussion of the Development History

A summary of the historical development of the site and surrounding area, based on the information obtained from the above sources is provided in Table 3. It should be noted that these maps are only a small section of time and represent the timescales given in each of the map records. It is highly possible that development or features may have been developed within or surrounding the site which may influence the site and this should be bourn in mind when assessing the history of the site.

Table 3 ***Historic Maps Assessment***

Date	***On Site Feature***	***On Site Mitigation (considering all possible pathways)***	***Off Site Feature***	***Off Site Mitigation (considering all possible pathways)***
1850 Source Map Scale 1:5,280	Open Land	No Source	Open Land	
1870 Source Map Scale 1:2,500	Residential Land	No Source	Residential Land	No Source
			Railway Land, 120m, S	Possible Vapour Risk Possible Land Gas Risk Possible GW Risk
1873 Source Map Scale 1:10,560				
1896 Source Map Scale 1:2,500				
1996 Source Map Scale 1:10,560				
1915 Source Map Scale 1:2,500				
1920 Source Map Scale 1:10,560				
1935 Source Map Scale 1:2,500			Works, 30m, E & W, 80m, S	Possible Vapour Risk Possible Land Gas Risk Possible GW Risk
1946 Historic Aerial Photo			Demolition of the immediate surrounding land uses, All directions for 50m	Source removed.
1951 Source Map Scale 1:10,560	Public House marked on site.	No Source	Development of residential Flats, 30m, All Directions	No Source

Table 3a Historic Map Assessment - Continued…….

Date	On Site Feature	On Site Mitigation (considering all possible pathways)	Off Site Feature	Off Site Mitigation (considering all possible pathways)
1955 Source Map Scale 1:10,000				
1957 Source Map Scale 1:1,250				
1962 Source Map Scale 1:1,250				
1967 Source Map Scale 1:10,000				
1968 Source Map Scale 1:1,250				
1970 Source Map Scale 1:2,500				
1974 Source Map Scale 1:10,000				
1985 Source Map Scale 1:25,000				
1991 Source Map Scale 1:10,000				
1991 Source Map Scale 1:1,250			Garages, 10m, S	Possible Soil Risk Possible Vapour Risk Possible Land Gas Risk Possible GW Risk
1994 Source Map Scale 1:1,250				

Table 3b Historic Map Assessment - Continued…….

Date	*On Site Feature*	*On Site Mitigation (considering all possible pathways)*	*Off Site Feature*	*Off Site Mitigation (considering all possible pathways)*
1999 Historic Aerial Photo				
1999 Source Map Scale 1:10,000				
2006 Source Map Scale 1:10,000				
2021 Source Map Scale 1:10,000				

Table 4 Overview of Historic Map Assessment Risk

Identified Risk	Distance & Direction	Year	Is risk in place?	Considering All Pathways		Justification
				Assessment Required.	Method of Assessment	
Open Land	On Site	1850-1870	X	No Source		No obvious source risk in place
Residential Land (Possibly Public House with no demarcation)	On Site	1870-1951	X	No Source		No obvious source risk in place
Public House	On Site	1951-Present	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Consider groundwater and vapour risks.
Open Land	Off Site, All Directions	1850 -1870	X	No Source		No obvious source risk in place
Residential Land	Off Site, All Directions	1870 – Present	X	No Source		No obvious source risk in place
Railway Land	Off Site, 120m, S	1870 – Present	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Consider groundwater and vapour risks.
Works	Off Site, 30m, E & W, 80m, S	1935 – 1951	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Consider groundwater and vapour risks.
Residential Flats	Off Site , All Direction	1951 - Present	X	No Source		No obvious source risk in place
Garages	Off Site, 10m, S	1991 - Present	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Consider groundwater and vapour risks.

5 Details of the Intended Future Use of the Site

No specific details are available as to the proposed end use of the site, although, plans are recorded in place which confirm that the proposed end use of the site will form a residential block of flats with associated parking and gardens.

6 References of Planning Applications

No current planning application is in place for the site area.

7 Discussion with Local Authority

No discussion with the Local Authority has been completed.

8 Consultation with Environment Agency

Consultation has not been made with the Environment Agency at this time. The information gained from Envirocheck and the EA web site has provided sufficient information at this stage. The assessment of the site should take into account the groundwater regime within the site area and the possible risk from both on site and off site contamination.

Should heavy or persistent contamination be identified within any Phase 2 or intrusive investigation, consultation will be required and will be undertaken.

9 Consultation with Appropriate Bodies/Local Sources

Consultation with the Local Authority has taken place and an attempt at the Archives department made. This forms the level of assessments made. No local sources of Information where in place at the time of writing this report and completing the walk over.

