Southern Testing
Environmental & Geotechnical

Phase 1 Desk Study Report

Desk Studies | Risk Assessments | Site Investigations | Geotechnical | Contamination Investigations | Remediation Design and Validation

Site: Ferdinand Street, London

Client: Opticlrealm Ltd

Report Date: 23rd December 2013

Project Reference: J11621

AGS ace ISO 9001 ISO 14001 BS18001

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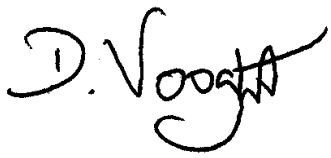
SUMMARY

The site comprises a row of six private garages with a front forecourt area surfaced in concrete for car parking. It is proposed to demolish the existing row of private garages and construct a four storey residential block of flats.

Geological records indicate the site to be underlain by London Clay.

A desk study was carried out and indicates that the site has a history of residential use and lockup garages with light industrial, commercial and residential use in the surrounding area. No significant offsite sources have been identified. The potential for contamination from onsite sources is considered to be low.

Further work is required to define the extent of the contamination if any and enable design of the remediation if needed.



D Vooght MSc
(Countersigned)

A Westgate BSc HONS
(Signed)

For and on behalf of Southern Testing Laboratories Limited

STL: J11621
23 December 2013

TABLE OF CONTENTS

A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in the returned Project Order Form (Ref Q131739) signed by Tim Cockburn on behalf of Opticrealm Ltd dated 19th November 2013.

2 Location

The site is located approximately 300m south east of Chalk Farm Underground Station in London. The approximate National Grid Reference of the site is TQ284 843.

3 Proposed Construction

We understand that it is proposed to demolish the existing row of private garages and construct a four storey residential block of flats with a small communal landscaped area to the rear of the building.

For the purposes of the contamination risk assessment, the proposed development land use is classified as Residential without plant uptake (CLEA model[1]). The gas sensitivity of the site is rated as High (CIRIA C665[2]).

4 Object

This is a Phase 1 Desk Study and Walkover investigation.

5 Scope

This report presents our desk study findings, and our interpretation of these data.

The findings and opinions conveyed via this Site Investigation Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

This report has been prepared for the sole internal use and reliance of Opticrealm Ltd and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report may not be appropriate to alternative development schemes.

[1] Environment Agency Publication SC050021/SR3 'Updated technical background to the CLEA Model' (2009).
[2] CIRIA C665 (2006) Assessing risks posed by hazardous ground gases to buildings.

B DESK STUDY & WALKOVER SURVEY

6 Desk Study

A desk study has been carried out. Reference has been made to the following information sources.

- Geological Maps
- Hydrogeological/Groundwater Vulnerability maps
- Aerial Photographs
- Historical Ordnance Survey Maps
- Environmental Databases
- Enquiries with Environment Agency (including EA website)
- Bomb Maps
- BRE Radon Atlas[3]

The environmental databases search report compiled for this desk study contains site-specific environmental data drawn from data sets that comprise publicly available information together with data from third parties, some of which is under review. Accordingly, Southern Testing Laboratories Limited does not warrant its accuracy, reliability or completeness.

The full report is included in Appendix C; a summary of the salient features is included in the following sections of this report.

6.1 Geology

The British Geological Survey Map indicates that the site geology consists of London Clay.

6.1.1 London Clay

London Clay is a well-known stiff (high strength) blue-grey, fissured clay, which weathers to a brown colour near the surface. It contains thin layers of nodular calcareous mudstone - "claystone" - from place to place, and crystals of water clear calcium sulphate (selenite) are common. Although slopes will stand in the clay at steep angles in the short term, the long-term stable slope angle is about 7^{o} for grassed, or cleared slopes, and a few degrees more for wooded slopes.

6.2 Hydrology and Hydrogeology

Data from the Environment Agency and other information relating to controlled waters is summarised below.

