HERTS & ESSEX SITE INVESTIGATIONS

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GEOTECHNICAL ASSESSMENTS – ENVIRONMENTAL ASSESSMENT - DESKTOP STUDY – CONTAMINATED LAND

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Report For:

NFC Homes Limited

Phase I DESK TOP STUDY REPORT

Site location:

38-42 Vincam Close, Whitton, TW2 7AB

August 2021
Report No. 16925

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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.

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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Qualifications

C.S.Gray

- 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	August 2021			

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.

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 report 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	August 2021
2	NFC Homes Limited	Electronic Copy	1	August 2021
3				
4				
5				
6				
7				
8				

EXECUTIVE SUMMARY

PHASE 1 DESK TOP STUDY REPORT

Client	NFC Homes Limited
Site Location	38-42 Vincam Close, Whitton, TW2 7AB
Existing Development	Residential dwellings
Proposed Development	Residential dwellings
Site Settings and Previous Uses	The site area is recorded as woodland until about 1960 when residential dwellings were recorded to the centre of the site, with an additional bungalow built in about 1966. These remain in place to date. Surrounding the site residential land was developed from 1960. Further from the site railway lines are recorded 80 meters to the south of the site from 1874 and then from 1966 additional railway lines are noted 50 meters to the southeast of the site these remain in place to date. To the northeast of the site area an Isolation Hospital was in place from 1913 to 1960 with the main buildings about 50 meters from the site area.
Nearest Surface Water Feature	The nearest surface water feature is recorded 123 meters to the south of the site and forms a ditch.

Geological and Hydrological Profile

Geology		***Aquifer Classification***
Made Ground	Shallow Made Ground Anticipated	Not Classified
Taplow Gravel Member	Sand and gravel	Principle Aquifer
London Clay	Clay	Unproductive Stratum

Groundwater Abstractions	The nearest abstraction well is located 1291 meters to the north of the site which is recorded as a Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden)
Source Protection Zone	The site does not lie within a Source Protection Zone.

Potential Sources of Contamination

On Site	***Off Site***
• None	• None

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	Limited sources of contamination that are likely to impact on the site are recorded within and surrounding the site. A watching brief should be kept as follows and it may be prudent to complete an exploratory investigation to confirm no risks are in place. 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.
Ground Water Risk	Considering the unproductive strata within and surrounding the site area there is limited risk of ground water being in place and with limited sources of risk in place within the site 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 pond located to the south of the site, direct links between the site conditions are unlikely to be in place due to the geology of the area.
Vapour Risk	No sources of vaporous contamination are recorded in place.
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	• It may be prudent to complete intrusive shallow based excavation using hand sampler to assess the geological conditions and recover samples. • General exploratory investigation sampling to assess 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 NFC Homes Limited 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 client is proposing to develop residential dwelling within the site. 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

A pre-application has been submitted to London Borough of Richmond upon Thames although no current applications are in place.

1.3 Decision Notice Relating to Contaminated Land

There are no conditions in place for the site at the time of writing this report, although as part of the pre-app response Richmond Council said:

"Contamination
Part of the site has been identified to have been impacted by contamination given the previous industrial use. As part of any future planning application, a contaminated land assessment should be submitted where the Council's Environmental Health officer would be consulted."

Therefore this report has been completed and will be submitted with the planning application.

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 Residential area of Whitton, 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:	38-42 Vincam Close, Whitton, TW2 7AB
Site assessed under	Aid as part of planning application and warranties
Current use of land:	Residential land
Previous use of site, (if known)	As above
Grid Reference	NGR 513360, 173830
Site Area	0.19 Hectares
Local Authority	Richmond Council
Gradient of the site	The site and the surrounding area forms a level area.
Proximity of Controlled Waters, (if known)	The nearest surface water feature is recorded as 123 meters to the south of the site area, where there is a ditch in place.

2.2 Existing Site Use

The site area forms three residential dwellings with gardens

2.3 Surrounding Land Uses

Surrounding the site area there is residential land in place, with Vincam Close in place to the south of the site.

2.4 Site Reconnaissance

The site walk over visit was undertaken in August 2021 on which the weather conditions were recorded warm and sunny.

Access

Front driveways are in place within the south of the site area which are accessible from the road. Pedestrian access is in place to the rear gardens of the bungalow (No 42) and Number 38. To the west of Number 40 there is access for vehicles to get the garage within the rear garden.

Site Area

Three dwellings are in place within the site area, a bungalow within the west, and two semi detached dwellings within the east.