Limited consultation with the Local Authority has taken place a review of the online planning files has been made. No other local sources of information were available at the time if the walk over. This forms the level of assessments made.

10 Previous Reporting

No previous reports are known to us at the time of writing this report.

11 Environmental Settings

11.1 Superficial Deposits and Solid Geology

The ground conditions based on geological maps and BGS information shows the site to be located within a small pocket area which is identified as London Clay is in place.

11.2 BGS Boreholes

No BGS Boreholes are reported surrounding the site.

Table 5 Geological Information

Geological Unit	*Brief Description*	*Anticipated thickness, (m)*	*Aquifer Type*
Superficial Deposits/Drift *On Site*			
Filled/Re-worked ground	Made Ground, (Potentially Contaminated Stratum).	0.5-1.00 meters+	Not Classified
Solid Geology Deposits			
London Clay	Clay	15m +	Unproductive Stratum

11.2 Hydrology

The nearest surface water feature is recorded as 794 metres to the south of the site which has no appreciable water feature in place.

No discharge consents are recorded surrounding the site.

No pollution incidents to controlled waters are present surrounding the site.

11.3 Hydrogeology

The published Environment Agency Groundwater Vulnerability Map of the area, (Sheet 40 Thames Estuary), indicates the site to be located within an area classified as an Unproductive Stratum which is formed by London Clay.

The nearest abstraction well is located 1376 metres to the east of the site which is recorded as for Municipal Grounds : Spray and Irrigation.

The site does not lie within a Source Protection Zone.

11.4 Implication of groundwater

Considering the above, groundwater risk may be in place if significant contamination or a persistent source of contamination are encountered or recorded within the site area, within the information to date risk is considered possible.

11.5 Flooding

The site does not lie within an area which is susceptible to flooding.

11.6 Landfill Sites

No landfill sites are recorded in place surrounding the site area.

Infilled land has been identified as in place some 127 meters to the west of the site which was unknown and possibly derived from a Quarry or Pit.

11.7 Environmentally Sensitive Sites

Surrounding the site area no environmentally sensitive receptors are recorded in place.

Table 6 Sensitivity of Environmental Receptors in the Vicinity of the Site

Receptor Type	Receptor(s)	Sensitivity	Comments
Groundwater	Unproductive Stratum	Low	Limited risk of migration to a lower groundwater system
Water Abstraction	Spray & Irrigation	Low	The nearest abstraction well is located 1376 metres to the east of the site which is recorded as for Municipal Grounds : Spray and Irrigation.
Source Protection Zone	NONE		
Surface Water	Unknown	Low	The nearest surface water feature is recorded as 794 metres to the south of the site which has no appreciable water feature in place.
Flooding	NONE		
Ecological	NONE		

12 Site Drainage and Other Potential Man Made Pathways

Drainage is recorded in place, although, the site has not been reviewed for drainage routes. A full drainage assessment may aid in the assessment of the site in relation to pathway creation for pollution to migrate.

13 Regulatory Data

Information relating to the potential hazards associated with environmental regulatory controls are summarised in Table 7 and 8. This information is recorded in full within the Envirocheck data provided within Appendix 5. The salient points recorded within this data are re-created below.

Table 7 Summery of Regulatory Data - Sources

Data	***On Site***	***Off Site***	***Distance from site.***	***Is potential risk in place?***
Sources				
LAPPC	None	Dry Cleaners	Off Site, m, 182m, S	**X**
Pollution Incident to Controlled Waters	None	Minor Incident – Unknown Sewage	Off Site, 933m, SE	**X**
Potentially Infilled Land	None	Unknown Filled Ground (Pit, quarry etc)	Off Site, 976m, E	**X**
Radon Potential - Radon Protection Measures	The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level).			**X**

Table 8 Summary of Regulatory Data - Receptors

Data	*On Site*	*Off Site*	*Distance from site.*	*Is potential risk in place?*
Receptors				
Nearest Surface Water Feature	None	No Obvious Feature	Off Site, 794m, S	X
Water Abstractions	None	Municipal Grounds: Spray Irrigation - Direct	Off Site, 1376m, E	X
OS Water Network Lines	None	None		X
Source Protection Zone	None	None		X

Table 9 BGS Estimated Chemistry Data

BGS Estimated Soil Chemistry Pollutant	*BGS Urban Soil Chemistry Averages (mg / kg)*		
	Minimum	Average	Maximum
Arsenic	1.00	17.00	161.00
Cadmium	0.10	0.90	165.20
Chromium	13.00	79.00	2094.00
Lead	11.00	280.00	10000.00
Nickel	2.00	28.00	506.00