Data		Remarks	Possible Hazard to/from Site Y/N
Aquifer Designation	Superficial Deposits	No Superficial deposits mapped on the site.	N
	Bedrock	London Clay – Unproductive Strata	N
Groundwater Vulnerability		Most urban areas are given a default High vulnerability classification as there is little	N

[3] BR 211 (2007) 'Radon: guidance on protective measures for new buildings'

Data	Remarks	Possible Hazard to/from Site Y/N
	actual data.	
Abstractions	There are no Abstractions within 300m of the site. The closest abstraction licence is 470m NE of the subject site.	N
Source Protection Zones	The site is not within a Source Protection Zone.	N
Surface Water Features	The nearest surface water feature the Regents Canal is located approximately 300m south of the site.	N
Flood Risk	The site is within an area that according to the mapping is not within an area that is at risk from fluvial flooding.	N
Discharge Consents	There are no Discharge consents within a 300m radius of the site.	N

In Terms of Hydrogeological and Hydrological setting for the site, it is considered likely that groundwater and surface water flows will follow the topographic gradient of the area, which slopes from the north west to the south east.

6.3 Historical Map Search

Copy extracts of historical Ordnance Survey plans dating from 1870 to 2012 were obtained and are presented in Appendix C together with a summary of the salient features.

In brief, the earliest mapping dating from 1870 shows the site as being developed with terraced residential houses. The houses stayed on the site unchanged until 1952 when the property, now No. 10 Ferdinand Place was mapped as a Public House. The site remains unchanged until 1963, with the mapping shows the terrace properties to have been demolished and the garages and hard standing car park that is present today were built. The adjacent block of flats to the north is first shown on the 1963 map. The public house to the south of the site was mapped until the most recent mapping (2012), this has since been redeveloped with the four storey block of flats at No.10 Ferdinand Place. The site has remained unchanged since this redevelopment.

The surrounding area was also developed from first mapping. The area in general has seen minor development, with the change of use of the railway depots to the south of the site becoming a distribution centre and the decommissioning of the tram ways. The housing in the area of first mapping along Ferdinand Street was generally terraced housing, this changed with the demolition and redevelopment of the land to residential blocks of flats. The Garage/Depot to the east of the site first shown in the 1957 mapping was in use until the 2012 mapping when it was redeveloped with residential housing.

6.4 Bomb Maps

Reference has been made to The London County Council Bomb Damage Maps (1939-1945) which indicate that the subject site was not damaged by bombing during the Second World War. However houses in Ferdinand Street and the now non-existent Haverstock Street were totally destroyed and damaged beyond repair. Some terraced houses to the north of the site are marked

as being part of clearance areas. This bombing lead to the development of the blocks of flats that are present from the 1952 OS Mapping. An Extract map is presented as Figure 2 in Appendix A.

6.5 Environmental Databases

	Distance (m)	Direction	Details	Possible Hazard to site
Historical Industrial Land Uses	80	S	Goods Sheds / Railways (1879 – 1974)	N
	40	E	Garage / Depot (1957-2012)	N
	80	W	Pianoforte Works (1894-1982)	N
	190	NW	Malden Factories(1894-1965)	N
Current Industrial Land Uses	There are 21 current Industrial Land Uses within a 250m radius of the subject site.			
	0	E	Funeral Directors	N
	51	W	Food and beverage industrial machinery	N
	55	W	Works, unspecified works or factory	N
	56	SE	Works, unspecified works or factory	N
	58	W	Works, unspecified works or factory	N
	59	W	Works, unspecified works or factory	N
	95	W	Works, unspecified works or factory	N
	100	NW	Electricity Substation	N
	106	SE	Petrol Service Station see Fuel Site (see fuel site at 134m below)	N
	119	W	Electricity Substation	N
	152	NW	City Store Self Storage – Container and storage.	N
	153	E	Lead and Light Warehouse	N
	172	W	Lazer Motorcycle sales – New Vehicles	N
	173	W	Chalk Farm Motorcycles Ltd – New Vehicles	N
	180	SE	Radar and Telecommunications Equipment	N
	205	S	Morrison's Fuel and Petrol See Fuel site (92m)	N
	209	E	Container Storage Depot	N
	211	W	Fish, Meat and Poultry Products	N
	236	SW	Electricity Substation	N
	230	SW	Roundhouse Theatre	N

