R. CARR GEOTECHNICAL SERVICES

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WALNUT HILL NURSERY, WALNUT HILL ROAD, ISTEAD RISE, KENT DA13 9HL.

PHASE I GEO ENVIRONMENTAL DESK STUDY AND PRELIMINARY RISK ASSESSMENT

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Appendix A Site History (Small scale)
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Walnut Hill Nursery, Walnut Hill Road, Istead Rise, Kent DA13 9HL.

1. Introduction

1.1 This report has been prepared on behalf of First 4 Drains Ltd, following receipt of instructions from Mr C Lawson.

1.2 The desk study has been commissioned to support a planning application for change of use of land and building(s) to offices, with incidental hard surfacing in order to create additional vehicular parking and a delivery area. A plan of the site is presented in Fig.1.

1.3 The purpose of this report is to identify and quantify contaminative and environment–related issues which could affect the development, human health and the water environment.

1.4 This report provides a review of the history of the site and its surrounding area, together with an environmental risk check and preliminary risk assessment in general compliance with the following guidelines:

- Land Contamination Risk Management (LCRM) Environment Agency (2020)
- National Planning Policy Framework (NPPF) (2021)

2. Topography

2.1 The site is located to the north of Walnut Hill Road at OS Land Ranger map reference TQ 632 689. At this point ground surface slopes very gently downhill from south to north.

3. Geology

3.1 Reference to the local Geological Survey sheet (no. 271: Dartford) has indicated that the site is located upon the Seaford Chalk member of the White Chalk subgroup.

3.2 The Chalk consists of soft, white, friable limestone that is 95% calcium carbonate and contains scattered nodular and tabular flint. The upper surface of the Chalk is often deeply convoluted and may contain solution pipes filled with overlying Tertiary or Quaternary deposits.

4. Hydrology and Hydrogeology

4.1 No surface water features have been identified within 500m of the site.

4.2 The Chalk is the Principal Aquifer of the area with high groundwater vulnerability. A Principal Aquifer is defined by the Environment Agency as a "highly permeable formation with known or possible presence of significant fracturing". These tend to be highly productive and capable of supporting public supply and other abstractions.

4.3 The site is located within a Source Protection Zone type 1 (inner protection zone).

4.4 Information obtained from the BGS borehole records database is indicative that groundwater occurs at a depth of 31m approximately 400m to the east of the site (borehole record from map reference TQ 635 690 dated 1973).

5. Site History

5.1 A search has been undertaken of historical Ordnance Survey Maps provided by Groundsure Location Intelligence, who provide a database of environmental information. The following maps have been examined for the presence of on- and off-site contamination, extracts of which are contained in Appendix A:

5.2 OS map scale 1:2500 1865:
On site: The site is undeveloped, comprising undifferentiated land located on the north side of a country lane bordered by deciduous woodland referred to as Catsland Shaw.
Off site: An old chalk pit is denoted within 250m to the northwest of the site.

5.3 OS map scale 1:10560 1895-1898:
On site: No significant change.
Off site: An old chalk pit is in evidence within 750m to the southeast of the site.

5.4 OS map scale 1:2500 1908:
On site: No significant change.
Off site: Scattered buildings of residential appearance have been constructed within 200m to the west of the site.

5.5 OS map scale 1:10560 1931:

On site: No significant change.

Off site: A tank is denoted within 750m to the northeast of the site.

5.6 OS map scale 1:2500 1933:

On site: No significant change.

Off site: A nursery is in evidence within 250m to the west of the site. Additional dwellings have been constructed within 100m to the south and east. Water Works are denoted within 400m to the northeast.

5.7 OS map scale 1:2500 1938:

On site: A rectangular building of residential appearance has been constructed centrally toward the south end of the site.

Off site: No significant change.

5.8 OS map scale 1:2500 1961:

On site: Two smaller buildings are now in evidence within the site's north section.

Off site: An overhead power line has been installed within 200m to the east of the site.

5.9 OS map scale 1:10560 19671-1973:

On site: No significant change.

Off site: Covered reservoirs are denoted within 750m to the southwest of the site.

5.10 OS map scale 1:2500 1990-1995

On site: Former buildings have been removed from the site and replaced by a rectangular building in its northwest section.

Off site: Adjoining land to the north of the site is referred to as a nursery.

5.11 It is understood that Walnut Hill Nursery operated as a commercial enterprise until approximately two years ago. The site was purchased during March 2024 by a drainage company (First 4 Drains Ltd) and is currently used as the offices of the company.