The bungalow is access via a tarmac driveway within leads onto a tarmac parking area to the front of the dwelling, at the time of the walk over there was a stockpile of wood and garden debris. Attached to the east of the dwelling there is a single garage in place. At the time of the walk over there was no access to the rear garden.

A set of semi detached two storey dwellings are in place towards the center of the site area. To the front of number 40 there is a block paved parking area which extends to the west of the dwelling under a Perspex and wooden car port and into the rear garden, the block paving leads up to a block work garage, with a flat roof. Plant beds and a lawn are in place across the rest of the garden area, with a wooden shed within the south east of the garden.

The front garden to number 28 within the east of the site area is laid to plant beds and lawn with a paved path and parking space. The garden area extends to the south and east of the dwelling, laid to lawn with an outbuilding within the north east of the garden.

Vegetation

Vegetation is in place across the site area, all of which was in a good state of growth.

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.

Asbestos Containing Materials

No Asbestos containing materials were reviewed within the site area. We recommend that an asbestos survey of the building be carried out, if not done so already, prior to any further demolition or works on site. A full assessment for asbestos within the fill in site will be required in order to fully consider risk from Asbestos.

Surrounding Area

Surrounding the site area residential land is in place. With rear gardens backing on to the north of the site area, to the south of the site area Vincam Close is in place with a block of private garages about 10 meters from the site area. To the west of the site area there are block of residential flats in place with railway lines beyond, about 50 meters from the site area.

Site Levels and Ground Cover

The site and the surrounding area generally form a level area of land.

Within the site area there is a mixture of paved and tarmac areas within the majority of the area external to the existing dwellings being laid to lawn and plant beds.

Current site activities

The current site use forms a residential land.

Effluent, Site Drainage and Services

Drainage and services are in place associated with the existing dwelling, although no service search is known to us within the east of the site area, therefore the location condition nor status of these services is known.

2.5 Site Reconnaissance – Photos

Print 1	View of the driveway to the bungalow looking towards Vincam Close.	Print 2	View of the bungalow within the west of the site area
			

Print 3	View of the stockpile in place within the front drive of the Bungalow	Print 4	View of the semi dertached dwellings
			

Print 5	View of the paved front driveway to Number 40

Print 6	View of the rear garden to Number 40

Print 7	View of the rear garden to Number 40

Print 8	View of the front of Number 38

Print 9	View of the parking area to the front of Number 38

Print 10	View of the garden to Number 38

Print 11	View of the garden to Number 38

Print 12	View of the garden to Number 38

Print 13	View of the garden to Number 38

Print 14	View to the rare of Number 38

Table 2 Walk Over Inspection Risk

Feature	*Location*	*Elevation*	*Is Risk Present?*	*Location to Target*
Residential dwellings	On and Off site	At GL.	X	Limited sources of contamination are in place and the use of the site will remain residential.
Private Garages	Off site – S 50m	At GL	X	Distance from the site will reduce risk

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 born 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)*
1874 Source Map Scale 1:2 500	Open Land	No Source	Open Land – NE, E, S, W	No Source
			Railway lines – S 80m	Possible Soil Risk Possible Vapour Risk Possible GW Risk
1869 Source Map Scale 1:10 560	Woodland	No Source		
1896 Source Map Scale 1:2 500			Railway lines – SE 50m	Possible Soil Risk Possible Vapour Risk Possible GW Risk
1897 Source Map Scale 1:10 560				
1913 Source Map Scale 1:2 500			Isolation Hospital – NE 10m	Possible Soil Risk Possible Vapour Risk Possible GW Risk
			Residential land – E	Limited sources
1920 Source Map Scale 1:10 560				
1932 Source Map Scale 1:10 560				
1934 Source Map Scale 1:10 560				
1938 Source Map Scale 1:10 560				
1960 Source Map Scale 1:10 000	Residential dwellings	Limited sources	Isolation Hospital – NE 10m – REMOVED	Source removed
			Residential land - N	Limited sources

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)*
1961 Source Map Scale 1:2 500				
1966 Source Map Scale 1:2 500 1:10 000	Additional dwelling– W	Limited sources		
1974 Source Map Scale 1:10 000				
1980 Source Map Scale 1:1 250				
1985 Source Map Scale 1:10 000				
1986 Source Map Scale 1:1 250				
1991 Source Map Scale 1:1 250				
1999 Source Map Scale 1:10 000				
2006 Source Map Scale 1:10,000				
2019 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 (woodland)	On and Off Site – N, E, S, W	Pre 1874 - 1960	X			No Source
Residential dwellings Additional dwelling	On Site – centre - W	1960 – Present 1966 – Present	X			Limited Sources
Railway lines	Off site – S 80m - SE 50m	Pre 1874 – Present 1896 – Present	✓	Possible Soil, Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	
Isolation Hospital	Off site – NE 10m	1913 - 1960	✓	Possible Soil, Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	
Residential land	Off site – E - N	1913 – Present 1960 – Present	X			Limited Sources

5 Details of the Intended Future Use of the Site

No specific Proposed plans are available to date, although 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.

