constructure

Constructure Ltd

21 Gladys Road

Structural Planning Report

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Basement Impact Assessment

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[revision A: June 2014]

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Contents

1.0 Introduction

Constructure Ltd were appointed in December 2013 for structural advice on the proposed refurbishment and extension of this property. This report has been produced to accompany the Planning Application submission by Pennington Phillips, describing the scope and nature of the structural works. It details the outline approach that will be taken to safeguard the integrity and stability of the existing building and adjoining property, in particular with the construction of the proposed lower ground floor structure.

1.1 Description of Works

It is proposed to construct a new single storey front lightwell/terrace leading off from the current cellar. The cellar floor is to be lowered to afford suitable headroom to enable the room to be used as habitable accommodation. Please refer to supporting sketches 1302/001 and 002.

1.2 Camden Planning Guidance CPG4 (including DP27)

The following categories were initially addressed as follows. These informed the further desk study in the subsequent sections:

1.2.1 Subterranean/Groundwater

- Is the site located directly above an aquifer? NO
- Will the proposed basement extended beneath the water table surface? NO
- Is the site within 100m of a watercourse, well (used/disused) or potential spring line? YES (see section 2.1)
- Is the site within the catchment of the pond Chains on Hampstead Heath? NO
- Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas? NO
- As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)? NO
- Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just ponds chains on Hampstead Heath) or spring line. NO

1.2.2 Slope Stability

- Does the existing site include slopes, natural or manmade, greater than 7°? (approximately 1 in 8) NO
- Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7°? (approximately 1 in 8) NO
- Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°? (approximately 1 in 8) NO
- Is the site within a wider hillside setting in which the general slope is greater than 7°? (approximately 1 in 8) NO
- Is the London Clay the shallowest strata at the site? YES (see section 3.1)
- Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree zones where trees are to be retained? NO
- Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site? NO
- Is the site within 100m of a watercourse or a potential spring line? YES (see section 2.1)
- Is the site within an area of previously worked ground? NO
- Is the site within an aquifer?. If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction? NO
- Is the site within 50m of the Hampstead Heath ponds? NO
- Is the site within 5m of a highway or pedestrian right of way? YES (see section 4.2.2)
- Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties? NO
- Is the site over (or with the exclusion zone of) any tunnels e.g. railway lines? NO

1.2.3 Surface Flow and Flooding

- Is the site within the catchment of the ponds on Hampstead Heath? NO
- As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route? NO
- Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas? NO
- Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses? NO
- Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses? NO
- Is the site in an area known to be at risk from Surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature? NO

2.0 The Site

Situated within the residential area of West Hampstead, the property is of 19th century origin, a mid terrace house which has been split into two apartments. The lower apartment occupies the ground and lower ground floor.

The lower ground floor is level with the rear garden but is below the road level, and the space beneath the front ground floor room is currently a generous cellar. There exists a walled hard-standing forecourt between the house and public highway, which is part of the demise of this property.

2.1 Local Geology

From the geological maps and borehole records for the area, the underlying soil is seen to be London Clay down to 30-40m, possibly with thin layer of Made Ground overlying. These strata are underlain by about 10m of the Lambeth Group, overlying 10-15m of Thanet Sand. Chalk is thought to be present at around -30mOD.

A tributary to the Westbourne river has been historically culverted to the north side of the property.

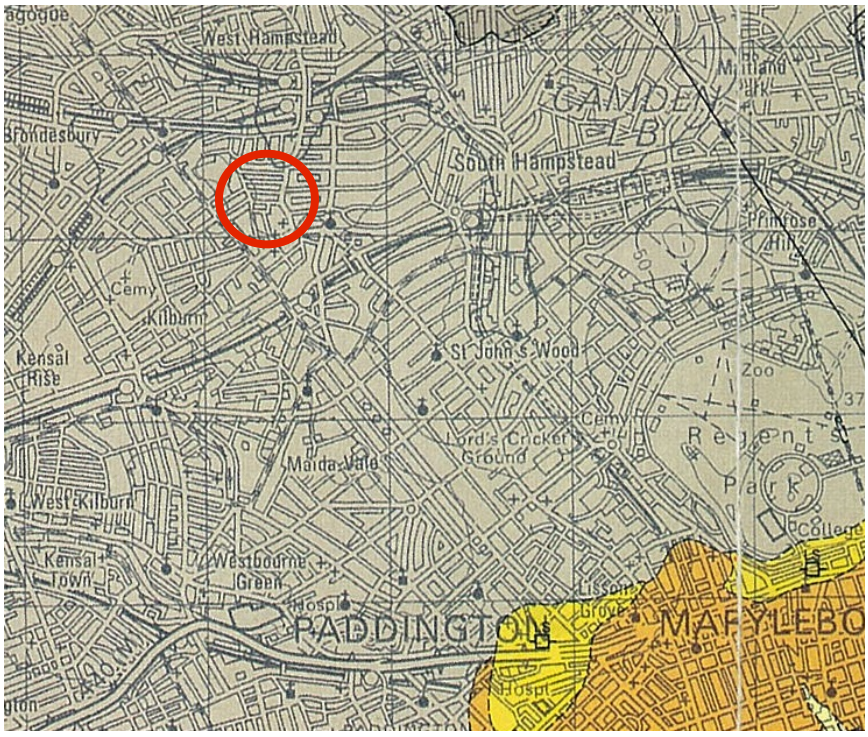
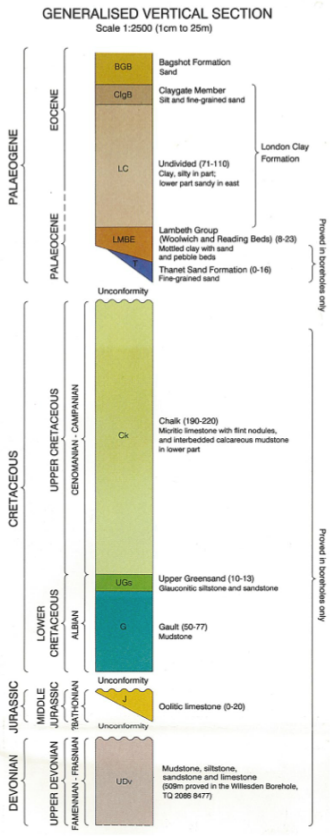


