

DESK TOP STUDY REPORT

| | |
|----------------------|--|
| Site Address: | Valentines, Wellpond Green, Standon, Ware, Herts, SG11 1NJ |
| Report Date: | February 2024 |
| Project No.: | 18256 |
| Prepared for: | Waller Planning |
| Planning Application | East Herts Council –No application in place to date. |



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LIST OF ABBREVIATIONS

| | |
|-------|--|
| BGS | British Geological Society |
| CIRIA | Construction Industry Research and Information Association |
| EA | Environment Agency |
| EHO | Environmental Health Officer |
| 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

Waller Planning
Suite a
19-25 Salisbury Square
Old Hatfield
Herts
AL9 5BT

Environmental Consultants:

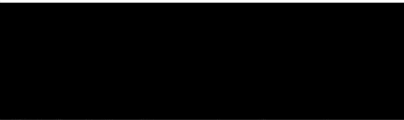
Herts & Essex Site Investigations.
Unit J8 Peek Business Centre
Woodside
Dunmow Road
Bishop's Stortford
Unit J8 Peek Business Centre
Hertfordshire.
CM23 5RG

Project Manager:

Chris Gray, M.Sc

Principal Author:

Chris Gray, M.Sc



Web: <http://www.hesi.co.uk>

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

| <i>Issue No</i> | <i>Status</i> | <i>Date</i> | <i>Prepared by: Rebecca Chamberlain Signature / Date</i> | <i>Technical review by: Chris Gray Signature / Date</i> |
|-----------------|---------------|---------------|--|---|
| 1 | Final | February 2024 | | |

SUMMARY

| | | | |
|-------------------------------------|---|---|--------------------------------------|
| Client | Waller Planning | | |
| Site Location | Valentines, Wellpond Green, Standon, Ware, Herts. SG11 1NJ | | |
| Existing Development | The existing development forms a residential site with main house and external barns and storage areas. A large garden is present to the rear of the site with a small oil tank in the north west corner of the site. | | |
| Proposed Development | The proposed development forms the demolition of the existing residential house and associated outbuildings and barns and the construction of a large private residential property and associated landscaping, driveway and garage. | | |
| Site Settings and Previous Uses | Historically, the site has formed open land from the earliest map record until 1897 when a building was identified to the north of the site and removed again in 1923. A small shed is then identified in 1947 which is removed in 1960. This was located centrally within the site. The main barns appear in the 2006 plans which are in place to date. | | |
| | Surrounding the site, Old House Farm is identified in place 1879 –1976 which is located 20 meters to the north west of the site. Residential housing is developed from 1879 and remains in place to date just to the north of the site. A public house is recorded 10 meters to the west of the site from 1879 –1993. General development of the surrounding area of the site is identified from 1960 onwards. Finally, Highfields Nursery including glasshouses and tanks is identified some 40 meters to the south west of the site from 1976 -2006. The nursery has been reviewed by HESI and confirms low risk pollution. | | |
| Geological and Hydrological Profile | Geology | Aquifer Classification | |
| | Made Ground | Shallow Made Ground Anticipated | Not Classified |
| | Lowestoft Formation | Medium Shrinkability slightly silty, sandy CLAY with occasional flint and chalk fragments | Secondary Aquifer - Undifferentiated |
| | London Clay | Clay | Unproductive Stratum |
| Nearest Surface Water Feature | The nearest surface water feature is recorded as 154 meters to the north of the site which is recorded as a likely pond. | | |
| Groundwater Abstractions | The nearest abstraction well is located 88 meters to the south west of the site and is identified as Horticulture and Nurseries: Spray Irrigation - Spray Irrigation Definition Order. This relates to the former nursery on the adjoining land parcel | | |
| Source Protection Zone | The site does not lie within a source protection zone. | | |
| Potential Sources of Contamination | Features On Site <ul style="list-style-type: none"> Oil Tank. Historic Buildings (northern section of the site) | Features Off Site <ul style="list-style-type: none"> Old House Farm, 20m, NW. <ul style="list-style-type: none"> Ruled out as a risk Highfield Nursery, 40m, SW <ul style="list-style-type: none"> Ruled out as a risk | |
| 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 are 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. |
| | <p>Potential pathways in place within the site area recorded as : -</p> <ul style="list-style-type: none"> 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 of vapours from Groundwater. Inhalation Asbestos dust and fibres (from Asbestos within the building) Inhalation Asbestos dust and fibres (from asbestos within the soil). |
| Ground Water Risk | <p>Considering the Secondary Aquifer - Undifferentiated within the site area there is a potential for groundwater to be in place and to be impacted on by the site area, although risks of contamination within the site area recorded as low, the follow pathways may be in place: -</p> <p>Leaching, lateral migration of shallow groundwater system underlying the site and subsequent abstraction well. Leaching, lateral migration of shallow surface water system adjacent to the site.</p> |
| Surface Water Risk | <p>Considering the nature of the feature surrounding the site area and the London Clay risk to the feature is reduced.</p> <p>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.</p> |
| Vapour Risk | <p>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: -</p> <p>Inhalation of vapours from soils - Visual and chemical tests to be completed initially;</p> |
| Land Gas Risk | <p>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 collected to date the risk of this is low.</p> |
| Recommendations | <ul style="list-style-type: none"> 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: - <ul style="list-style-type: none"> Install standpipe for the monitoring of both groundwater and vapour risks. Targeted and spatial sampling to assess on site source risk. Consideration through the site assessment as to the presence of Asbestos product within the site and subsoil within the site. Assess the risk to and from the groundwater - Leachate testing and groundwater sampling if required. 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. |
| | <p>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.</p> |

PRELIMINARY RISK ASSESSMENT – DESKTOP STUDY - PHASE 1 REPORT

1 Context and Objectives of this report

1.1 Introduction

We have been asked by Waller Planning 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 dwellings with gardens, as such the derivation of risk has been assigned as a 'Residential Land Use with Home-grown Produce'.