Table 10 Geological Hazards

Geological Hazard	*Distance & Direction*	*Feature*	*Risk Assessment Required*
Non Coal Mining Areas of Great Britain	On Site		Very Low
Collapsible Ground	On Site		Very Low
Compressible Ground	On Site		No Hazard
Ground Dissolution Features	On Site		No Hazard
Landslide	On Site		Very Low
Running Sand	On Site		Very Low
Shrinking or Swelling Clay	On Site		Moderate

Table 11 Summary of Contemporary Trade Entries

Trade Name	*Trade Use*	*Distance & Direction from Site*	*Is potential risk in place?*	**Comment**
St. Johns Wood Heating Services Ltd	Boilers - Servicing, Replacements & Repairs	58m, NW	X	
The Perfume Shop	Perfume Suppliers	68m, SW	X	
Olympic T C R	Garage Services	73m, SE	X	
Further Trades Extend Away From The Site, (See Envirocheck Data)				

**NB The above information is taken from the Envirocheck trade directories*

14 Identification of Potential Contaminants of Concern and Source Areas

Potential sources of contamination are brought forward for further risk assessment which are detailed in Table 12 :-

Table 12 Table of Source Risk

Risk Assess -ment	*Source Risk*	*Additional Features*	*Source of Information*	*Location*	*Date*	**Considering Site Specific Pathways**	
						Assessment Required.	**Method of Assessment**
	Features On Site						
A	Public House		Historical Maps	On Site		Possible Soil Risk	Recover Soil Samples Install Standpipes GW Assessments
B	Railway Land			Off Site, 120m, S		Possible Human Health Risk	Install Standpipes Vapour Assessments
B	Works			Off Site, 30m, E & W, 80m, S		Possible Human Health Risk	Install Standpipes Vapour Assessments
	Walk Over Survey						
A	Parking Areas		Walk Over Survey	On Site		Possible Soil Risk Possible Vapour Risk Possible GW Risk	Recover Soil Samples Install Standpipes Vapour Assessments GW Assessments
A	Vehicle Garages			Rear, Off Site, 5m, S		Possible Soil Risk Possible Vapour Risk Possible GW Risk	Recover Soil Samples Install Standpipes Vapour Assessments GW Assessments
	Envirocheck Data						
	NONE						

15 Outline Conceptual Model

What must now be considered is what contamination should be identified as a potential hazard as a result of the use of the site specific areas. In order to undertake this task, the ***Contaminated Land Reports, (CLR10)***, has been used which details some trades and potential sources of contamination. In addition to this, the Department of Environment Industry Profiles have been incorporated which detail trade, and also, specific site usage of the trade and contaminant sources.

The information below incorporates a hazard assessment of the features surrounding the site that could potentially impact on the proposed development. This is based on the information below :-

Table 13 CIRIA Contaminated Land Risk Assessment Table

		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**

Extracted from CIRIA Publication C552 Contaminated Land Risk Assessment

Table 14 *Risk Assessment A*

Source (Potential Contaminating Use)	Potential *Contaminants*	*Receptors*	*Pathways*	*Associated Hazard, [Severity]*	*Proposed Site Use Risk Assessment*		
					Likelihood of occurrence	*Potential Risk*	*Notes*
Public House ***Parking Area*** ***Vehicle Garages*** ***On Site and directly off site.***	TPH's Naphthalene.	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Likely	Moderate	Possible risk in place
			Ingestion of home grown produce	Medium	Likely	Moderate	Possible risk in place
			Ingestion of contaminated water through water main pipework	Medium	Likely	Moderate	Possible risk in place
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	Possible risk in place
			Inhalation of land Gases	Medium	Unlikely	Low	No Risk
			Inhalation of vapours through contaminated ground waters	Medium	Unlikely	Low	No Risk
		Adjoining Land Owners	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of home grown produce	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of contaminated water through water main pipework	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours through contaminated ground waters	Medium	Unlikely	Low	No Risk
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	Medium	Unlikely	Low	No Risk
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.	Medium	Unlikely	Low	No Risk
		Flora	Plant Uptake Direct Contact	Medium	Likely	Moderate	Possible risk in place
	Asbestos	Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Likely	High	Possible risk in place
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Likely	High	Possible risk in place
	Metals Metalloids PAH's	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers; Dermal contact;	Medium	Likely	Moderate	Possible risk in place
			Ingestion of home grown produce	Medium	Likely	Moderate	Possible risk in place
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	Medium	Unlikely	Low	No Risk
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.	Medium	Unlikely	Low	No Risk
	TPH's Naphthalene,	Buildings; Construction Materials. Services	Direct contact with contaminated soils;	Medium	Likely	Moderate	Possible risk in place
			Direct contact with contaminated groundwater	Medium	Unlikely	Low	No Risk