Historical applications are in place with Council as follows: -

Number 38
Application No: 81/0516
Proposal: Erection of a part first floor and part two storey extension at side of dwelling house
Decision: Granted Permission 10/08/1981

Application Number: 80/0329
Proposal: Erection of first floor extension at side and rear of dwelling house.
Decision: Refused Permission 30/05/1980

Application No: 79/0168
Proposal: Erection of a first floor side extension.
Decision: Granted Permission 30/05/1980

Application Number: 72/0400
Proposal: Erection of single storey extension at side of property comprising lounge, bedroom and W.C.
Decision: Granted Permission 04/05/1972

Application No: 70/1982
Proposal: Erection of single storey addition at rear of property comprising dining room and lounge extension.
Decision: Granted Permission 20/11/1970

Application Number: 65/1093
Proposal: Erection of an additional garage.
Decision: Granted Permission 23/09/1965

Number 40

Application No: 71/0540
Proposal: Erection of single storey addition at rear of property comprising dining room and lounge extension.
Decision: Granted Permission 29/04/1971

Application Number: 60/0797
Proposal: Erection of a bungalow and garage.
Decision: Granted Permission 28/09/1960

7 Discussion with Local Authority

Comments from the EHO were received by the client as part of the pre application :-

Part of the site has been identified to have been impacted by contamination given the previous industrial use. As part of any future planning application, a contaminated land assessment should be submitted where the Council's Environmental Health officer would be consulted.

It is not clear for the historical mapping of the site what industrial uses were recorded in place.

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

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 an area of Taplow Gravel Member. This is seen to overlie London Clay which will be in place to depth. Surrounding this deposit, 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 <u>*On Site*</u>			
Filled/Re-worked ground	Made Ground, (Potentially Contaminated Stratum).	0.5-1.00 meters+	Not Classified
Taplow Gravel Member	Sand & Gravel	4-6+ meters	Principle Aquifer
Solid Geology Deposits			
London Clay	Clay	15m +	Unproductive Stratum

11.2 Hydrology

The nearest surface water feature is recorded as 123 meters to the south of the site which is recorded as a ditch.

No discharge consents are recorded surrounding the site.

The nearest pollution incidents to controlled waters is recorded as 111 meters to the south of the site which are recorded as Minor Incidents from Chemicals - Unknown.

11.3 Hydrogeology

The published Environment Agency Groundwater Vulnerability Map of the area indicates the site to be located within an area classified as a Principal Aquifer. The underlying geology is recorded as an Unproductive Stratum.

The nearest abstraction well is located 1291 meters to the north of the site which is recorded as a Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden) this may therefore form a Potable Water Supply, although no dedicated potable abstraction is recorded within 1.5km of the site.

The site does not lie within a Source Protection Zone.

11.4 Implication of groundwater

Considering the underlying Principle Aquifer, groundwater links are possible and therefore some degree of assessment will be required to classify the extent of risk to a groundwater system, as well as abstraction wells, surface water features and source protections zones surrounding the site area.

In accordance with Environment Agency guidance document: -

- Groundwater Protection: Principles and Practice (GP3) Part 5 – Remedial Targets Methodology,

The document confirms: -

- "Selecting compliance points for use in land contamination risk assessments the distance to a set compliance point should not exceed 50 metres for hazardous substances or a maximum of 250 metres for non-hazardous pollutants unless there are specific physical constraints on the ability to use the groundwater resource. Any increases above these specified distances may be justified but must be supported by a sustainability assessment that takes into account environmental, social and economic factors."

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 low.

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.

No Infilled land has been identified surrounding the site area.