1.2 Reference to the Current Planning Application Details

No current application in place for this proposed development.

1.3 Decision Notice Relating to Contaminated Land

No decision notice is 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 surroundings 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 Characteristics of the site

2.1 The Site

The site is located within a rural area of Wellpond Green in Hertfordshire, 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

| | |
|---|---|
| <i>Site Address:</i> | Valentines, Wellpond Green, Standon, Ware, Hertfordshire. SG11 1NJ |
| <i>Site assessed under</i> | Site Owners Request - Aid as part of planning and warranties |
| <i>Current use of land:</i> | Residential Dwelling |
| <i>Previous use of site, (if known)</i> | As above |
| <i>Grid Reference</i> | NGR 541270, 222210 |
| <i>Site Area</i> | 0.58 Hectares |
| <i>Local Authority</i> | East Herts Council |
| <i>Gradient of the site</i> | The site is generally flat with a very slight gradient to the south. |
| <i>Proximity of Controlled Waters, (if known)</i> | The nearest surface water feature is recorded as 154 meters to the north of the site. By examination of map records, this is likely a series of ponds. A ditch is present some 100 meters to the south west of the site. This leads off to the southwest. |

2.2 Existing Site Use

The site forms a rectangular shaped parcel of land which is mainly laid to grassed landscape, although, incorporates a large gravel driveway and parking area. The main house is set back from the main road and forms a two storey brick built structure.

2.3 Surrounding Land Uses

The surrounding land uses are detailed below: -

- To the north of the site residential housing is in place with open land to the north west of the site.
- To the east of the site area a small rectangular shaped parcel of land is in place as grazing land for horses beyond which is residential housing.
- To the south of the site area, residential gardens are in place.
- To the west of the site area residential land is in place.

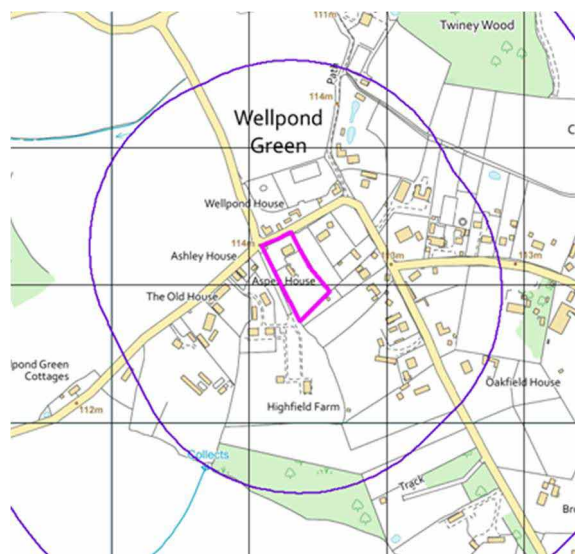
2.4 Site Reconnaissance

The site walk over visit was undertaken in January 2024 on which the weather conditions were recorded overcast although, dry.

Access

Access into the site is identified as off a small lane which leads into a gated entrance area which in turn opens out into a parking area for approximately six vehicles. This area is bounded by hedgerows and fencing, although, does include a wooden outbuilding / shed on the southern side. Access is also available for both pedestrian and vehicle access down the western side of the shed which leads to a large parking area in front of further sheds. This provides parking for approximately 20-30 vehicles. Pedestrian access is available around the remainder of the site.

Site Area



The main site is identified as rectangular and is formed by residential land throughout. Upon gaining access into the site, parking areas are available at the main entrance. The north of the site off the main road has two wooden sheds, the western shed is void of materials and the eastern shed is in use as a utility room (laundry). No features within these areas are identified with risk.

The main gravel drive leads down to the main parking area of the site which again is laid to a gravel. This area is located in front of large barn which are in use as storage areas for general household materials and also parking for vehicles. To the south of the area there is a small barn used as storage areas.

The main house is identified as set back from the main road by approximately ten meters back and includes a grassed lawn with planter beds. No features are recorded in place which would promote a risk and includes some trees and vegetation along the front boundary.

The remainder of the site to the rear of the main building is identified as grassed landscape which becomes saturated to the rear section of the site, (where the lower part of the site is in place).

Directly behind the main house, a patio area is identified in place which has a well established patio for recreation. An area has been set aside to the immediate front of this patio area for shrub planting which confirms well established shrubs have been in place.

Directly to the west of the barns at the top of the site, a small fenced off area is identified which houses a concrete section with plastic oil tank. This provides the energy element for the main house and from visual inspection is well looked after and with no oil staining in place.

Within the main house, just inside the front door a small basement is identified in place which extends dimension of approximately 5 meters x 3 meters. No features are recorded in the basement.

Vegetation

All vegetation across the site is in a good state of health and with no signs of distress.

Above or below ground fuel or oil storage tanks

By examination of the site an above ground oil tank is in place to the north west section of the site adjacent to the top barns. This is housed on a concrete apron and has no signs of current or historic staining.

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 any made ground will be required in order to fully consider risk from Asbestos.

Surrounding Area

Surrounding the site, residential housing is in place to all directions with an area to the north west identified as arable land.