Table 15 *Risk Assessment B*

Source (Potential Contaminating Use)	**Potential *Contaminants***	***Receptors***	***Pathways***	***Associated Hazard, [Severity]***	***Proposed Site Use Risk Assessment***		
					Likelihood of occurrence	***Potential Risk***	***Notes***
Railway Land Off Site, 120m, S Works Off Site, 30m, E & W, 80m, S	TPH's Naphthalene PCB's.	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Unlikely	Low	No Risk
			Ingestion of home grown produce	Medium	Unlikely	Low	No Risk
			Ingestion of contaminated water through water main pipework	Medium	Unlikely	Low	No Risk
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of land Gases	Medium	Unlikely	Low	No Risk
			Inhalation of vapours through contaminated ground waters	Medium	Unlikely	Low	No Risk
		Adjoining Land Owners	Direct contact; Inhalation dust and fibers. Dermal contact	NO LIABILITY FROM THIRD PARTIES			
			Ingestion of home grown produce				
			Ingestion of contaminated water through water main pipework				
			Inhalation of vapours				
			Inhalation of vapours through contaminated ground waters				
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.				
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
		Flora	Plant Uptake Direct Contact	Medium	Unlikely	Low	No Risk
Asbestos		Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Unlikely		No Risk
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Unlikely		No Risk
Metals Metalloids PAH's		Site Users Construction Workers.	Direct contact; Inhalation dust and fibers; Dermal contact;	Medium	Unlikely	Low	No Risk
			Ingestion of home grown produce	Medium	Unlikely	Low	No Risk
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	NO LIABILITY FROM THIRD PARTIES			
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
TPH's Naphthalene.		Buildings; Construction Materials. Services	Direct contact with contaminated soils;	Medium	Unlikely	Low	No Risk
			Direct contact with contaminated groundwater	Medium	Unlikely	Low	No Risk

Table 16 Overview of Risk Assessments - Proposed Site Use

Receptors	Pathways	A	B
		Public House and Parking / Garages	***Railway Land & Works***
Site Users ***Construction Workers***	Direct Contact, Inhalation of Dust and Fibres, Dermal Contact	✓	X
	Ingestion of home grown vegetation	✓	X
	Ingestion of contaminated water through water main pipework	✓	X
	Inhalation of vapours from soils	✓	X
	Inhalation of vapour from contaminated ground waters	✓	✓
	Inhalation of land gas vapours	✓	X
	Inhalation Asbestos dust and fibers (from Asbestos within the building)	✓	X
	Inhalation Asbestos dust and fibers (from asbestos within the soil)	✓	X
Adjoining Land Owners	Direct Contact, Inhalation of Dust and Fibres, Dermal Contact	✓	No Liability from third parties
	Ingestion of home grown vegetation	✓	
	Ingestion of contaminated water through water main pipework	✓	
	Inhalation of vapours from soils	✓	
	Inhalation of vapours from contaminated ground waters	✓	
Flora	Plant Uptake / Direct Contact	✓	X
Groundwater; Abstraction Well & Surface Water	Leaching, lateral migration of shallow groundwater to a River or surface water receptor.	✓	No Liability from third parties
	Leaching, lateral migration of shallow groundwater system underlying the site and subsequent abstraction well or SPZ	✓	
Buildings	Direct contact with contaminated soils.	✓	X
	Direct contact with contaminated groundwater	✓	X

**NB : Due to Severe Consequence from Asbestos and Explosive Gases, some risk is assessed and potentially in place and therefore highlighted above.*
GW Only: Some risks have been assessed as a direct result of potential mobilisation of groundwater contamination that may influence the site. A pictorial conceptual model has been reproduced within this report to confirm the above findings

16 Discussion on Sources of Contamination

The assessments of the site have drawn conclusions of historical and ongoing land uses which may impact on the proposed development which will be further considered through location, (either on or off site) and nature of risk. These are discussed below:-

Table 17 Pollutant Risk

Risk Assessment	Land Use	Pollutant	
Risk Assessment A	***Historic Maps*** ***Public House, Parking*** On Site / Adjacent to the site	***Soil, Groundwater & Vapour Risk*** Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols, Asbestos, Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene. ***Soil Sampling Groundwater & Vapour Assessment***	
Risk Assessment B	***Historical Features & Walk Over Survey*** ***Railway Land and Works*** On Site	***Vapour Risk*** Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene, PCB's. ***Vapour Assessment***	
Spatial Sampling, (General Assessment)		Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols.	25 meter Centres In accordance with BS10175: 2011+A2:2017.
		Asbestos	5-10 meter Centres In accordance with BS10175: 2011+A2:2017.