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	Principle Aquifer	Moderate	Possible risk to underlying Sand & Gravel Deposits
	Unproductive Stratum	Low	Limited risk of migration to a lower groundwater system
Water Abstraction	Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden)	Medium	The nearest abstraction well is located 1291 meters to the north of the site
Source Protection Zone	NONE		
Surface Water	Ditch	Low	The nearest surface water feature is recorded as 123 meters to the south of the site
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				
Pollution Incident to Controlled Waters	None	Minor Incident – chemical – Unknown in 1991	S 111m	X
Radon Potential - Radon Protection Measures	No radon protective measures are necessary in the construction of new dwellings or extensions			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	Ditch	S 123	X
Water Abstractions	None	Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden)	N 1291	X
OS Water Network Lines	None	Inland River	S 123m	X
Source Protection Zone	None			X

Table 9 BGS Estimated Chemistry Data

BGS Estimated Soil Chemistry Pollutant	*BGS Measured Urban Soil Chemistry*	*BGS Urban Soil Chemistry Averages (mg / kg)*		
	W 162m	Minimum	Average	Maximum
Arsenic	14.10	1.00	17.00	161.00
Cadmium	0.30	0.10	0.90	165.20
Chromium	63.20	13.00	79.00	2094.00
Lead	81.00	11.00	280.00	10000.00
Nickel	17.50	2.00	28.00	506.00

Considering the background concentrations present, Potential for human health risk is anticipated within this area.

Table 10 Geological Hazards

Geological Hazard	*Distance & Direction*	*Feature*	*Risk Assessment Required*
Non-Coal Mining Areas of Great Britain	On Site		Negligible
Collapsible Ground	On Site		Very Low
Compressible Ground	On Site		Negligible
Ground Dissolution Features	On Site		Negligible
Landslide	On Site		Very Low
Running Sand	On Site		Very Low
Shrinking or Swelling Clay	On Site		Negligible

Table 11 Summary of Contemporary Trade Entries

Trade Name	*Trade Use*	*Distance & Direction from Site*	*Is potential risk in place?*	**Comment**
National Appliance Repairs	Cookers - Sales & Service	W 18m	**X**	59, Rodney Road, Inactive – This also forms a residential dwelling and therefore likely to the office or registered address.
No other trades are recorded within 50m, (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 Off Site						
A	Railway lines		Historical Maps	Off site – S 80m - SE 50m	Pre 1874 – Present 1896 – Present	Possible Soil, Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments
	Former Isolation Hospital		Historical Maps	Off site – NE 10m	1913 - 1960		

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*
Features Off Site ***Railway lines*** -S 80m & SE 50m ***Former Isolation Hospital*** 1913 – 1960 – NE 10m	TPH's Naphthalene. VOC's, PCB's	Site Users Construction Workers.	Direct contact. Inhalation dust and fibers. Dermal contact	Medium	Unlikely	Low	Distance from the site and the time that has passed reduces risk
			Ingestion of home-grown produce	Medium	Unlikely	Low	
			Ingestion of contaminated water through water main pipework	Medium	Unlikely	Low	
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	It is unlikely that significant sources of vaporous contamination is/was in place from these features which then reduces the likelihood of it migrating to the site area.
			Inhalation of land Gases	Medium	Unlikely	Low	No sources of Gas Gases
			Inhalation of vapours through contaminated ground waters	Medium	Low Likelihood	Moderate / Low	It is unlikely that significant sources of vaporous contamination is/was in place from these features which then reduces the likelihood of it migrating to groundwater and the site area.
		Adjoining Landowners	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	Distance from the site and the time that has passed reduces risk
Asbestos		Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Unlikely	Moderate / Low	No Action - Distance removes risk
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Unlikely	Moderate / Low	No Action - Distance removes risk
Metals Metalloids PAH's		Site Users Construction Workers.	Direct contact. Inhalation dust and fibers. Dermal contact;	Medium	Unlikely	Low	Distance from the site and the time that has passed reduces risk
			Ingestion of home-grown produce	Medium	Unlikely	Low	
		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. VOC's, PCB's		Buildings. Construction Materials. Services	Direct contact with contaminated soils;	Medium	Unlikely	Low	No Action
			Direct contact with contaminated groundwater	Medium	Low Likelihood	Moderate / Low	It is unlikely that significant sources of vaporous contamination is/was in place from these features which then reduces the likelihood of it migrating to ground water and the site area.

16 Identification of Potential Contaminants of Concern and Source Areas

Based on the information gained no specific sources of contamination are in place which are likely to impact on the development site. Within the site area there may be made ground in place although this is unlikely to contain contamination the following assessments are recommended

17 Next Steps

Considering the information gathered to date, it may be prudent to complete a general assessment of any fill material encountered within the site area to confirm no risk are in place.

Any assessment of the site should be 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 and BS10175: 2011+A2:2017, (approximately 1900 m²), we would recommend that the site should be could be subjected to a sampling density of between of 15 - 25 meter grid pattern to for an exploratory investigation. As such, we can confirm that a likely 3-6 samples will be required across the site to provide a 'good' spatial density.

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.
- Obtain samples of the made ground, natural soils for contamination testing for a general suite of potential contaminants
- Visually appraise soils to consider olfactorily 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 samples will be sent directly to the chemist in cool boxes to retain the integrity of the soil sample.

