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# Ground Investigation Letter Report

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|---|---|
| **CLIENT** | Bedford Estates c/o F T Architects Limited |
| **SITE ADDRESS** | Land to the rear of 51 Gower Street, London WC1E 6HJ |
| **REPORT REFERENCE** | GWPR1717. This letter report must be read in conjunction with the Ground and Water Limited Ground Investigation, ref. GWPR1183/GIR/April 2016. Terms and Conditions provided in Appendix A. |
| **ENGINEER** | Francis Williams, Ground and Water Limited |
| **INVESTIGATION LOCATIONS** | Site works were undertaken on the 7th July 2016 and comprised the construction of a hand held window sampler boreholes to 5.30m bgl. The boreholes could not extend beyond 5.30m bgl due to the density of the sub-surface soils. A 19mm diameter combined bio-gas and groundwater monitoring well was installed to 4.00m bgl. Please see Figure 1 Attached. Field work logs are provided in Appendix B. |

**GROUND CONDITIONS ENCOUNTERED**

**Summary of Strata Encountered (WS1)**

| Strata | Depth Encountered (m bgl) | Thickness (m) |
|---|---|---|
| CONCRETE | GL | 0.15 |
| MADE GROUND (Mid brown locally clayey gravelly sand. Sand is fine to coarse grained. Gravel is occasional, fine to coarse, sub-rounded to sub-angular brick, cement and concrete). | 0.15 | 1.35 |
| MADE GROUND (Brown clayey gravelly sand. Sand is fine to coarse grained. Gravel is occasional, fine to coarse, sub-angular flint). | 1.50 | 2.20 |
| MADE GROUND (Black slightly sandy silty CLAY) | 3.70 | 0.30 |
| COHESIVE LYNCH HILL GRAVEL MEMBER (Mid brown/orange brown silty CLAY) | 4.00 | 1.00 |
| GRANULAR LYNCH HILL GRAVEL MEMBER (Orange brown gravelly SAND. Sand is fine to medium grained. Gravel is occasional, fine to medium, sub-angular flint). | 5.00 | 0.30 |