17 Next Steps

Considering the information gathered to date, we would suggest that an appropriate way forward would be to assess the condition of the subsoil within the site resulting from the historical and former uses of the site as detailed within previous sections of this report. We would suggest that the most viable way of assessing risk will be to consider the following assessment techniques.

The assessment of the site proposed in this report and the following recommendations which are detailed below have been prepared in accordance with key guidance documents as follows:-

- National Planning Policy Framework;
- British Standards 10175:2011+A2:2017
- Contaminated Land Report, (CLR11) 11, 'Model Procedures for the Management of Contaminated Land', (2004);
- DEFRA: Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, (April 2012);
- Environment Agency, (EA), GP3 'Groundwater Protection: Policy and Practice'.

Based on the site area and size of the site, (approximately 500 m²), we would recommend that the site should be subjected to a sampling density of between 15-20 meter grid pattern or moderate risk pollutants which is broadly in line with that proposed by 10175:2011+A2:2017 and offers a greater density sampling pattern of 10-15 meter grid pattern for high risk pollutant such as Asbestos. As such, we can confirm that a likely 3-4 samples will be required across the site to provide a 'good' spatial density and an additional 5-6 sample locations being tested for Asbestos.

The investigation is proposing to undertake the following at the site :-

- Determine the ground and groundwater conditions;
- Determine if there are any obstructions such as old service and foundations, buried tanks, etc;
- Install vapour monitoring well installations and monitor the levels of vapours.
- Obtain samples of soil to test for vapours contaminants, as identified in Table 17;
- Install standpipes to obtain readings of vapour for analysis to be tested for a range of contaminants, as identified in Table 17;
- Visually appraise soils to consider olfactoral or visual presence of contamination factors, risk, vapours or fragments.
- All laboratory testing should be completed to MCERT/UKAS accredited standard.
- All detection limits provided by chemical laboratories must fall below the set screening values

17.1 Soil Assessment

Soil sampling will be completed recovering samples in appropriate containers for analysis by the analytical chemist. All sampling will be sent directly to the chemist in cool boxes to retain the integrity of the soil sample.

Table 18 Soils Assessment - Targeted Sampling

Feature	***Contaminant***	***Method Of Investigation***
Parking Areas	Standard suite Hydrocarbons.	Window Sampler Boreholes Hand Auger Boreholes Trial Pits
Rear boundary adjacent to private garages		

Table 19 Soils Assessment – Spatial Sampling

Feature	***Contaminant***	***Method Of Investigation***
Historic development	Standard Environmental Suite	Window Sampler Boreholes Hand Auger Boreholes Trial Pits

Upon completion of on-site sampling and the associated chemical analysis, the soil data will be compared against the Generic Assessment Criteria derived by AtRisk Soils which has been purchased as a reviewing standard. This has been prepared by Atkins as Soil Screening Values, (SSV's). Additionally, values will be adopted for screening values using LQM / CIEH – Suitable 4 Use Levels in the absence of Atkins adopted values.

17.2 Groundwater Assessment

Method of Groundwater Assessment

Considering the low risk to the ground water and surface water feature order to gain an understanding of the groundwater system and the level of risk in place, we can confirm that the following works should be completed: -

- Assess the geology and absence or presents of groundwater;
- Groundwater assessments are considered limited at present. Should groundwater be encountered within the site, an additional assessment should be made and standpipes installed. At present, this is not considered unlikely.

17.3 Land Gas Assessment

No sources of land gases are in place for the site area, should significant made ground or organic matter be encountered within the site area reassessment may be required, although for the information collect to date the risk of this is low.

17.4 Vapour Risk Assessment

Considering the potential for vapour risk to be in place from various source as noted below, the following risk are in place.

Table 20 Vapour Risk Assessment - Response Zone

Feature	***Targeted Response Zone***	***Location to Target***	***Vapour risk***
Parking Areas	Made Ground	Site wide	TPH's, Naphthalene, BTEX. MTBE.
Vehicle Garages		Site wide	
Works, (Off Site).		North	
Railway Land, (Off Site).		South	

Considering the above, we would suggest that soil testing is undertaken to assess whether contamination that may promote a vapour risk is in place within the site area and the groundwater.