Site Levels and Ground Cover

The site forms a level area of land with a slight gradient down to the south. The site is laid to a combination of main grassed landscape, (65% of the site), housing, (10% of the site), and patio and parking / access areas, (25% of the site).

Current site activities

The current site use forms a residential house.

Effluent, Site Drainage and Services

Drainage and services are recorded in place, although no service search is known to us, therefore the location condition nor status of these services is known.

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



Print 13 View



Print 14 View



Print 15 View



Print 16 View



*Print 17*View



*Print 18*View



*Print 19*View



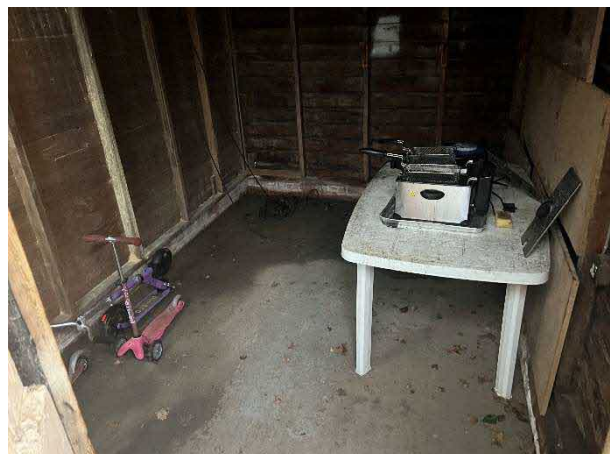
*Print 20*View



*Print 21*View



*Print 22*View



Print 23 View



Print 24 View



Print 24 View



Print 25 View



Print 26 View



Print 27 View



Table 2 Walk Over Inspection Risk

| <i>Feature</i> | <i>Location</i> | <i>Elevation</i> | <i>Is A Risk Assessment Required?</i> |
|------------------|-----------------|------------------|---------------------------------------|
| Heating Oil Tank | NW Corner | At GL. | |
| Residential Land | Site | At G.L | X |

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*

| <i>Date</i> | <i>Scale</i> | <i>On Site Feature</i> | <i>Off Site Features</i> |
|-------------|--------------|---------------------------------------|---|
| | | | Old House Farm, 20m, NW |
| 1879 | 1:10,560 | Open Land | Residential Housing, 10m, N |
| | | | Public House, 10m, W |
| 1883 | 1:2,500 | | |
| 1897 | 1:2,500 | Building, (Northern section) | |
| 1899 | 1:10,560 | | |
| 1923 | 1:2,500 | Building, (Northern section), removed | |
| 1924 | 1:10,560 | | |
| 1947 | 1:10,560 | Small shed / building | |
| 1960 | 1:10,000 | Residential House | Housing developed, all directions. |
| | | | Old House Farm Removed, 20m, NW |
| 1976 | 1:2,500 | | Highfield Nursery, 40m, SW (Including Nursery buildings and tanks) |

| <i>Date</i> | <i>Scale</i> | <i>On Site Feature</i> | <i>Off Site Features</i> |
|-------------|-----------------------------|------------------------------|------------------------------------|
| <i>1982</i> | 1:10,000 | | |
| <i>1993</i> | 1:2,500 | | |
| <i>1999</i> | Historic Aerial Photo | | |
| <i>1999</i> | 1:10,000 | | |
| <i>2006</i> | 1:10,000 | Additional barns constructed | Nursery buildings removed, 40m, SW |
| <i>2023</i> | 1:10,000 | | |

Table 4 *Overview of Historic Map Assessment Risk*

| Identified Risk | Distance & Direction | Year | Is A Risk Assessment Required? | Justification |
|--|--------------------------|----------------|--------------------------------|---|
| Open Land | On Site | 1879 –1897 | X | No Source |
| Building, (Northern Section) | On Site | 1897 –1923 | | Use of barn may include pollutants / risk |
| Building Removed , (Northern Section) | On Site | 1923 –1947 | X | Source of risk removed |
| Small Shed | On Site | 1947 –1960 | | Use of Shed may include pollutants / risk |
| Residential House | On Site | 1960 –2006 | X | No Source |
| Additional Barns Constructed | On Site | 2006 - Present | | Use of barns may include pollutants / risk |
| Old House Farm | Off Site, 20m, NW | 1879 –1976 | | Farm use may promote some level of risk from close by to the site. |
| Residential Housing | Off Site, 10m, N | 1879 - Present | X | No Source |
| Public House | Off Site, 10m, W | 1879 - 1993 | X | No Source |
| Housing Developed | Off Site, All directions | 1960 - Present | X | No Source |
| Highfield Nursery, 40m, SW (Including Nursery buildings and tanks) | Off Site, 40m, SW | 1976 - 2006 | | Nursery use may promote some level of risk from close by to the site. |

5 *Details of the Intended Future Use of the Site*

The proposed development forms the demolition of the existing residential house and associated outbuildings and barns and the construction of a large private residential property and associated landscaping, driveway and garage.

6 *References of Planning Applications*

From a review of the East Herts Council web site no current applications are in place within the site.

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*

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 of 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. HESI are aware of the nursery site adjacent to the proposed development and have completed contaminated land investigations to confirm risk. Based on a review of this information, no obvious fuels have been identified associated with the above ground tanks and contamination was very marginally above a residential land use standard from Lead and PAH's. Migratory potential to his land parcel will likely be minimal.