6. Environmental Information Search

6.1 A search of environmental data has been carried out for the site by Groundsure Location Intelligence. A summary of relevant information is provided as follows, full details of which are contained in Appendix B:

6.2 Historical Industrial Land Uses (Multiple entries grouped together)

Nursery: Dates present 1965-1973	85mW
Unspecified Quarry: Dates present 1867-1955	149mW
Water Works: Dates present 1931-1979	256mE
Unspecified Heap: Date present 1955	318mNE
Unspecified Ground Workings: Dates present 1938	350mNE
Unspecified Tank: Dates present 1931-1955	351mNE
Sewage Tanks: Dates present 1938-1939	387mNE
Cuttings: Dates present 1867-1955	478mS

6.3 Historical Tanks (Multiple entries grouped together)

Unspecified Tanks: Dates present 1933-1955	334mNE
SewageTanks: Dates present 1933-1995	390mNE

6.4 Historical Energy Features

Electricity Substation: Date present 1995	394mE
Electricity Substation: Date present 1997	495mW

6.5 Waste and Landfill

None identified within 500m of the site.

6.6 Waste Exemptions

Agricultural Waste Processing (various)	53mSW
Agricultural Waste Processing (various)	89mE
Agricultural Waste Processing (various)	97mW
Agricultural Waste Processing (various)	476mW

6.7 Recent Industrial Land Uses

Pylon	237mE
Electricity Cable (Decommissioned)	397mS
Electricity Cable (Decommissioned)	426mS

6.8 Sites Determined as Contaminated Land

None identified within 500m of the site.

6.9 Pollution Incidents

Major Water Impact Incident Date: 09/01/2018	347mE

6.10 **Groundwater Vulnerability**

Principal Bedrock Aquifer of High Vulnerability	On site

6.11 **Groundwater Abstractions**

Potable abstraction (active)	131mN

6.12 **Surface Water Abstractions**

None identified within 2000m of the site.

6.13 **Surface Water Body Catchments**

Lower Medway	On site

6.14 **Flooding**

Surface Water Flooding	Negligible
Groundwater Flooding	Negligible

6.15 **Environmental Designations**

London Green Belt	On site
Conservation Area	On site

6.16 **Designated Ancient Woodland (Within 400m)**

Unknown	78mW
Walnut Wood	96mN

6.17 **Artificial and Made Ground**

None identified within 500m of the site.

6.18 **Natural Ground Subsidence Hazard Rating**

Shrink Swell Clays	Negligible
Running Sands	Negligible
Compressible Deposits	Negligible
Collapsible Deposits	Very low
Landslides	Negligible
Ground dissolution of soluble rocks	Moderate

6.19 **Mining and Ground Workings (Grouped where multiple references)**

Thirty Acres Shaw Chalk Pit - Surface Mineral Working	296mNW

6.20 **Ground Cavities and Sinkholes**

None identified within 500m of the site.

6.21 **Radon**

Low Probability Radon Area (Less than 1% of homes estimated to be at or above Action Level)	No radon protection measures necessary

7. Site Inspection

7.1 An inspection of the site was undertaken on 21st July 2025 in dry, overcast weather conditions with sunny intervals.

7.2 The site was situated within a semi-rural area on the southern outskirts of Istead Rise village. An electronically controlled, sliding security gate provided access into the site directly from Walnut Hill Road.

7.3 A single storey brick building under a pitched tile roof and containing office facilities was present at the front of the site, accessed by a tarmac drive (Plate 1). Ornamental borders supporting Spruce trees and shrubs were located to the front of the building, together with designated staff parking spaces.

7.4 A drive formed from paving blocks passed along the west side of the site to the rear of the office building, additional parking spaces being located along the west boundary of the site (Plate 2). Stored inert building materials and a pair of skips were present in the site's northwest corner, together with a large circular water tank.

7.5 Ground surface to the rear of the offices consisted of an extensive area of block paving on which were parked a number of cars and light vans. A partially refurbished, rectangular block and timber building with a concrete floor was located at the west side of the paved area, parked vehicles and a fork-lift being present inside the building (Plate 3).

7.6 A marginal grass border was present alongside the rear of the office building and a cluster of ornamental shrubs was located next to its northwest corner (Plate 4).

7.7 The east side of the site supported a rectangular timber building containing staff toilets and a small office with an external charging point for electric vehicles.

7.8 The block paving extended along the site's east side to its rear boundary (Plate 5). An area of sand prepared for future paving was situated between the paved area and a rectangular timber building of recent construction which was located at the north end of the site (Plate 6).

7.9 Former nursery land beyond the rear of the site consisted of an area of compact granular surfacing intersected by concrete footpaths and supporting disused poly tunnels.