	Distance (m)	Direction	Details	Possible Hazard to site
Current and Historical Landfills	No records of current and historical Landfills within 1000m of the subject site.			
Fuel Sites	There are three fuel site within 500m of the site			
	92	SW	Morrison's Camden, Chalk Farm Road, Chalk Farm, London, Greater London, NW1 8AA - Active	N
	134	SE	Esso, Chalk Farm Service Station, 29-33, Chalk Farm Road, Chalk Farm, London, Greater London NW1 8AJ –Closed	N
	238	W	Texaco Star Chalk Farm, 81-85 Chalk Farm Road, Chalk Farm, London, Greater London, NW1 8AR - Obsolete	N
Pollution Incidents	There are 2 reported pollution incidents within 300m of the site			
	296	NW	Date: 30/05/2002 Incident ID: 82130 Pollutant: Organic Chemicals / Product Description: Other Organic Chemical or Product No Impact to land or water Significant Impact to Air : Category 2	N
	305	SE	Date: 09/02/2008 Incident ID: 562771 Pollutant : Atmospheric Pollutants and Effects Description: Household Waste No Impact to Water or Air Impact to Land Minor Category 3	N
IPC Part B Authorisations	92	SE	Morrison's 29 Chalk Farm Road, London NW1, Petrol Station, Current Permit, Type B.	N
	134	SE	Texaco 81-85 Chalk Farm Road London, NW1 – Current Permit - Petrol Station	N
	213	SW	Lex Volvo –regents Pk Body shop, Dumpton Place, Gloucester Ave NW1, Vehicle Re-Spray – Historical Permit – Part B	N
	231	S	Wm Morrison's Supermarkets plc. – Chalk Farm Road NW1, Dry Cleaners – Current Permit – Part B	N

	Distance (m)	Direction	Details	Possible Hazard to site
Hazardous Substances Consents	-	-	There are no sensitive land use designations within 300m	N
Sensitive Land Use Designations	-	-	There are no sensitive land use designations within 300m	N

Generally only sources of contaminants within a 300m radius of the site have been considered above. While additional sources may exist at a greater distance from the site. Given the relatively impermeable nature of the underlying geology (London Clay), they are not considered to pose a significant risk.

A number of historical land uses have been identified within a 300m radius of the site, the nearest being a garage/depot 40m to the east, which has recently been redeveloped with residential properties. None of the other sources are considered to pose a significant risk to the subject site due to the distance from the site and the impermeable nature of the underlying soils. They are therefore not considered further.

Equally while a number of current industrial land uses have been identified, given the distance from the site and impermeable nature of the underlying soils they are not considered to pose a significant risk to the subject site and so are not considered further.

6.6 Geological Hazards and Mining Activities

Data from various sources relating to potential geological hazards at the site are summarized below. The Hazard Potentials listed for the BGS data are as presented in the Groundsure report, derived from various generic BGS sources, which are **not considered as site-specific**. It is important that this information is considered in context of the actual site topography, ground conditions encountered during future investigation, and development proposals.

Data Source	Hazard	Hazard Potential to Site	Remarks
BGS	Potential for Collapsible Ground Stability Hazard	Very Low	
	Potential for Compressible Ground Stability Hazard	Negligible	
	Potential for Ground Dissolution Stability Hazard	No Hazard	
	Potential for Landslide Ground Stability Hazard	Very Low	
	Potential for Running Sand Ground Stability Hazard	Negligible	
	Potential for Swelling or Shrinking Clay Ground Stability Hazard	Moderate	London Clay typically has a High Volume Change Potential: - subject to further intrusive testing.

Data Source	Hazard	Hazard Potential to Site	Remarks
	Shallow Mining Hazard	No Hazard	
ARUP	Mining Instability	No Hazard	
GroundSure	Underground Working Feature	No Hazard	258m to Southwest a tunnel is shown built in 1989. No risk to site.

**Chelsea Spelaeological Society/ Kent Underground Research Group*

6.7 Radon Risk

With reference to BRE guidance: no radon protection is required on this site.