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 identified a Lowestoft Formation forming the superficial deposits near surface. This is likely identified as a medium Shrinkability slightly silty, sandy CLAY with occasional flint and chalk fragments.

The underlying geology is identified as a London Clay which will form a high plasticity CLAY.

11.2 BGS Boreholes

A BGS Borehole, (Identification Number TL 42 SW/16), records approximately 1.20 meters of Sand which in turn overlies London CLAY.

Table 5 Geological Information

| <i>Geological Unit</i> | <i>Brief Description</i> | <i>Anticipated thickness, (m)</i> | <i>Aquifer Type</i> |
|------------------------------------|---|-----------------------------------|------------------------------------|
| Superficial Deposits/Drift On Site | | | |
| Filled/Re-worked ground | Made Ground, (Potentially Contaminated Stratum). | 0.5-1.00 meters+ | Not Classified |
| Lowestoft Formation | Chalky till, together with outwash sands and gravels, silts and clays | 4-6 meters | Secondary Aquifer Undifferentiated |
| Solid Geology Deposits | | | |
| London Clay | Clay | 15m + | Unproductive Stratum |

11.3 Hydrology

The nearest surface water feature is recorded as 154 meters to the north of the site which is recorded as a likely pond.

The dataset records a discharge consent on site, although, this relates to the Nags Head Public house which is an off site feature. This is recorded as Sewage Discharges - Final/Treated Effluent - Not Water Company. Further discharge consents confirm discharge consents which extend away from the site for sewage discharge also.

The nearest pollution incident to controlled water is identified as 827 meters to the north of the site and is identified as from Agricultural –General.

11.4 Hydrogeology

The published Environment Agency Groundwater Vulnerability Map of the area indicates the site to be located within an area classified as a Secondary Aquifer Undifferentiated. The underlying geology is recorded as an Unproductive Stratum which is formed by London Clay.

Secondary undifferentiated are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value.

Unproductive strata are largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

The nearest abstraction well is located 88 meters to the south west of the site and is identified as Horticulture and Nurseries: Spray Irrigation - Spray Irrigation Definition Order. This relates to the former nursery on the adjoining land parcel.

The site does not lie within a Source Protection Zone.

11.5 Implication of groundwater

Considering the underlying Secondary Aquifer Undifferentiated, 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 protection zones surrounding the site area.

In accordance with Environment Agency guidance document: -

- The Environment Agency's approach to groundwater protection, Version 1.2, (February 2018)

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 possible.

11.6 Flooding

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

11.7 Landfill Sites

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

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

| <i>Receptor Type</i> | <i>Receptor(s)</i> | <i>Sensitivity</i> | <i>Comments</i> |
|------------------------|------------------------------------|--------------------|---|
| Groundwater | Secondary Aquifer Undifferentiated | Moderate | Possible risk to underlying sandy deposits |
| | Unproductive Stratum | Low | Limited risk of migration to a lower groundwater system |
| Water Abstraction | Agricultural | Low | The nearest abstraction well is located 88 meters to the southwest of the site and is likely unused as the nursery is no longer in place. |
| Source Protection Zone | NONE | | |
| Surface Water | Pond | Low | The nearest surface water feature is recorded as 254 meters to the southwest of the site which is recorded as a likely pond |
| Flooding | 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 *Summary of Regulatory Data - Sources*

| <i>Data Sources</i> | <i>On Site</i> | <i>Off Site</i> | <i>Distance from site.</i> | <i>Is A Risk Assessment Required?</i> |
|---|---|-------------------------------|----------------------------|---------------------------------------|
| Discharge Consents | None | Nags Head | 20m, NW | X |
| Pollution Incident to Controlled Waters | None | Minor Incident - Agricultural | 827m, N | 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*

| <i>Data Receptors</i> | <i>On Site</i> | <i>Off Site</i> | <i>Distance from site.</i> | <i>Is this a potential receptor for risk ?</i> |
|-------------------------------|----------------|----------------------------|----------------------------|--|
| Nearest Surface Water Feature | None | Pond | 154m, N |] |
| Water Abstractions | None | Agricultural - General | 88m, N |] |
| OS Water Network Lines | None | Inland River –Thames Group | 249m, SW | X |
| Source Protection Zone | None | None | | X |

Table 9 *BGS Estimated Chemistry Data*

| <i>BGS Estimated Soil Chemistry Pollutant</i> | <i>BGS Estimated Soil Chemistry</i> | <i>BGS Urban Soil Chemistry Averages (mg / kg)</i> | | |
|---|-------------------------------------|--|----------------|----------------|
| | | <i>Minimum</i> | <i>Average</i> | <i>Maximum</i> |
| Arsenic | <15 | | | |
| Cadmium | <1.8 | | | |
| Chromium | 60-90 | | | |
| Lead | <100 | | | |
| Nickel | 30-45 | | | |

Table 10 *Geological Hazards*

| <i>Geological Hazard</i> | <i>Distance & Direction</i> | <i>Feature</i> | <i>Risk Assessment Required</i> |
|--|---------------------------------|----------------|---------------------------------|
| Non-Coal Mining Areas of Great Britain | On Site | | Highly Unlikely |
| 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 | | Low |

Table 11 Summary of Contemporary Trade Entries

| <i>Trade Name</i> | <i>Trade Use</i> | <i>Distance & Direction from Site</i> | <i>Is A Risk Assessment Required?</i> | <i>Comment</i> |
|--|------------------|---|---|----------------|
| <i>No trades within 190 meters of the site</i> | | | | |