7.10 Mature mixed woodland was present along the east boundary of the site whereas undeveloped land was situated to the west, a deciduous hedgerow supporting mature trees forming the site boundary.

8. Conceptual Site Model

8.1 Based upon the available information the site appears to have originally comprised undeveloped land which was initially developed for residential purposes then functioned as the front sales area of a horticultural nursery. Following the cessation of the nursery business, the site was sold approximately 2 years ago and has since supported the offices of a drainage company. There is little evidence to suggest the presence of any historical contamination upon the site that would significantly impact either its proposed use or the wider environment. The site is therefore considered to constitute a low risk.

8.2 Historic and more recent commercial activities and installations identified by the Groundsure report within the local area are considered sufficiently remote and/or inconsequential so as not to have impacted the site. Consequently, a low risk has been identified to the site from off-site sources of potential contamination.

8.3 The site is underlain by a Principal Aquifer and an active potable groundwater abstraction has been identified 131m to the north of the site. However, groundwater is not anticipated to occur for some considerable depth and any risk to the underlying Chalk aquifer could be mitigated by appropriate precautions within the design of the development and during construction work. Providing that such precautions are undertaken, the proposed development is considered to constitute a low risk to the water environment. No surface water features have been identified within 500m of the site.

8.4 No areas of putrescent landfill have been identified within 500m of the site and the topography of the site does not indicate the presence of excessive quantities of made ground beneath the site surface. The Groundsure report has confirmed that radon protection measures are not necessary within the design of the new development. A low risk is therefore considered applicable to the site from both on- and off-site emissions of ground gases.

9. Preliminary Risk Assessment

9.1 A preliminary risk assessment has been defined utilising the available information. The risk from possible sources of contamination to receptors including the public, workers, future users and environment has been analysed using the Source – Pathway – Receptor model approach.

9.2 The main receptors considered in the following assessment are:

- Future users
- Occupants of surrounding buildings
- Groundwater and associated abstractions
- Site workers
- Building fabric
- Plants

Source	Hazard	Receptor	Pathway	Severity of impact	Risk	Action required to clarify and define mitigation, if necessary
Organic contaminants possibly present in site surfacing or due to localised leakages of fuels and lubricants from parked vehicles e.g. PAH, TPH	Toxic and carcinogenic	Future Users	Inhalation, ingestion and skin contact	Serious	Low	No potential historical contamination identified on site. Office workers unlikely to come into direct contact with subsoil.
		Adjoining site occupiers	Ditto	Moderate	Low	Minimise dust, avoid spillages.
		Ground workers (if relevant)	Ditto	Serious	Low	Provision of appropriate protective clothing and equipment.
		Groundwater Drains & surface water	Leaching, permeable strata, drainage	Serious	Low	Appropriate precautions with storage of contractors' fuels during development and in design of surface water drainage in areas of vehicular parking.
	Attack on plastic or rubber	Building Services and Fabric	Leaching and diffusion	Serious	Low	Seek advice of local water authority if issues arise over type of materials.
Inorganic contaminants possibly present in site surfacing e.g. arsenic, lead, etc	Zootoxic	Future users	Inhalation, ingestion and skin contact	Serious	Low	No potential historical contamination identified on site. Office workers unlikely to come into direct contact with subsoil.
		Local residents	Ditto	Moderate	Low	Minimise dust where possible.
		Ground workers (if relevant)	Ditto	Moderate	Low	Provision of appropriate protective clothing and equipment. Minimise dust.
		Groundwater	Leaching, permeable strata, groundwater	Serious	Low	Appropriate surface water drainage in areas of vehicular parking.
Phytotoxic metals e.g. copper, zinc.	Phytotoxic	Plants	Uptake	Serious	Low	Vegetation in established ornamental borders in healthy condition.
		Groundwater	Leaching, permeable strata, groundwater	Serious	Low	Appropriate surface water drainage in areas of vehicular parking.
Asbestos	Carcinogenic and respiratory irritant	Future Users	Air inhalation	Serious	Low	Removal and disposal by experienced contractor if discovered on site.
		Adjoining site occupiers	Ditto			
		Site workers			Low	
Ground gases e.g. methane, carbon dioxide.	Asphixiant, explosive	Future Users	Service ducts	Serious	Low	No credible sources of on- or off-site ground gas emissions identified. Radon protection measures not required.
		Adjoining site occupiers Site workers	Air inhalation			

10. Discussion/Recommendations

10.1 Part IIA of the Environment Protection Act 1990 defines contaminated land as: "any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:-

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

b) pollution of controlled waters is being, or is likely to be, caused

"Harm" means harm to the health of living organisms or other interference with the ecological systems of which they form part, and in the case of man, includes harm to his property.