7 Walkover Survey

A walkover survey was carried out on 28th November 2013 when the weather was dry and overcast.

7.1 General Description and Boundaries

The site is accessed from Ferdinand Street through a metal gate in the brick wall frontage. The front of the site consists of a concrete surfaced area of car park with a drain gully in the centre. At the rear of the property are a row of six private garages that have been boarded up. These garages back onto the neighbouring funeral directors premises to the east of the site. To the south a four storey modern block of flats of No. 10 Ferdinand Place bounds the site.

The site is devoid of vegetation, but there are some mature London Plane trees to the north in the pavement of Ferdinand Street. To the north east of the site, directly north of the funeral directors to the east of the site is an immature deciduous tree.

The general Topography of the area is generally flat with a slight slope to the south east.

The site is situated in an area which is predominantly used as residential with commercial shops and business at the south end of Ferdinand Street and on Chalk Farm Road. Dispersed around the area within the residential areas are small areas of industrial works or garages. Historically these generally have been located in the same areas historically.

7.2 Photographs

A series of photographs showing the site and the surrounding area is included in Appendix B.

C PRELIMINARY CONCEPTUAL MODEL

8 Introduction

In the context of this report, the conceptual model summarises the potential pollutant linkages identified for the site and forms the basis of the risk assessment for the site. The preliminary model comprises the potential sources of contamination, receptors that could be harmed and exposure pathways identified from the desk study and walkover survey. These potential linkages form the basis upon which the investigation is designed and reported.

9 Potential Sources of Contamination

The site has a history of residential use and is located within a predominantly residential area.

A number of potentially contaminative uses have been identified, both on site and in the locality.

Potential contaminants associated with these uses have been compiled from desk study information and our experience of such sites.

9.1 On Site Sources

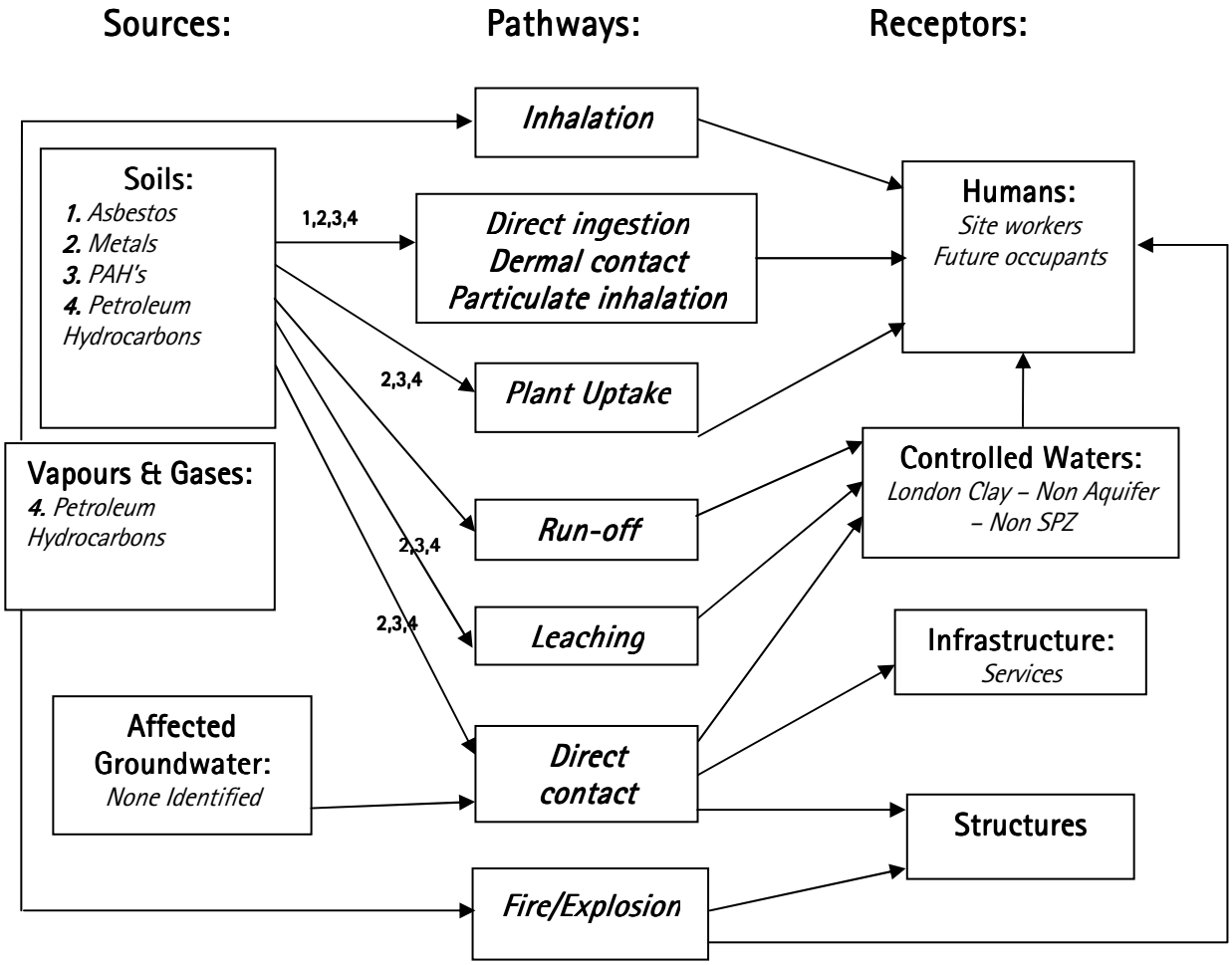
Source	Potential Contaminants
Made Ground associated with historic redevelopment of the site	Metals, PAH's and Asbestos Containing Materials.
Lock up garages :- storage of vehicles, possible fuel/oil storage and minor vehicle maintenance	Petroleum hydrocarbons, PAH's, Metals.