Table 15 Soils Assessment - Targeted Sampling

Feature	***Contaminant***	***Method of Investigation***
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.	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

The unproductive strata within and surrounding the site area will greatly reduce the potential of risk to the ground water, therefore the watching brief noted in section 15.5 should be kept.

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

No sources of vapours risks are recorded within the site area.

17.5 Working Brief

During the course of the development it will be the responsibility of the on-site manger to ensure watching briefs are kept. A watching brief consists of a record of:

- Any observations of contamination made during the course of development by any member of site staff, contractor or visitor.
- A photographic record of the key stages of development and key occurrences including any contamination found during the course of the development, the formation levels of excavations, any reduced level dig/mass excavation, formation of landscaped or garden areas, etc.
- Contact the Environmental Engineer and strategic points within the development of the site where contamination validation elements will be required.

In areas of the site where there is a greater chance of finding contaminated soil and/or water an area specific watching brief will need to be kept. Such a brief will need to be completed by an appropriately qualified site manager and/or an environmental consultant. The following table specifies works in specific parts of the site that require an area specific watching brief, identifying who must complete the watching brief.

Table 16 Watching Brief – Targeted areas for observation

Area of site	*Works to be observed*	*Person to observe works*
Foundation Excavations	General watching brief through foundation excavations.	Site agent / Contractors

Upon completion of associated works, a written and signed statement will be obtained by the following parties:

- Ground works contractor(s) upon completion of foundations and ground works.
- On site manager upon completion of groundworks and landscaping work.

The written statement must clearly state whether or not evidence of contamination was identified during the course of the development and the action that was taken. An example statement is provided below.

“I am [insert name] from [insert company]. We undertook [insert works undertaken] between the [start date] and [finish date]. During the course of work at [insert site name and address] we observed [delete

were not applicable: no potential contamination / evidence of contamination / significant evidence of contamination].

Where contamination is identified

The contamination identified:

[include a description of the observations of the contamination]
[identify the location of the observations of contamination and mark the locations on a plan]
[Who was notified of the observations]
[What action was taken to mitigate/clear up contamination]"

The on-site manager statement must include confirmation of whether all site staff and contractors received an appropriate brief regarding the potential presence of contamination.

Site Staff Training / Briefing

All site staff, site contractors and, where significant contamination is expected site visitors, will be briefed on the potential presence of land, water or air bourn contamination before commencing work on the site. Apart from any standard Health & Safety practices this will include the following information:

- Health & Safety considerations;
- Asbestos Awareness course;
- The type of land, water or air bourn contamination expected at the development site based on previous use and available site investigation information.
- Any particular areas of the site which are likely to be affected.
- Staff responsibilities under the discovery strategy.

The on-site manager will need to provide written confirmation that site staff were briefed about contaminated land in line with these recommendations.

17.6 Discovery Strategy

The discovery strategy sets out the actions that must be taken if contamination is encountered during the course of a development.

A significant observation includes any observation of contamination. Examples of the types of observations that would be considered significant are set out in the following table.

Table 17 Discovery Strategy – Examples of Observations

Evidence	*Description*
Visual	• Fuel or oil like substances mixed in with or smeared on the soil or floating on perched, groundwater or surface waters. • Waste materials (refuse, barrels, industrial wastes, ash, tar, etc.) buried at specific location or across the site. • Marked variation in colour. For example red, orange, yellow, green, light or dark blue, etc. may indicate contamination from a variety of contaminants. • Soils including large amounts of ash and clinker where such contamination of soils wasn't expected.
Odours	• Fuel, oil and chemical type odours • Unusual odours such as sweet odours or fishy odours
Wellbeing	• Light headedness and/or nausea when in excavations, at the working face of an excavation, when visual or olfactory evidence of contamination exists, etc. • Burning of nasal passages, throat, lungs or skin. • Blistering or reddening of skin due to contact with soil

Note: The examples provided in this table are not exhaustive.

The following table sets out the actions that must be taken if significant or suspected land, water or air contamination is observed by site staff, contractors or visitors.

Table 18 Discovery Strategy – Action to be taken if risks are encountered

Person observing contamination	*To be reported to:*	*Action to be taken*
Site visitor	Must report observations to the site manager	None
Contractor	Must report observations to the site manager	Stop work and where possible make area safe and secure area before reporting to site manager
On site manager	Must report observations to their direct manager, the appointed Environmental Consultant, the Planning Authority and Contaminated Land Officer at the Local Authority	Stop work and where possible make area safe and secure area before reporting to others
Environmental Consultant	Must report observations to the site manager, the Planning Authority and Contaminated Land Officer at the Local Authority	Advise that work stops and where possible that the area is made safe before reporting to others

The following table identifies other organisations that may need to be contacted in an emergency or where pollution of controlled waters or nuisance is occurring.