10.2 There are two steps in applying the definition of contaminated land:

1) Identification of a "contaminant", a "pathway" (or pathways) and a "receptor" with respect to the land in question.
2) Identification of a pollutant linkage and that the pollutant linkage:
    a) is resulting in significant harm being caused to the receptor in the pollutant linkage.
    b) presents a significant possibility of significant harm being caused to that receptor.
    c) Is resulting in the pollution of controlled waters
    d) Is likely to result in such pollution.

10.3 Under the Groundwater Regulations Act 1998, it is an offence to allow List I substances to enter groundwater. It is also an offence to allow List II substances to enter groundwater without prior consultation with the local authority.

10.4 The site is considered to pose a low risk to the receptors considered in Section 9.2. No significant pollutant linkages have been identified, therefore a Category 4 classification as proposed by DEFRA publication SP1010 (March 2014) is considered applicable to the site (i.e. level of risk posed acceptably low). No further action is therefore considered necessary providing that the following precautions are undertaken:

- Appropriate design of surface water drainage in areas of vehicular parking, including the incorporation of oil separators in order to prevent mobile contaminants leaching into groundwater.
- Any excavated material removed from the site should be disposed of at a licensed depository. Haulage transfer notes to be retained as evidence that this

procedure has been undertaken and for inclusion within a verification report if required by the Local Planning Authority.

- Precautions during the course of the development in order to prevent the escape and subsequent migration of pollutants into the underlying Principal Aquifer. Any fuel and/or lubricants utilised by contractors' should be stored in a secure, preferably bunded area of the site.

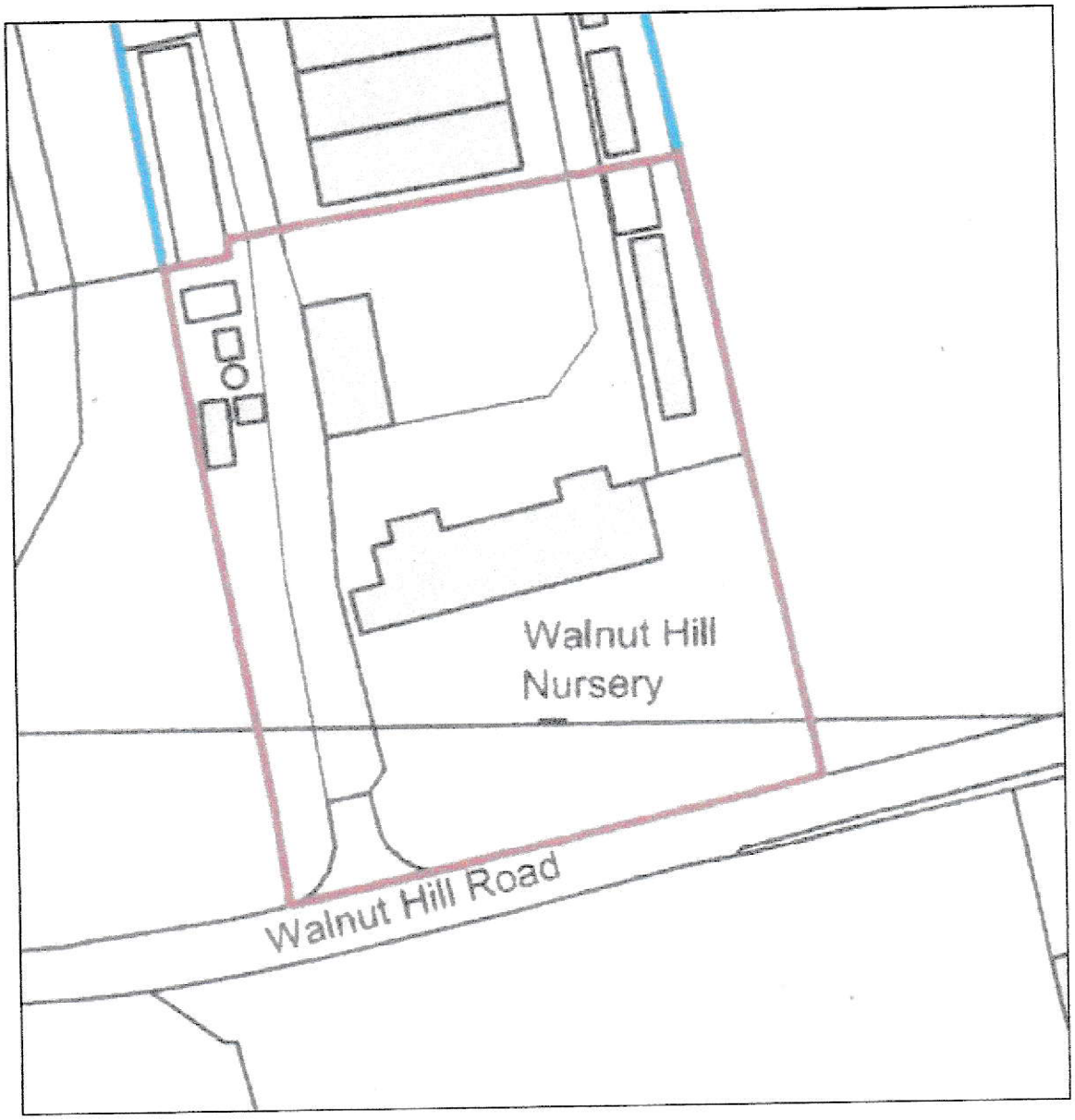
10.5 In the event that contamination not detected by the Desk Study is encountered on the site, the nature of the contamination should be adequately assessed and an appropriate remediation strategy implemented.