17.5 Working Brief

It should be noted that this investigation is undertaken in order to identify the extent of contamination as a result of historic and ongoing use. Should any areas of the site be encountered within the development that appear potentially contaminated through visual or olfactory assessment outside that discussed within this report, consultation with ourselves should be undertaken in order to identify the risk associated with the material.

Table 21 ***Overview of Works***

Receptor	Scope of Investigation Works Required			Proposed Method of Assessment	Proposed Site Works to Complete
	Assessment of :				
	Soils	Vapour and Gas	Ground and Surface Water		
Human Health	✓	✓	✓	Window Sampling - Soil sampling - Install standpipe - Vapour Monitoring	Recover samples of the made ground. Assessment of the underlying natural soils to consider contamination. Vapour Risk Assessment. Analysis of soil samples for GQRA Assessment. Reporting
Surface Water	X	X	X	No Action	
Ground Water	X	X	X	No Action	
Services & Building	✓	✓#	X	Window Sampling - Soil sampling	Recover samples of the made ground. Vapour Risk Assessment. Groundwater Assessment. Analysis of soil samples for GQRA Assessment. Reporting.
Geotechnical Assessment	✓	N/A	X	Window Sampling	Recover samples of the natural soils for laboratory testing. Assessment of shallow soils for conventional foundation. Consider deeper or piled foundations. Reporting.

NB * Initial assessments of the site should be undertaken using Leachate Testing and water sampling if required.
Complete soils testing to assess if vaporous contamination is in place within the site area.

APPENDIX ONE

CONCEPTUAL MODEL

HERTS & ESSEX SITE INVESTIGATIONS
The Old Post Office, Wellpond Green
Standon, Ware, Herts. SG11 1NJ
Telephone: 01920 822233
e-mail info@hesi.co.uk

Appendix No	1
Sheet No	1
Job No	17185
Date	Jan 2022

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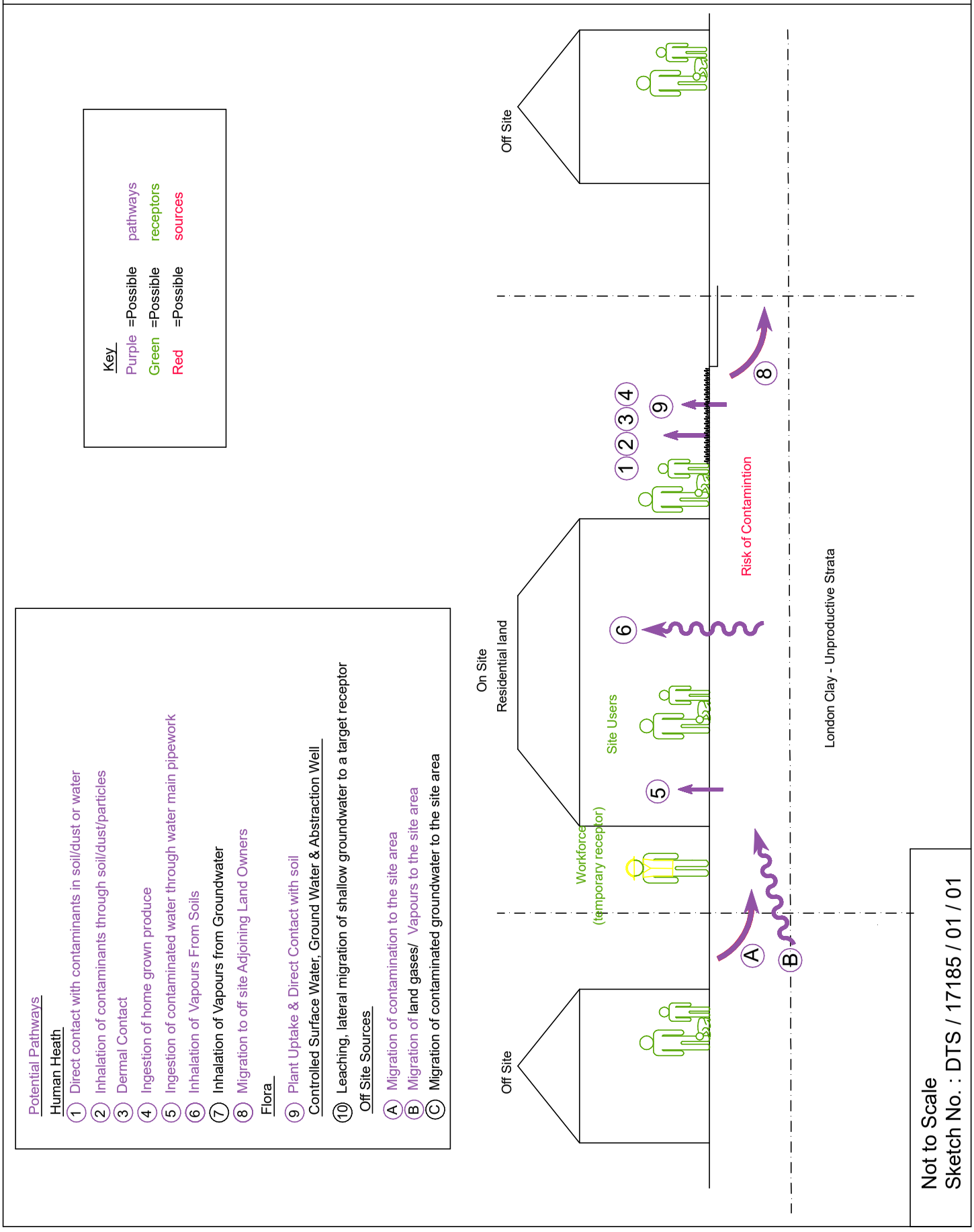
Site Conceptual Model - Proposed SIte Plan