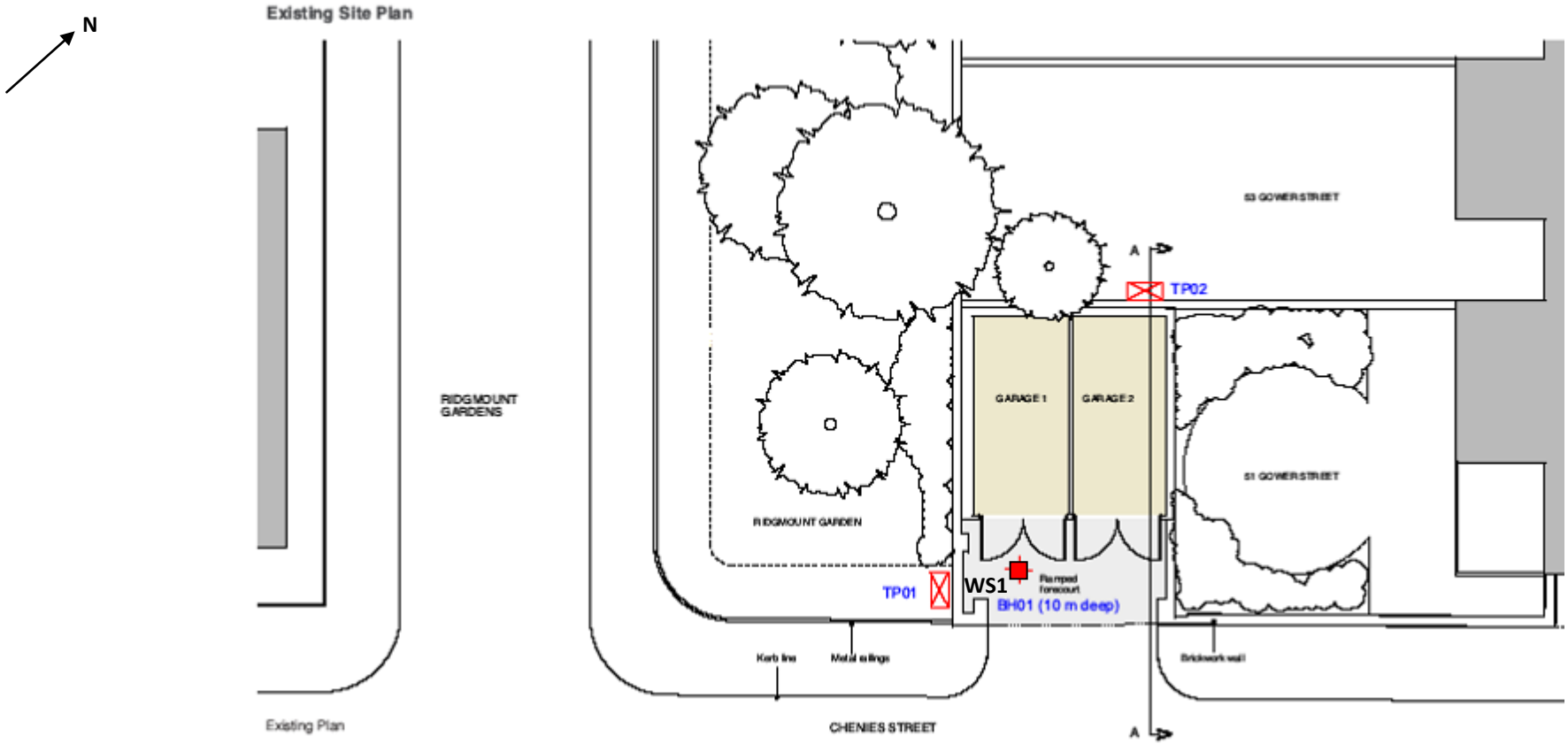
**GROUNDWATER**

No groundwater was encountered during the construction of WS1. During the original investigation a groundwater strike was encountered at 6.40m bgl in BH1.

The results of return visits to dip the small diameter well installed to 4.00m bgl in WS1 can be seen overleaf:

| Project Ref | Site Location | Borehole Ref. | Groundwater reading (m bgl) | Depth to base of borehole (m bgl) | Date |
|---|---|---|---|---|---|
| GWPR1717 | 51 Gower Street, London | WS1 | 3.60 | 3.80 | 19/07/2016 |
| GWPR1717 | 51 Gower Street, London | WS1 | 3.50 | 3.80 | 03/08/2016 |

The groundwater level noted is likely to represent perched water within the Made Ground ponding at the base of the small diameter well, bottomed out in the cohesive Lynch Hill Gravel Formation.




**NOT TO SCALE**

| | | |
|---|---|---|
| **Project:** Land to the rear of No. 51 Gower Street, London WC1E 6HJ | | **Figure 1** |
| **Client:** Bedford Estates c/o F T Architects | **Date:** August 2015 | ground&water |
| **Trial Hole Location Plan** | **Ref:** GWPR1717 | |

## APPENDIX A
### Conditions and Limitations

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report ("you" or "the Recipient") are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist. It was not part of the scope of this report to comment on environment/contaminated land considerations.

The conclusions and recommendations relate to Land to the rear of 51 Gower Street, London WC1E 6HJ.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

## APPENDIX B
## Fieldwork Logs

Ground and Water Ltd

Borehole No
**WS1**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Land to the rear of 15 Gower Street | Project No.: GWPR1717 | Co-ords: - | Hole Type: WS |
| Location: London WC1E 6HJ | | Level: - | Scale: 1:50 |
| Client: Bedford Estates c/o FT Architects Ltd | | Dates: 07/07/2016 | Logged By: RT |

| Well | Water Strikes | Samples & In Situ Testing: Depth (m) | Type | Results | Depth (m) | Level (m AOD) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | 0.20 | D | | 0.15 | | | CONCRETE |
| | | 0.50 | D | | | | | MADE GROUND: Mid brown gravelly sand. Sand is fine grained. Gravel is occasional, fine to coarse, sub-rounded to sub-angular brick, cement and concrete. |
| | | 0.80 | D | | | | | |
| | | 1.00 | D | | | | | |
| | | 1.20 | D | | 1.20 | | | |
| | | 1.50 | D | | 1.50 | | | MADE GROUND: Brown clayey gravelly sand with clay lenses. Sand is fine to coarse grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded brick, cement and concrete. |
| | | 2.00 | D | | | | | MADE GROUND: Brown clayey gravelly sand. Sand is fine to coarse grained. Gravel is occasional, fine to coarse, sub-angular flint. |
| | | 2.50 | D | | | | | |
| | | 3.00 | D | | | | | |
| | | 3.50 | D | | | | | |
| | | | | | 3.70 | | | MADE GROUND: Black slightly sandy silty clay. |
| | | 4.00 | D | | 4.00 | | | LYNCH HILL GRAVEL MEMBER: Mid brown/orange brown silty CLAY. |
| | | 4.50 | D | | | | | |
| | | 5.00 | D | | 5.00 | | | LYNCH HILL GRAVEL MEMBER: Orange brown gravelly SAND. Sand is fine to medium grained. Gravel is occasional, fine to medium, sub-angular flint. |
| | | 5.30 | D | | 5.30 | | | End of Borehole at 5.30 m |
| | | | Type | Results | | | | |

Remarks: No groundwater encountered.
Roots noted to 5.30m bgl.

AGS