Desk Study Report

99a Frognal
London
NW3

Client	Harrison Varma
Engineer	Fluid Structures

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GEA Geotechnical & Environmental Associates

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EXECUTIVE SUMMARY

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

BRIEF

This report describes the findings of a desk study carried out by Geotechnical and Environmental Associates Limited (GEA) on the instructions of Fluid Structures, on behalf of Harrison Varma, to determine the history of the site, assess the potential for contamination and to provide preliminary information on foundation options with regard to the proposed redevelopment of the site, which will involve the replacement of the existing building with a three-storey house, with single level basement, parking and private garden areas.

DESK STUDY FINDINGS

The earliest map studied, dated 1871, shows the site to be mostly undeveloped comprising a lightly wooded area crossed by an intricate pattern of paths, with two small buildings located on the northern part of the site. Frognal House was located less then 50 m to the east of the site and it may be that the site comprised a landscaped area belonging to this estate, or to the row of buildings that adjoined the southeastern part of the site.

The site remained essentially unaltered until some time between 1879 and 1895, when the trees had been cleared and two rectangular buildings had been constructed on the central part of the site. At some time between 1896 and 1915, the northernmost of the two buildings was replaced with a much smaller structure and by 1934, both buildings appear to have been demolished and replaced with an L-shaped building on the central part of the site. At some time between 1951 and 1954 this building was demolished and the site was essentially unoccupied, except for a small building in the northeastern corner of the site. An access road, running along the southern boundary of the site towards Frognal, was established between 1958 and 1966, although the site remained unoccupied, until some time between 1968 and 1970, when a building, labelled as 99a Frognal, was constructed on the central western part of the site. Shortly after this time, Frognal House was demolished and by 1974 the existing property at 99 Frognal was constructed. The site has remained essentially unaltered from that time.

CONTAMINATION RISK ASSESSMENT

The site has been occupied by a series of residential buildings throughout its developed history. As a result the risk of contamination has been assessed as VERY LOW; it would, however, be prudent to carry out a limited number of contamination tests as part of the ground investigation prior to redevelopment as a precautionary measure.

FOUNDATIONS

The British Geological Survey map of the area indicates the site to be underlain by the Bagshot Formation over the Claygate Member. Excavations for the proposed basement structure will require temporary support to maintain stability and prevent any excessive ground movements. The foundation loads are likely to be light to moderate and spread foundations bearing within the predominantly granular soils of the Bagshot Formation should provide a suitable foundation solution.

1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Fluid Structures, on behalf of Harrison Varma, to carry out a desk study of 99a Frognal, London, NW3 6XR.

1.1 Proposed Development

Consideration is being given to the residential redevelopment of this site, through the construction of a three storey house, with single level basement, associated hardstanding for parking and private garden areas.

This report is specific to the proposed brief and the advice herein should be reviewed if the proposals for the site are amended.

1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows:

- to determine the history of the site and surrounding area, with respect to any previous or present potentially contaminative uses;
- to research the geology of the site;
- to check records of data on ground water, surface water and other publicly available environmental data;
- to use the information obtained in the above searches to carry out a qualitative risk assessment with respect to subsurface contamination; and
- to provide preliminary comments on foundation options for any future development on the site.

1.3 Scope of Work

In order to meet the above objectives, a desk study was carried out, comprising, in summary, the following activities:

- a visual inspection of the exterior of the site;
- a review of readily available geological maps;
- a review of publicly available environmental data sourced from the Envirocheck database;
- a review of historical Ordnance Survey (OS) maps supplied by Landmark;
- a review of information sourced from the internet and other publications;
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside the stated scope of the research. Any comments made on the basis of information obtained from third parties are given in good faith on the assumption that the information is accurate. No independent validation of third party information has been made by GEA.

2.0 THE SITE

2.1 Site Description

The site is located roughly 350 m to the west of Hampstead London Underground station. It is accessed via a private roadway, which enters the southeastern corner of the site, and is bounded on all the remaining sides by residential properties. The site may additionally be located by National Grid Reference 526030 185880.

It was not possible to access the site to carry out a full walkover survey of the site; however, it was possible to view the main building and external areas of the site from the private road. The site is situated on the eastern side of the crest of a ridge, with the ground sloping steeply away from the site towards the east. The western part of the site is occupied by an existing two storey building, with a two storey garage extension on the southwestern part of the site. The driveway area, situated between the existing buildings on the southern part of the site, slopes down in an easterly direction to meet the private access road.

The remainder of the site comprises private garden and landscaped areas with numerous mature and semi-mature trees of mixed deciduous and evergreen species. The southern boundary of the site is formed by a brick wall, which reaches a height in excess of 3.0 m and is likely to comprise a retaining wall to the adjoining site.

2.2 Site History

The site history has been researched by reference to historical Ordnance Survey (OS) maps sourced by the Landmark database.

The earliest map studied, dated 1871, shows the site to be mostly undeveloped comprising a lightly wooded area crossed by an intricate pattern of paths, with two small buildings located on the northern part of the site. Frognal House was located less then 50 m to the east of the site and it may be that the site comprised a landscaped area belonging to this estate, or to the row of buildings that adjoined the southeastern part of the site.

The site remained essentially unaltered until some time between 1879 and 1895, when the trees had been cleared and two rectangular buildings had been constructed on the central part of the site. At some time between 1896 and 1915, the northernmost of the two buildings was replaced with a much smaller structure and by 1934, both buildings appear to have been demolished and replaced with an L-shaped building on the central part of the site.