Table 19 Discovery Strategy – Organisations to be contacted if risks are encountered

Occurrence	*Description*	*Contact*
Risk to the public	If at any point residents, the public or others may be at risk as a result of contamination found during the course of investigation, remediation or development works	· Contact the emergency services if there is a risk to life · Contaminated Land Officer/Planning Authority · Health & Safety Executive
Nuisance to residents/the public	If a nuisance has been or is likely to be caused to nearby residents, the public and others – for example odours, dust, noise, vibration, etc.	· Pollution Control Team at the Local Authority (and other council's where necessary)
Pollution of controlled waters	If any surface, culverted or groundwater has been polluted – for example slurry, contaminated soil/water or a chemical spillage entering a river or canal.	· Environment Agency · Planning Authority and Contaminated Land Officer at the Local Authority
Pollution of adjoining land	If land outside the boundary of the development site is polluted from site activities – for example slurry, contaminated soil/water or a chemical spillage	· The owner of the land · Planning Authority and Contaminated Land Officer at the Local Authority

APPENDIX ONE

CONCEPTUAL MODEL

HERTS & ESSEX SITE INVESTIGATIONS
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e-mail info@hesi.co.uk

Appendix No 1
Sheet No 1
Job No 16925
Date Aug 2021

38-42 Vincam Close, Whitton, TW2 7AB

Site Conceptual Model - Proposed SIte Plan

Potential Pathways

Human Heath

1. Direct contact with contaminants in soil/dust or water
2. Inhalation of contaminants through soil/dust/particles
3. Dermal Contact
4. Ingestion of home grown produce
5. Ingestion of contaminated water through water main pipework
6. Inhalation of Vapours From Soils
7. Inhalation of Vapours from Groundwater
8. Migration to off site Adjoining Land Owners

Flora

9. Plant Uptake & Direct Contact with soil

Controlled Surface Water, Ground Water & Abstraction Well

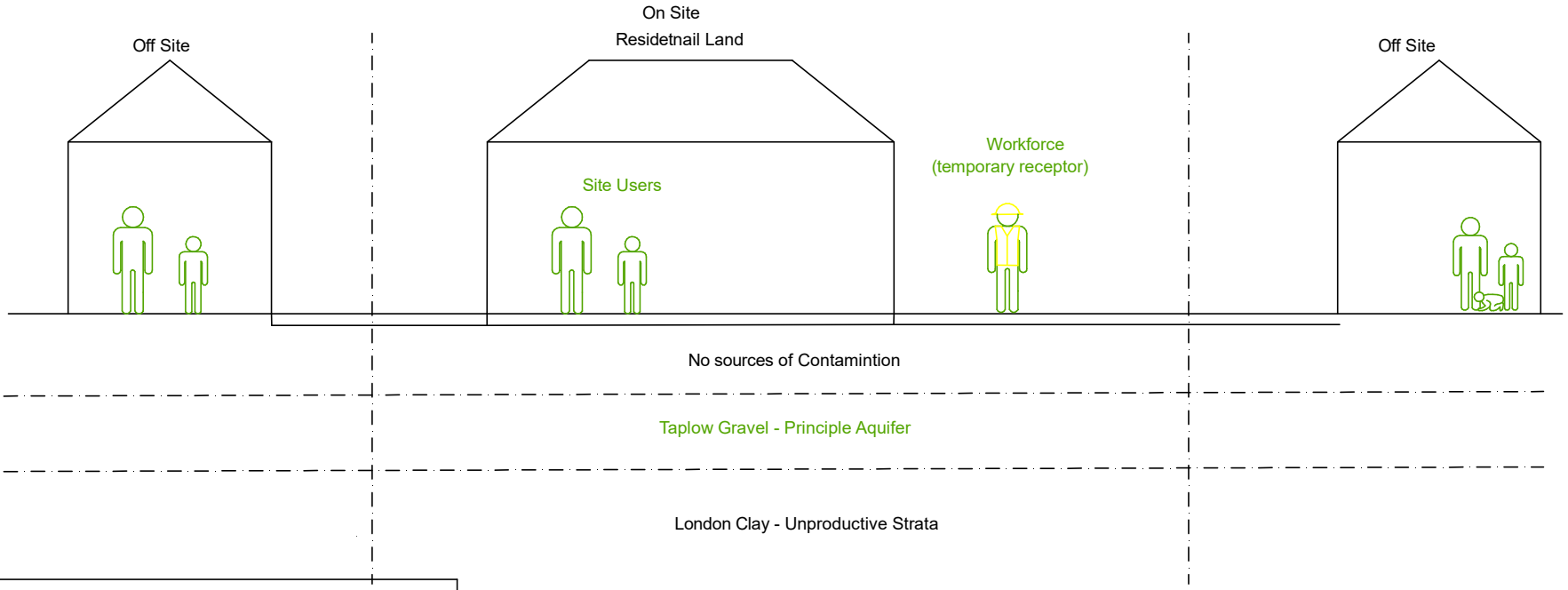
10. Leaching, lateral migration of shallow groundwater to a target receptor