*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 14: -

Table 12 Table of Source Risk

| <i>Risk Assessment</i> | <i>Source Risk</i> | <i>Associated Contaminants</i> | <i>Source of Information</i> | <i>Location</i> | <i>Date</i> | <i>Considering Site Specific Pathways</i> | |
|------------------------|------------------------------------|--|------------------------------|-----------------|---|---|---|
| | | | | | | <i>Assessment Required.</i> | <i>Method of Assessment</i> |
| A | Heating Oil Tank | PAHs, TPHs. | Walk Over Survey | | | Possible Soil Risk | Recover Soil Samples |
| | Buildings, (Historic Buildings) | Metals, Semi Metals, Organic, Inorganic, Speciated PAH's, Speciated TPH's, Asbestos | Historic Maps | On Site | 1923 –1947 1947 –1960 2006 –Present | Possible GW Risk Possible Vapour Risk | Install Standpipes GW & Vapour Assessments |
| B | Old House Farm | Metals, Semi Metals, Organic, Inorganic, Speciated PAH's, Speciated TPH's, Asbestos, Pesticides. | Historic Maps | On Site | 1879 –1976 | Possible GW Risk Possible Vapour Risk | Install Standpipes GW & Vapour Assessments |
| | Highfields Nursery | Metals, Semi Metals, Organic, Inorganic, Speciated PAH's, Speciated TPH's, Asbestos, Pesticides. | Historic Maps | On Site | 1976 - 2006 | Possible GW Risk Possible Vapour Risk | Install Standpipes GW & Vapour Assessments |

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 source pathway and receptor. In order to undertake this task, the risk assessment process is based on guidance provided in CIRIA C552 (2001) Contaminated Land Risk Assessment –A Guide to Good Practice.

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*

| | | <i>Consequence</i> | | | |
|--------------------|-----------------|--------------------|-------------------|-------------------|-------------------|
| | | Severe | Medium | Mild | Minor |
| <i>Probability</i> | 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 | |
| Historic Buildings Heating Tank On Site | Speciated PAH's, Speciated TPH's, Oil | 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 | Likely | Moderate | Possible risk in place | |
| | | | Inhalation of land Gases | Medium | Likely | Moderate | Possible risk in place | |
| | | | Inhalation of vapours through contaminated ground waters | Medium | Likely | Moderate | Possible risk in place | |
| | | Adjoining Landowners | 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 | Low Likelihood | Moderate / Low | Limited risk in place | |
| | | Controlled Surface Water; | Leaching, lateral migration of shallow groundwater to a target receptor. | Medium | Likely | Moderate | Possible risk in place | |
| | | Ground Water. Abstraction Well. | Leaching, migration through fissures / cracks which may migrate to a groundwater receptor. | Medium | Likely | Moderate | Possible risk in place | |
| | | 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 Speciated 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 | Likely | Moderate | Possible risk in place |
| | | | Ground Water. Abstraction Well. | Leaching, migration through fissures / cracks which may migrate to a groundwater receptor. | Medium | Likely | Moderate | Possible risk in place |
| Speciated PAH's, Speciated TPH's, Metals Semi Metals Organic Inorganic | Buildings. Construction Materials. Services | Direct contact with contaminated soils; | Medium | Likely | Moderate | Possible risk in place | | |
| | | Direct contact with contaminated groundwater | Medium | Likely | Moderate | Possible risk in place | | |

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 | | |
| Old House Farm Off Site, 20m, NW Highfields Nursery, 40m, SW | Speciated PAH's, Speciated TPH's, Organic Inorganic Pesticides. | Site Users Construction Workers. | Direct contact. Inhalation dust and fibers. Dermal contact | Medium | Unlikely | Low | No Action | | |
| | | | Ingestion of home-grown produce | Medium | Unlikely | Low | No Action | | |
| | | | Ingestion of contaminated water through water main pipework | Medium | Unlikely | Low | No Action | | |
| | | | Inhalation of vapours | Medium | Unlikely | Low | No Action | | |
| | | | Inhalation of land Gases | Medium | Unlikely | Low | No Action | | |
| | | | Inhalation of vapours through contaminated ground waters | Medium | Unlikely | Low | No Action | | |
| | | 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; Ground Water. Abstraction Well. | | Leaching, lateral migration of shallow groundwater to a target receptor. Leaching, migration through fissures / cracks which may migrate to a groundwater receptor. | | | | |
| | | Flora | Plant Uptake Direct Contact | Medium | Unlikely | Low | No Action | | |
| | | 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 | No Action | |
| Ingestion of home-grown produce | Medium | | | Unlikely | Low | No Action | | | |
| Controlled Surface Water; Ground Water. Abstraction Well. | Leaching, lateral migration of shallow groundwater to a target receptor. | | | No liability from third parties | | | | | |
| | Leaching, migration through fissures / cracks which may migrate to a groundwater receptor. | | | | | | | | |
| Speciated PAH's, Speciated TPH's, Metals Semi Metals Organic Inorganic Pesticides | Buildings. Construction Materials. Services | Direct contact with contaminated soils; | Medium | Unlikely | Low | No Action | | | |
| | | Direct contact with contaminated groundwater | Medium | Unlikely | Low | No Action | | | |