APPENDIX TWO

SITE PLANS

HERTS & ESSEX SITE INVESTIGATIONS
The Old Post Office, Wellpond Green
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e-mail info@hesi.co.uk

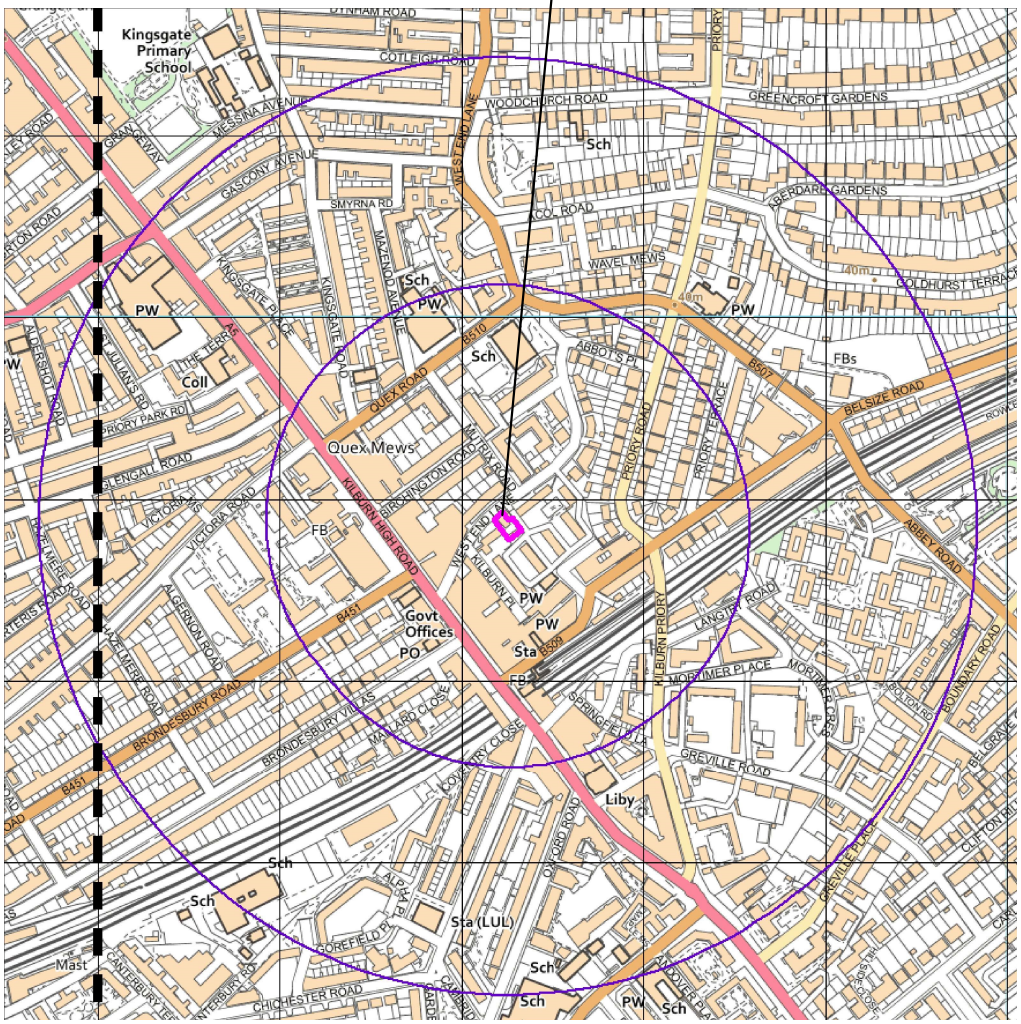
Appendix No	2
Sheet No	1
Job No	17185
Date	Jan 2022