Off Site Sources

A. Migration of contamination to the site area
B. Migration of land gases/ Vapours to the site area
C. Migration of contaminated groundwater to the site area

Key

Purple =Possible pathways
Green =Possible receptors
Red =Possible sources



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APPENDIX TWO

SITE PLANS

HERTS & ESSEX SITE INVESTIGATIONS

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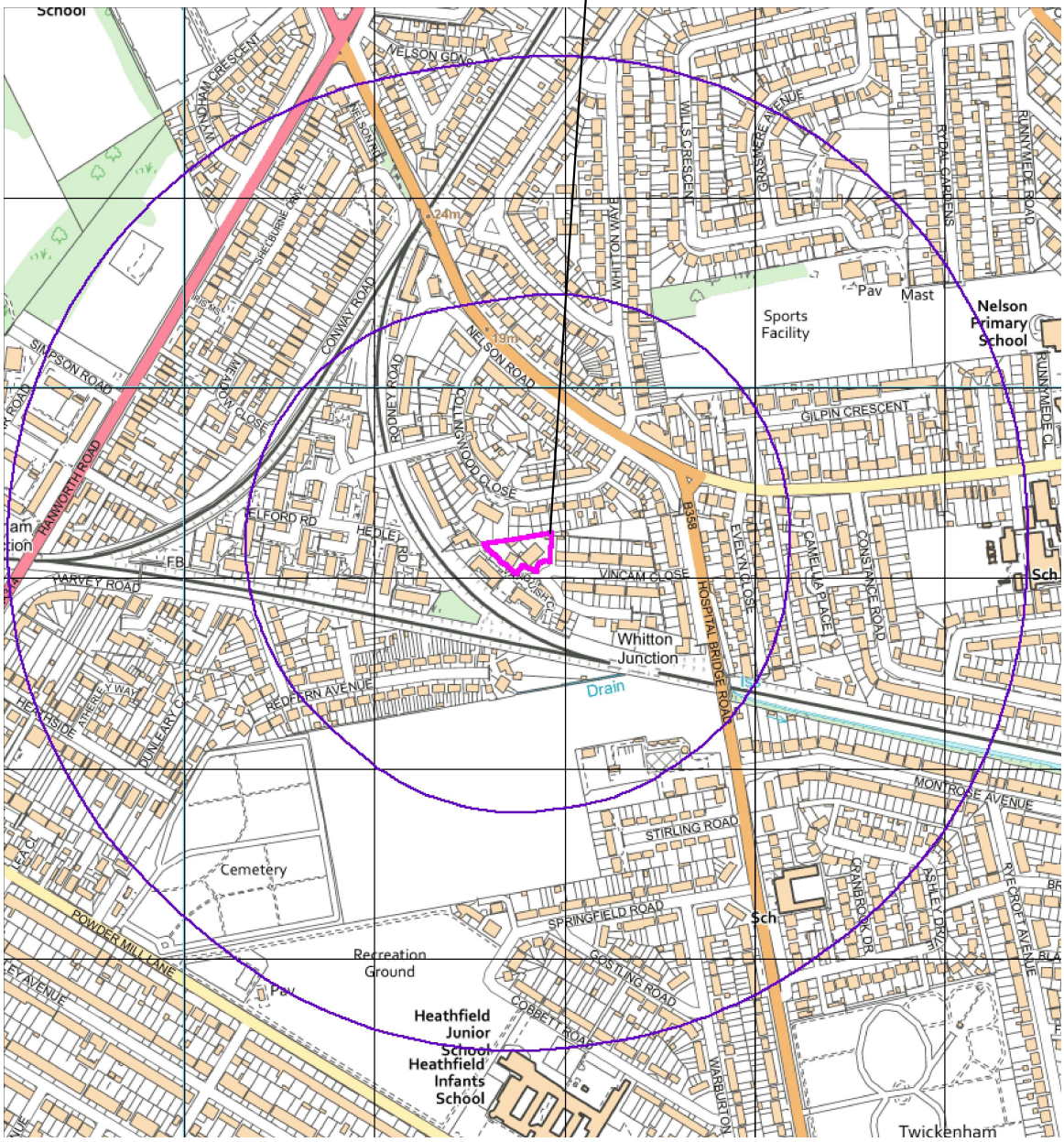
Appendix No	2
Sheet No	1
Job No	16925
Date	Aug 2021