Table 16 Overview of Risk Assessments - Proposed Site Use

| Receptors | Pathways | A | | B | |
|---|--|---|---|----------------|---------------------------------|
| | | Oil Tank, Historic Buildings | | Old House Farm | |
| 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 vapor from contaminated ground waters | | | | X |
| | Inhalation of land gas vapours | X | | X | X |
| | Inhalation Asbestos dust and fibers (from Asbestos within the building) | | | | X |
| Inhalation Asbestos dust and fibers (from asbestos within the soil) | | | | X | |
| Adjoining Owners | Land | 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 | | No Liability from third parties |
| | | Inhalation of vapours from soils | X | | |
| | | Inhalation of vapours from contaminated ground waters | X | | |
| Flora | Plant Uptake / Direct Contact | | | | X |
| Groundwater; Abstraction Well & Surface Water | Leaching, lateral migration of shallow groundwater to a River or surface water receptor. | | | | |
| | Leaching, lateral migration of shallow groundwater system underlying the site and subsequent abstraction well or SPZ | | | | No Liability from third parties |
| 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*

| <i>Risk Assessment</i> | <i>Land Use</i> | <i>Pollutant</i> |
|---|--|--|
| <i>Soil, Groundwater & Vapour Risk</i> | | |
| <i>Risk Assessment A</i> | Heating Oil Tank Historic Buildings | 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. |
| <i>Soil Sampling Groundwater & Vapour Assessment</i> | | |
| <i>Risk Assessment B</i> | Old House Farm, 20m, NW | Minimal Risk Identified. Distance removed risk and the sites have been developed as residential land. Testing from the nursery site confirms low risks. |
| <i>Spatial Sampling, (General Assessment)</i> | | 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. BS3882:2015 |
| | | Asbestos |
| | | 25-meter Centres In accordance with BS10175: 2011+A2:2017. |
| | | 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.
- Land contamination risk management (LCRM).
- 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, (2010) GPLC1 Guidance Principles for Land Contamination.

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 and groundwater for contamination testing at targeted site-specific designed locations. Test soil and groundwater samples for a range of contaminants, as identified in Table 18.
- Obtain samples of soil to test for vapours contaminants, as identified in Table 18.
- 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 sampling will be sent directly to the chemist in cool boxes to retain the integrity of the soil sample.

Based on the site area and size of the site, (approximately 5800 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 6-8 samples will be required across the site to provide a 'good' spatial density and an additional 10-12 sample locations being tested for Asbestos.

Table 18 *Soils Assessment - Targeted Sampling*

| <i>Feature</i> | <i>Contaminant</i> | <i>Method of Investigation</i> |
|--------------------|---|--|
| Historic Buildings | Metals, Semi Metals, Speciated PAHs, Speciated TPHs, Asbestos | Window Sampler Boreholes Hand Auger Boreholes |
| Heating Oil Tank | Speciated PAHs, Speciated TPHs | Trial Pits |

Table 19 *Soils Assessment – Spatial Sampling*

| <i>Feature</i> | <i>Contaminant</i> | <i>Method of Investigation</i> |
|-------------------------|---|--------------------------------|
| General Developed areas | Metals, Semi Metals, Speciated PAHs, Speciated TPHs, Asbestos | Hand Auger Boreholes |

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

In 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: -

The Geology within the site should be confirmed.

- The depth of the Geology within the site should be assessed and if ground water is encountered or has the potential to be in place, some assessment of the risk to groundwater and surface water features should be carried out as well as potential human health risk from vapours.
 - o Considering the size and nature of the site, the groundwater elevation may be perched at locations and as such, strikes may be local to lenses or pockets of more permeable ground in order to provide surface water runoff.

Standpipes should be installed across the site, in order to orientate the groundwater table to identify groundwater flow direction. Three standpipes should be installed for groundwater assessment such that orientation of the groundwater table can be undertaken.

- We would recommend that the installation of the boreholes at the site should be completed in order to determine the groundwater elevation. The boreholes should be left for a minimum period of one week in order to allow the groundwater to reach equilibrium at which time, purging of the standpipe well should be completed to consist of a minimum of 3 well volumes removed from the standpipes prior to samples being recovered. Sampling of the groundwater can be completed and retained in appropriate containers dependent upon the analysis proposed. The sample should then be sent to the analytical chemist for assessment in appropriate transport conditions.

- It is possible that groundwater assessments may require extending the standpipes through any superficial deposits suggested by the Envirocheck report. The Chalk aquifer is the principal aquifer in which assessments should be completed.
- Considering the size and nature of the site should ground water risk be recorded within the site area each borehole should be sampled and tested for the range of pollutants as identified within this report. The potential risks should be initially assessed against the UK Drinking Water standard as a Tier 1 assessment Criteria with possible further assessments required where heavy contamination or risk deemed in place. Groundwater samples should be compared against the EQS standards, (Environmental Quality Standards).
- The assessment of groundwater will also be used to consider the risks to surface water features and whether the site may impact of this feature.
- Risk assessments A, should be tested for so the extent of pollutants can be identified within the groundwater sample.