Figure 1 - Geological map showing site



2.2 London Underground

Consultation of LUL Route Maps demonstrate that the site is sufficiently far from London Underground infrastructure. Additionally, the new substructures are no deeper than the existing foundations. Therefore no consultation with the London Underground Asset Protection team will be necessary.

2.3 Existing Utilities and Underground Services

Existing services including sewers and drainage runs will be identified prior to commencing the works. The outfall to public sewer is known to be deeper than the existing property foundations, as such this will not be impacted by the proposed extension.

3.0 Investigation Works and Assessments

3.1 Site investigation

A trial pit investigation was carried out in February 2014. The findings of this are shown on drawing 001. A thin layer of made ground was penetrated to find the bearing substratum of London Clay.

Note, since the extension is to be no deeper than the deepest existing substructures, and since there are no overlying geological deposits (the bedrock geology is evident from trial pits alone), there is deemed no requirement for a borehole investigation.

3.1.1 Contamination testing

Contamination testing is to be carried out by the contractor during the excavation works to allow WAC classification for disposal.

3.1.2 Groundwater

The trial pits were found to be dry and open upon completion. This suggests that the ground water is unlikely to affect the works.

3.1.3 Soil Properties

The high plasticity of clays found upon the site will ordinarily mean that foundation depths will need to be designed to be deep enough to reach beyond the influence of any trees, though in this case the proposed excavation for the basement will be sufficiently deep so as not to be critical in this respect.

3.2 Stability of excavations

Excavations in Made Ground are likely to be unstable and so may require temporary support. Excavations within the London Clay are expected to be more stable in the short term. The boundaries will be shored and propped to the contractor's temporary works engineer's design, alternatively the reinforced retaining walls formed in 1m bays, to contractor's preference.

3.3 Flood Risk

With reference to the Environment Agency's Flood Risk map, it can be seen that the site lies outside any flood risk zones. The site is on higher ground than the areas that historically experienced flooding most recently in 1975. As such, no detailed Flood Risk Assessment is deemed required.

The area of hardstanding and roof areas combined do not materially increase in the proposed scheme, and so the outflows into the public sewer system from the site due to surface waters will be comparable to the existing site.

3.4 Hydrogeological Assessment

The existing subsoils are of London Clay. The trial pit investigation showed a nominal build-up of made ground underlain by clay, upon which the original foundations are situated. No ground water was encountered.

The extension of the lower ground floor to the front will not be deeper than the existing deepest substructure, as shown on the supporting drawings.

The local natural watercourse has been historically culverted, and is a suitable distance away to not be impacted by the proposed excavations, which are not deeper than the original cross wall to the house, itself being located between the site of the culvert and the proposed light well extension and nominal floor reduction.

Because the property already has a full-depth structural foundation, and a cellar, the proposed extension has a negligible volumetric impact upon the subsoils. The clay subsoils are relatively impermeable, and so any lateral ground water flows would be minimal. As such, the proposed extension is deemed to have no significant effect on the local hydrogeology.

4.0 Construction and Design Parameters

4.1 Conversion of Cellar to Accommodation

Please refer to our drawing 002. The protection of the neighbouring properties and boundary structures has been carefully considered, such to ensure that during the works, the boundary and neighbouring structures are protected from ground movement. The techniques proposed therefore are designed to conform with this.

4.1.1 Underpinning

Under the house, the side walls on the boundary lines will be underpinned in 1.0m bays to some 1m depth. Underpinning will be sequenced to avoid excavating immediately adjacent freshly curing concrete. The underpinning will be pinned up with dry pack mortar rammed in.

This internal cross wall was found to be deep enough to accommodate the lowering of the floor.

4.1.2 Floor Slab

It is proposed to create a suspended reinforced concrete slab, in order to avoid a need to form a hardcore sub base, thus reducing excavation depths.

4.1.4 Heave Protection

The nature of the sandy clay soil is such that heave under the shallow excavation will not be of significance. As such, no allowance is considered necessary to be made for a heave mat.