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2.3 Other Information

A search of public registers and databases has been made via the Envirocheck database and extracts from the results of this search are included in the Appendix. More detailed information relating to the search can be provided on request.

The report has indicated that there are no active or historical landfill sites, waste management, transfer or disposal sites located within 500 m of the site. The search has also indicated that there have been no pollution incidents to controlled waters within 500 m of the site.

Reference to records compiled by the Health Protection Agency (formerly the National Radiological Protection Board) indicates that the site falls within an area where less than 1% of homes are affected by radon emissions and therefore basic radon protective measures will not be necessary. A single Local Authority Pollution Prevention and Controls (LAPPC) authorisation, relating to a dry cleaners, has been granted within 500 m, at a distance of approximately 354 m to the southwest of the site.

3.0 GROUND CONDITIONS

3.1 Soil Conditions

The Geological Survey map of the area (BGS sheet 256) indicates that the site is underlain by the Bagshot Formation, overlying the Claygate Member.

The anticipated ground conditions have been generally confirmed by a previous investigation carried out by GEA approximately 100 m to the northeast of the site. The investigation encountered made ground to depths of between 0.25 m to 2.40 m, which was underlain by the Bagshot Formation to the full depth of the investigation of 6.0 m. The Bagshot Formation was found to comprise an upper layer of pale brown mottled orange-brown very silty clayey fine sand with occasional pockets of firm clay, which became less clayey with depth and was underlain by pale brown and yellowish brown silty fine sand, which was proved to the full depth of the investigation.

3.2 Ground Water Conditions

The former National Rivers Authority (NRA) Ground Water Vulnerability map suggests that the site is underlain by a minor aquifer, with soils of variable permeability and high leaching potential. The site does not lie within a nitrate vulnerable zone or a source Protection Zone (SPZ), as defined by the Environment Agency and does not lie in an area at risk of flooding.

The nearest natural water feature is a spring, which issues on West Heath, approximately 650 m to the north of the site and flows in a westerly direction into Leg of Mutton Pond. Reference to

published information[1] has indicated that a number of tributaries of the River Westbourne rose within the vicinity of the site, approximately 150 m to the northwest, 320 m to the south and 400 m to the southeast of the site respectively. Each of the tributaries flowed separately in a south to southwesterly direction, before coming together and merging to the north of Kilburn High Road.

The direction of groundwater flow beneath the site is likely to be in an easterly or southerly direction, with the general slope of the ground away from the site, towards the former tributaries of the River Westbourne.

During the previous investigation of the nearby site, ground water was only encountered in a single location and comprised a groundwater seepage within the Bagshot Formation at a depth of 2.75 m. Subsequent monitoring showed the standpipes, installed as part of the investigation, to be dry after a period of three weeks.

4.0 RISK ASSESSMENT

Consideration is being given to the residential redevelopment of this site, through the construction of a three storey house, with single level basement, associated hardstanding for parking and private garden areas.

4.1 Environmental Risks

The desk study research has indicated that site has not had a contaminative history.

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. As part of the new regime local authorities are required to carry out inspections of their area to identify sites that may be contaminated.

The determination of contaminated sites is based on a "suitable for use" approach which involves investigating the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of establishing one or more "pollution linkages"; a pollution linkage requires a source of contamination, a sensitive target or receptor that is at risk from the contamination and a pathway by which the contamination can travel from the source to the target.

Current guidance to Local Planning Authorities (LPAs)[2] also indicates the need for a risk assessment and requires that where development is proposed on land that may be affected by contamination, a risk assessment should be carried out for consideration by the LPA before the planning application is determined. Where unacceptable risks are identified proposals need to be made to address these risks as part of the development process. The guidance recognises the benefits of a phased approach and the desk study is the first phase in the process of investigating and identifying contamination to assist in the determination of a planning application.

At this site no sources of contamination have been identified and therefore, using this qualitative rating system, the site is regarded as having a VERY LOW risk: However, it would be prudent to carry out contamination testing as part of the ground investigation as a precautionary measure.

1 Barton, N (1992) *The Lost Rivers of London,* Historical Publications Limited
2 Planning Policy Statement 23 (2004) *Planning and Pollution Control* HMSO

4.2 Development Issues

The Bagshot Formation below the site should provide a suitable bearing stratum for spread foundations supporting light to moderate loads, provided that there is not a significant thickness of made ground below the site.

Excavations for the proposed basement structure will require temporary support to maintain stability and prevent any excessive ground movements.

Groundwater inflows are unlikely to be encountered in the basement excavations; however, shallow inflows of perched water within any made ground present on the site and in the vicinity of existing foundations may be encountered, although such inflows unlikely to be significant.

5.0 CONCLUSIONS

On the basis of the findings of the research carried out there is considered to be a VERY LOW risk from contamination at this site and it is not is considered that this site should not be viewed as contaminated as defined by the Environment Act.

It would be prudent to carry out further investigations prior to the redevelopment to confirm the ground conditions and engineering properties, to provide foundation design recommendations and to check for any potential contaminants present.

Geotechnical & Environmental Associates (GEA) is an engineer-led and client-focused independent specialist providing a complete range of geotechnical and contaminated land investigation, analytical and consultancy services to the property and construction industries**.**

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