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

| <i>Feature</i> | <i>Targeted Response Zone</i> | <i>Location to Target</i> | <i>Vapour risk</i> |
|------------------|-------------------------------|---------------------------|--------------------------------|
| Heating Oil Tank | Made Ground | NW Area | Speciated PAHs, Speciated TPHs |

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 Surface Water and | | |
| Human Health |) |) |) | Window Sampling - Soil sampling - Install standpipe - Groundwater sampling* | Recover samples of the made ground. Assessment of the underlying natural soils to consider contamination. Leachate testing on elevated samples. 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

Valentines, Wellpond Green, Standon, Ware, Herts. SG11 1NJ

Site Conceptual Model - Proposed Site Plan

Potential Pathways

Human Health

- 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 Land Gases / 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

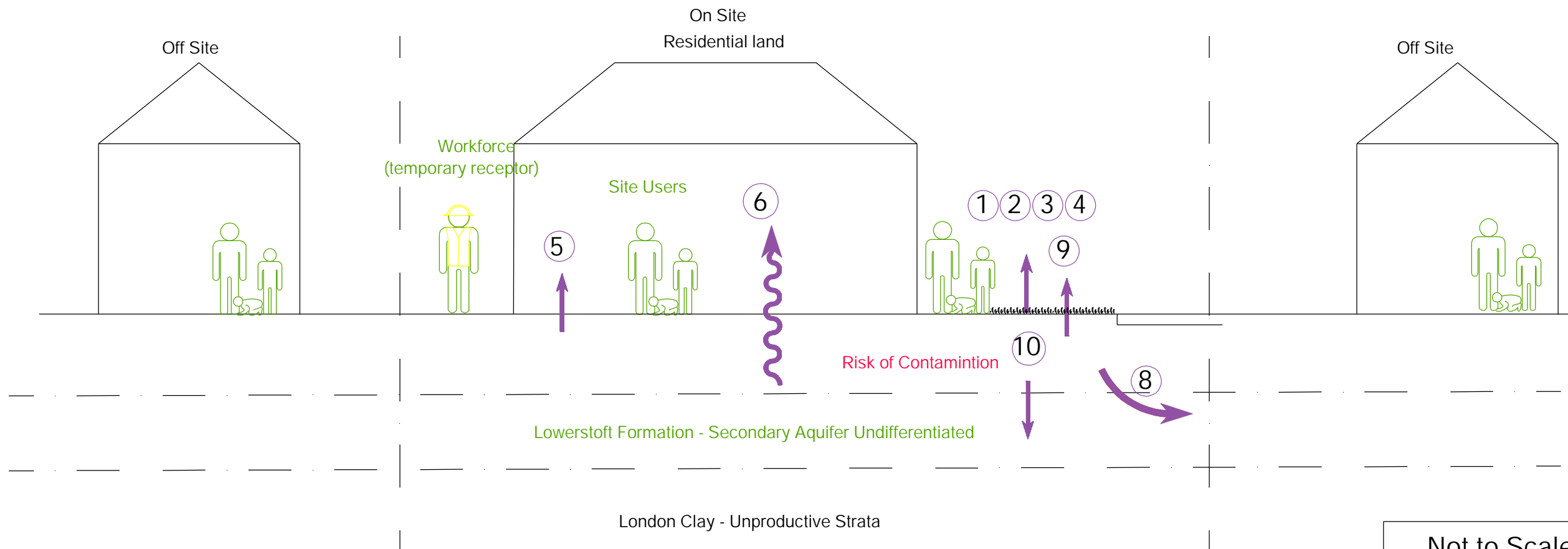
- ⑩ Leaching, lateral migration of shallow groundwater to a target receptor

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
- Grey = Not in place within this site