4.1.5 Water Pressure and Control

No groundwater was evident that would impose load to the new floor slab. Investigations suggest that in the temporary condition, no groundwater is likely to be encountered. As such dewatering is not likely to be needed.

4.2 Front Terrace Extension

Please refer to drawing 002.

4.2.1 Retaining walls

The forecourt will be excavated to meet the level of the lower ground floor, and the boundary to the south and to the east, some 1m back from the highway, will be retained using a new reinforced concrete cantilever retaining wall.

4.2.2 Highways

The front of the property is adjacent to the public highway. The surcharge used in the design is based on the Highways Agency Design Manual for Roads and Bridges Volume 1, Section 3, Part 14. Values of HB loading of 12.0kN/m^2 or HA loading of 10.0kN/m^2 are to be considered. The proposed front retaining wall will therefore be designed to resist these forces. To the northern boundary, a similar extension has been constructed in 2012. The boundary retaining wall is in reinforced concrete, and this can be utilised directly.

4.3 Party Walls

The proposed development falls within the scope of the Party Wall Act 1996. Procedures under the Act will be dealt with in full by the Employer's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary notices under the provisions of the Act and agree Party Wall Awards in the event of disputes. The Contractor will be required to provide the Party Wall Surveyor with appropriate drawings, Method Statements and other relevant information covering the works that are notifiable under the Act. The resolution of matter under the Act and provision of the Party Wall Awards will protect the interests of all owners.

The scheme for 21 Gladys Road will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties in the street. The Surveyors will verify this as part of the process under the Act.

4.4 Design Codes

The following design codes will be followed during the detailed design stage:

The Building Regulations 2010 - Approved Document A

BS 648 - Weights of building materials

BS 5950:1 - Structural use of steelwork in building

BS 6399:1 - Loadings for buildings (Dead and imposed loads)

BS 6399:2 - Loadings for buildings (Wind loads)

BS 8110:1 - Structural use of Concrete

BS 8004 - Foundations

BS 8002 - Earth retaining structures

BS 8102 - Protection of structures against water from the ground

5.0 Outline Construction Sequence

The outline construction sequence and temporary works assumed in the design and described in this report will be superseded by the Contractor's construction proposals. The Contractor will be required to provide full proposals, method statements and calculations to the engineer prior to the commencement of any works on site and these will be considered in conjunction with the permanent structures and verified as suitable before the works are implemented.

The appointed contractor will be required to provide a detailed works sequence with their tender submission. An outline sequence of the substructures works is likely to be as follows:

- Secure site, erect hoardings, establish welfare facilities, and divert on-site services.

- Enabling works, demolition and stripping out works. Detailed sequence by specialist contractor. Remove debris and excavation arisings from site via the highway, in accordance with agreed management plan.
- Break out and remove existing lower ground floor
- Excavate underpins for perimeter wall adjoining the neighbouring properties and front wall in sequenced bays 1.0m wide. Cast mass concrete against soil to the rear and formwork to the front face with a “letterbox” at the top. Terminate concrete 75mm below the underside of the existing footing.
- 24 hours after casting concrete, ram dry-pack mortar onto the gap between pre-existing footing and new underpin.
- Continue until walls have been underpinned following standard timings for underpinning, ensuring no excavation is carried out until at least 48 hours after casting an adjacent underpin.
- Reduce level of soil internally
- Lay sand blinding
- Arrange reinforcement for slab then cast concrete slab
- Excavate forecourt providing shoring to preserve integrity of south and east boundaries
- Drill and resin-set dowels to northern boundary structure
- Construct slab and retaining wall base
- Construct retaining walls, progressively, removing shoring as this progresses
- Once cured, remove temporary upper level props.

6.0 Temporary Works

Temporary works design and coordination is to be carried out by a suitably qualified and experienced specialist and full design details (drawings and calculations) will be submitted to the engineer for comment. This specialist will be appointed by the Contractor who will be responsible for the design, erection and maintenance of all temporary works to ensure the stability of the existing structure, excavations and adjacent structures at all times.

7.0 Trees

No trees are in close enough proximity such to be affected by the proposed works.

8.0 Drainage Services

The development is an extension of a single family dwelling apartment. Therefore, there will be no significant increased discharge into the existing drainage and sewage systems. Surface water will not be altered as the majority of the proposed works are underground and there will be no addition to the hard surface areas formed at ground level. The outfall to the Gladys Road public sewer can therefore be continued as per historic use.

9.0 Summary

During construction, lateral and vertical stability of the building will be maintained by directly underpinning and temporarily propping, such that no significant adverse movement is expected.

Environmental impacts have been assessed, and the response to geotechnical and hydrological aspects have been considered. The proposals are deemed to not have any adverse impact in this respect.

Once complete, the new structure will provide a robust and secure support for both new and existing structure without detriment to the overall stability of the building or adjoining property.

None of the proposed superstructure alterations will fundamentally affect the integrity and stability of the original structures upon and adjacent the site.

Appendices

Appendix A: Sketch 001: Trial Pits

Sketch 002: Proposals