38-42 Vincam Close, Whitton, TW2 7AB

Location Plan

N

The Site



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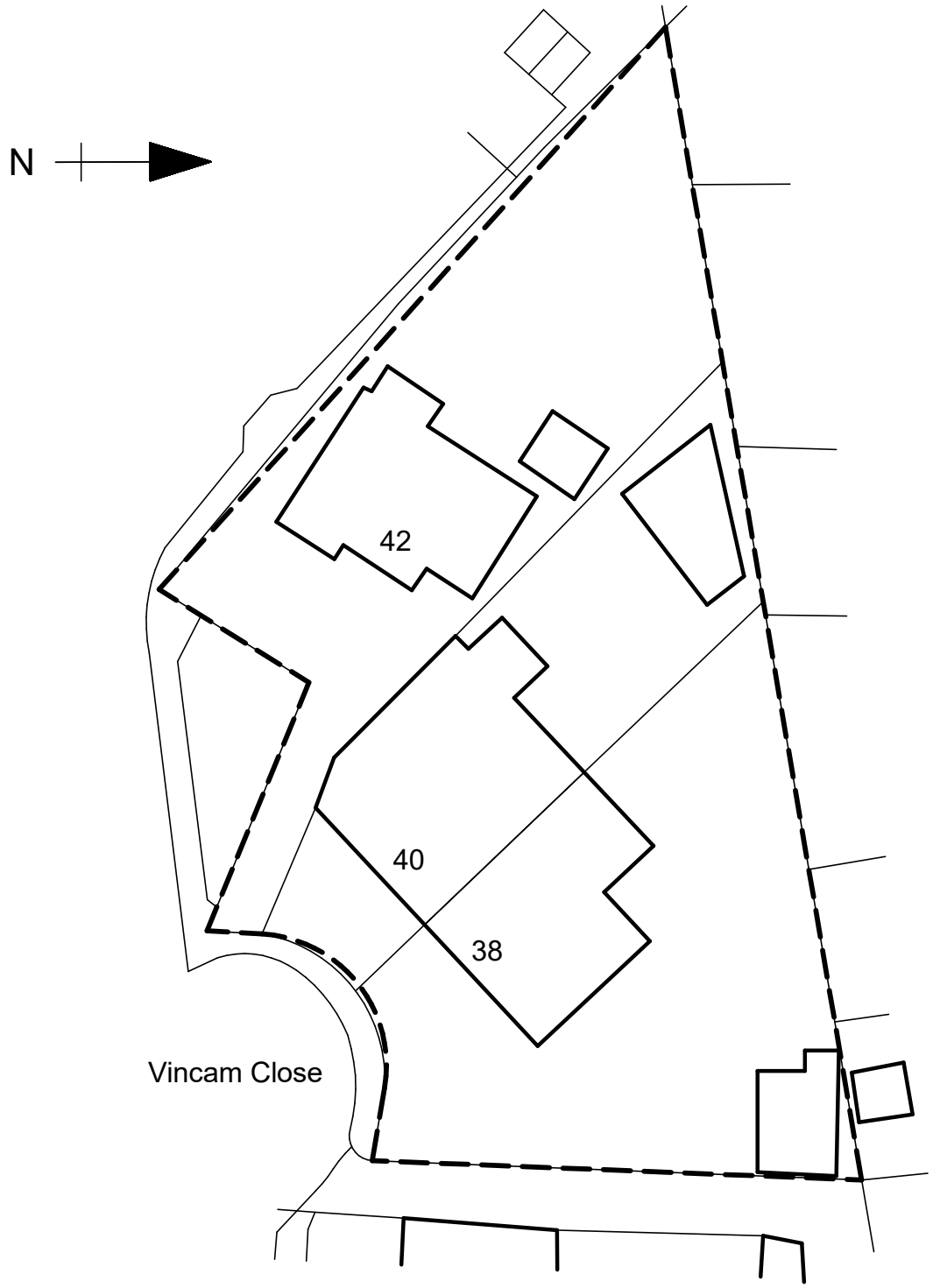
Existing Site Plan



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