Not to Scale
Sketch No. : DTS / 18741 / 01 / 01

APPENDIX TWO

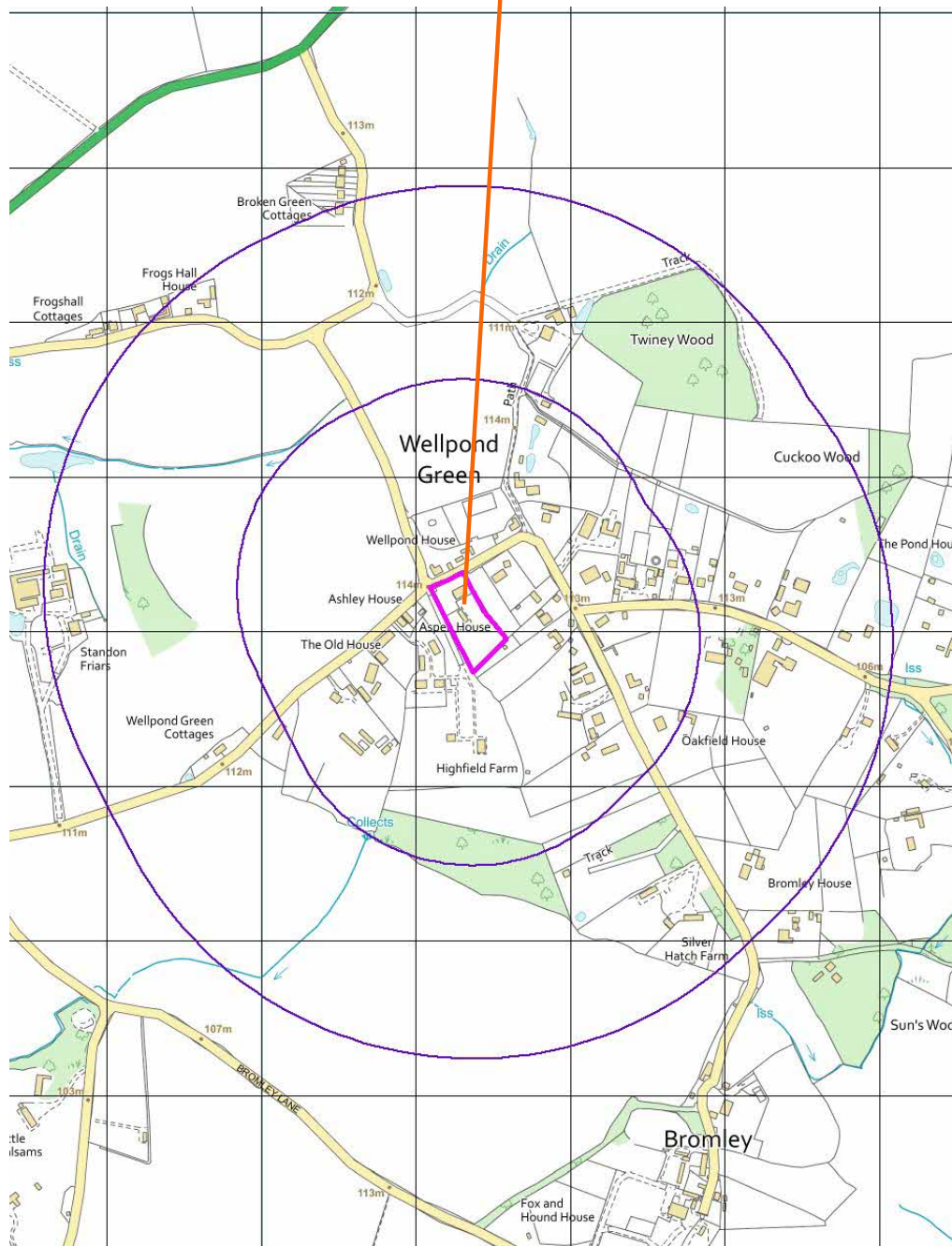
SITE PLANS

Valentines, Wellpond Green, Standon, Ware, Herts. SG11 1NJ

Location Plan



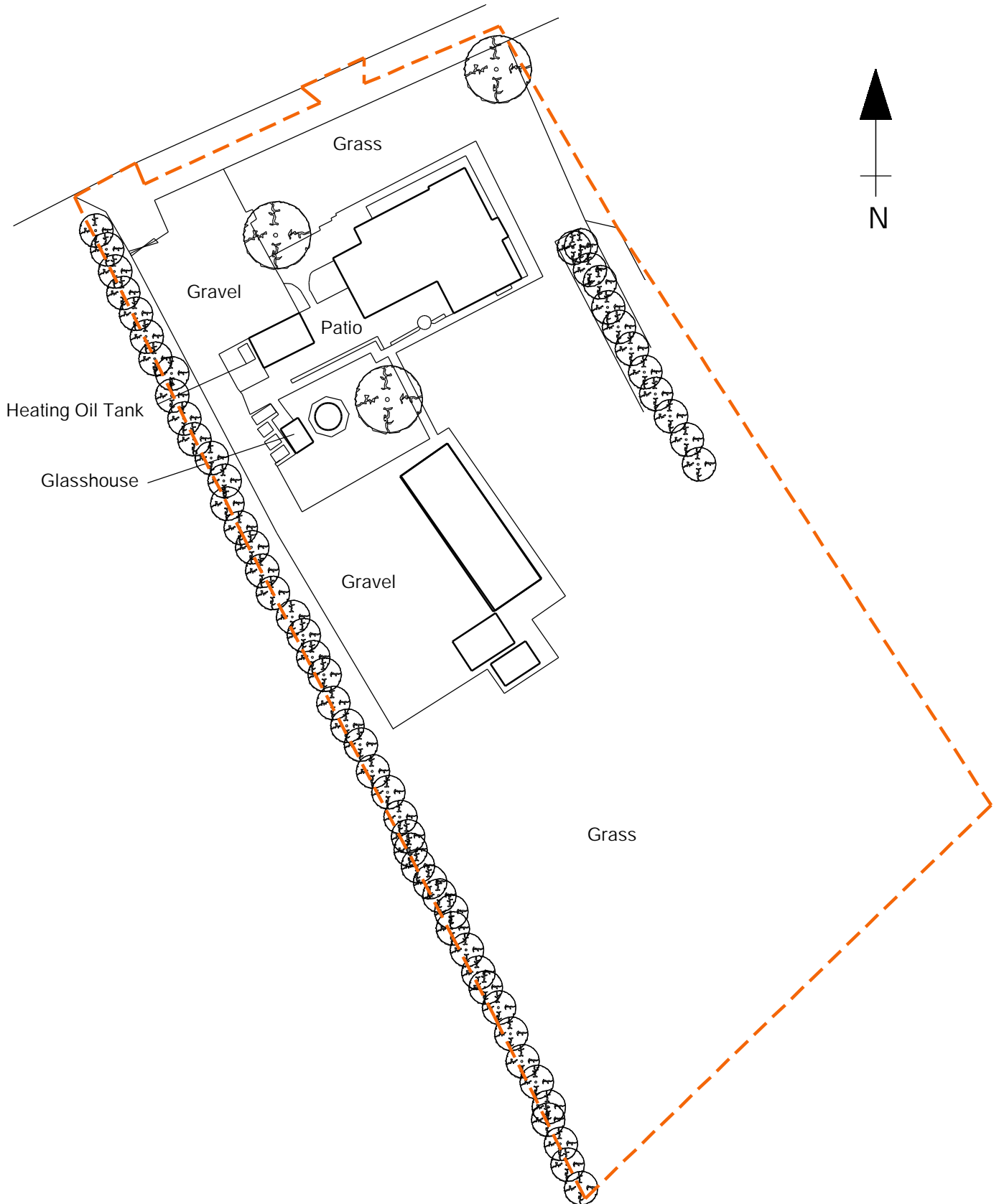
Site Plan



Not to Scale
Sketch No. : DTS /18741 /02 /01

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Existing Site Plan



Not to Scale
Sketch No. : DTS / 18741 / 02 / 02

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Proposed Site Plan