10.6 Any asbestos-containing material is discovered on the site the material should be removed by an experienced contractor to a licensed depository.

10.7 Ground workers should be provided with appropriate PPE and washing facilities.

10.8 This report should be made available to the Contaminated Land Officer of the Local Planning Authority for due consideration prior to the commencement of the development.

[redacted]



Walnut Hill Nursery, Walnut Hill Road, Istead Rise

Fig 1 Plan of Site.

Plate 1

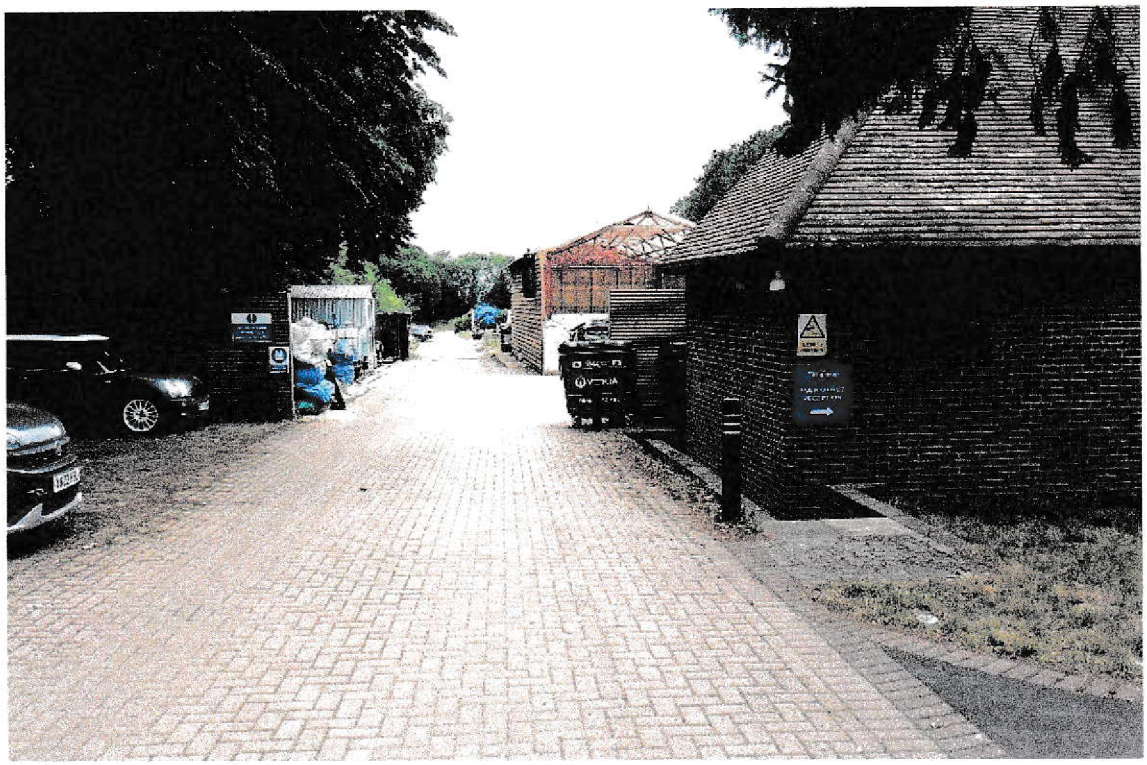


Plate 2

Plate 3

Plate 4

Plate 5

Plate 6