Bird in the Hand, West End Lane, London NW6 4NX

Location Plan

N

The Site



Not to Scale

Sketch No. : DTS / 17185 / 02 / 01

HERTS & ESSEX SITE INVESTIGATIONS
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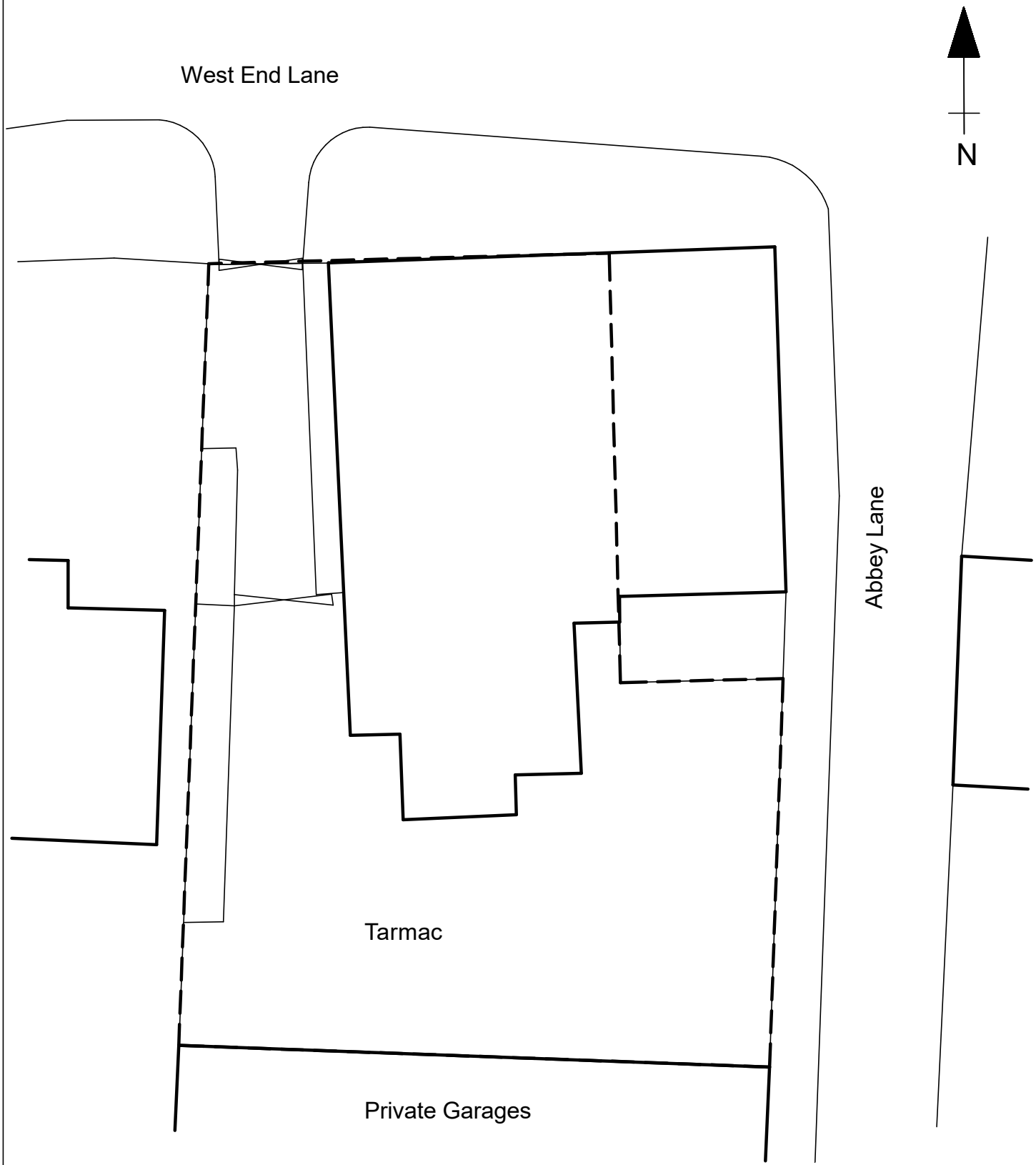
Appendix No	2
Sheet No	2
Job No	17185
Date	Jan 2022

Bird in the Hand, West End Lane, London NW6 4NX

Existing Site Plan



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