9.2 Off Site Sources

No significant offsite sources have been identified.

10 Pollutant Linkages and Model Summary

The following diagram shows the potential pollutant linkages identified for the site and summarises the preliminary conceptual model:



// Denotes potential pollutant linkage not complete

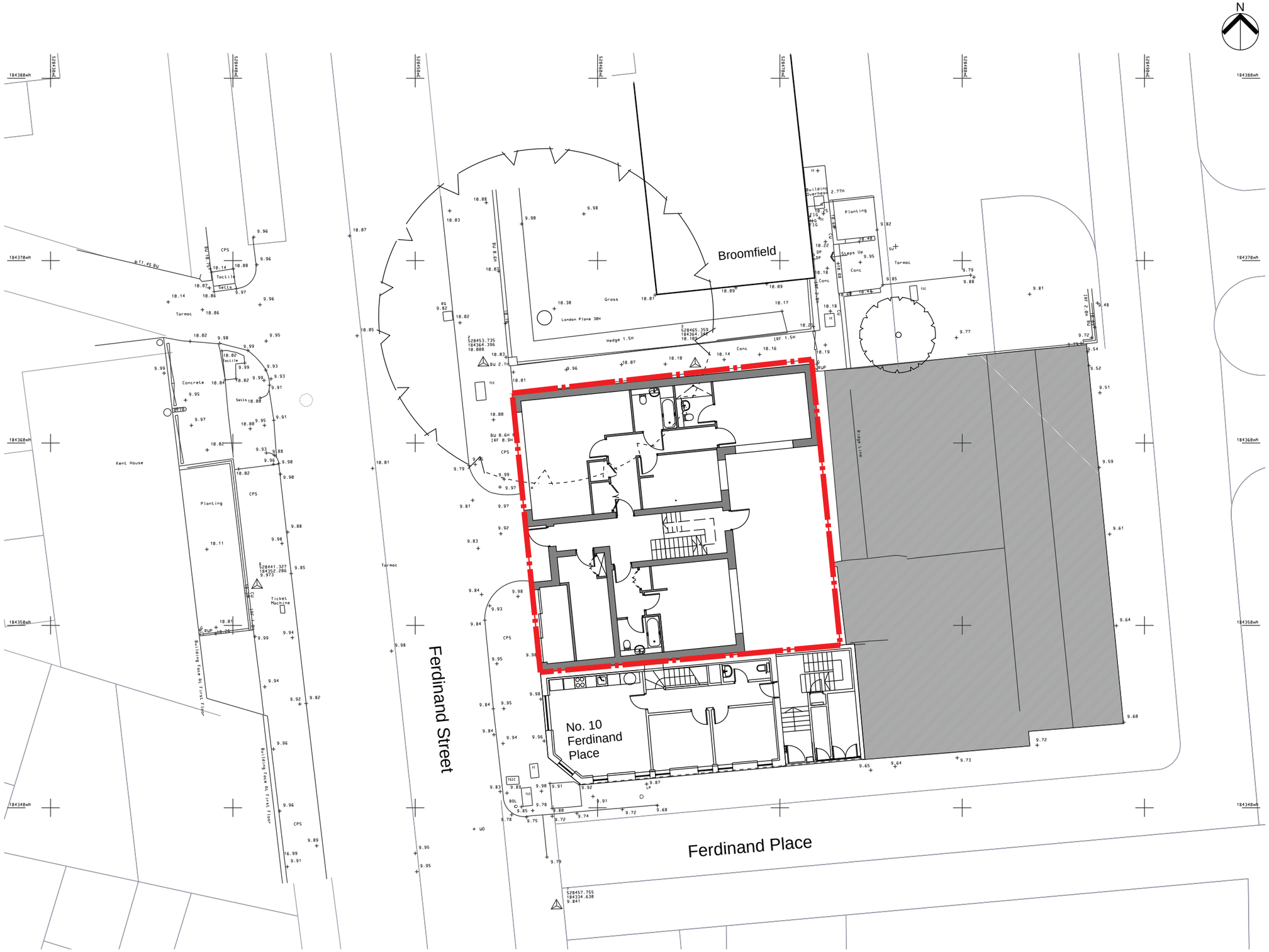
11 Conclusions and Recommendations

The site has a history of residential use with more recent use as a car park and lockup garages. No significant offsite sources have been identified. The potential for contamination from onsite sources is considered to be low.

A detailed intrusive investigation is recommended to assess the potential pollutant linkages identified.

APPENDIX A

Site Plans



NOTES

1. Base drawing supplied by others

Site Area

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Southern Testing :
Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA

ST Consult:
Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

ST Consult
Environmental & Geotechnical

Client:
Opticrealm Ltd

Job Title:
Ferdinand Street, London, NW1

Description:
Preposed site plan

Drawing No:
Fig 1.

Scale: 1:10	Paper size: A3
Drawn by: AW	Checked by:
Date: 19/12/2013	

(for guidance only)

Black
Total destruction

Purple
Damaged beyond repair

Dark Red
Seriously damaged; doubtful if repairable

Light Red
Seriously damaged, but repairable at cost

Orange
General blast damage – not structural

Yellow
Blast damage, minor in nature

Light Blue
Clearance areas

Light Green
Clearance areas

V1 flying bomb

V2 long range rocket

FIG 2.
London County Council Bomb Damage Maps (1939-1945)

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Southern Testing :
Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA

ST Consult:
Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

ST Consult
Environmental & Geotechnical

Client:
Opticrealm

Job Title:
Address

Description:
London County Council Bomb Damage Maps (1939-1945)

Drawing No:
FIG 2.

	Paper size: A3
Drawn by: AW	Checked by: DV
Date: 20th December 2013	

APPENDIX B

Photographs

View from Ferdinand Street onto site to garages at rear

View from Ferdinand Street onto site to garages at rear

View of Front of the site to Ferdinand Street

Broomfield residential flat to north of the site

Rear elevation of No.10 Ferdinand Place, bounding south side of the site.

Ferdinand Place at rear (east) of site

Funeral Directors at rear of the site on Ferdinand Palace

Funeral Directors at rear of the site on Ferdinand Palace

Surrounding area on Ferdinand Street to north of subject site

Surrounding area on Ferdinand Street to north of subject site

Surrounding area on Ferdinand Street to south of subject site

Housing block opposite subject site on Ferdinand Street.