CONSTRUCTION METHOD

STATEMENT FOR

SUBTERRANEAN DEVELOPMENT

At

54 RUSSELL GARDENS, LONDON, W14 8EZ

For

SUGAR BAY HILL LTD

Prepared by

Engineering Force Ltd

August 2014
Design Brief

1. Introduction:

This report presents the proposal of Engineering Force, as Civil and Structural Engineers, for the proposed re-development of No. 54 Russell Gardens the garages adjacent to No. 90 Elsham Road. A Site visit has been carried out to inspect the part demolished site and record trial holes along the perimeter retaining walls.

The site is located in the Royal Borough of Kensington and Chelsea (RBKC) about 500m to the west of Holland Park at the corner of Elham Road and Russell Gardens. The site is bounded by Elsham Road and Russell Gardens to the east and the south and by the properties 90 Elsham Road and 12 Russell Gardens Mews to the north and west respectively.

The properties immediately adjacent to the site which could potentially be affected by the works are:

1. 2B Russell Gardens Mews - a traditionally brick built two storey residential property with accommodation arranged over the ground and first floors.
2. 12 Russell Gardens Mews - a traditionally brick built two storey residential property with accommodation arranged over the ground and first floors.
3. 90 Elsham Road - a modern new build four storey residential property which has a further lower ground floor/basement extending for the full footprint of the building with accommodation arranged over all five floors.

The site is a rectangular shape that extends over an area of about 24m by 22m.

The property No. 54 Russell Gardens has an area of about 24m by 15m in plan. It is currently occupied by a two storey building with a single storey extension to the west, which is currently used as a public house. There is a lower ground floor underneath the whole footprint of the building that extends to about 3m below ground level.

The area of the garages adjacent to No. 90 Elsham Road is approximately 24m by 7.5m in plan and is currently occupied by parking bays and by a single storey garage at the front and by a single storey brick structure that is currently the extension of the pub on No. 54 Russell Gardens at the rear. It is understood that under this area there is a lower ground floor that is currently backfilled. The lower ground floor is expected to extend to the same depth of the lower ground floor at No. 54 Russell Gardens.

2. Soil analysis and Hydrogeological Review:

A review of the hydrogeological conditions at No. 54 Russell Gardens and the garages adjacent to No. 90 Elsham Road has been carried out on the basis of site specific and record information on stratigraphy and ground conditions.
A geotechnical site investigation report has been prepared for the site by Risk Management Ltd and the findings and recommendations are presented in detail in their report referenced ‘RML 4627’ and dated March 2011.

The ground conditions encountered during their investigations were generally as expected from geological survey records and comprise (from street level) of an average 3.6m depth of Made Ground over Kempton Gravel which extends up to a depth of 6.5m over the solid geology of the London Clay (recorded to at least 10.0m depth i.e. the maximum length of the boreholes) which is expected to extend to a depth of about 60.0m.

Groundwater was encountered between 3.0 to 4.0m below street level and therefore is likely to be encountered during the basement excavations. Should groundwater be encountered then it can usually be adequately dealt with expeditiously by the construction of sumps from which water can be pumped and therefore no special precautions are assumed necessary at this stage.

No significant landfill gas or ground contamination was encountered.

A hydrogeological report has been prepared for the site by the Geotechnical Consulting Group and the findings and recommendations are presented in detail in their report dated August 2014.

Their report was based on constructing a two storey basement extending to about 7.0m below ground level and for this more onerous situation the deeper basement would create a local barrier to the groundwater currently flowing across the site.

This is expected to cause the groundwater to deviate around the basement with a minor increase of water pressure on the uphill side of the basement. This is unlikely to have any significant effects on the local hydrogeology or on adjacent properties because the permeability of the gravel is high and the water table is relatively deep below ground.

It was recommended that water pressure and uplift should be accounted for when designing the basement walls and slabs and which will be accommodated for by the sheet piles (used in conjunction with a proprietary cavity drain system) and the new reinforced concrete wall.

It was also recommended that land drainage should be provided to deal with water run-off from hard standings and garden areas.

3. **Proposal:**

It is proposed to redevelop the site replacing the existing structures with a new six storey building for residential and commercial purposes. The redevelopment would also include the re-instalment of the existing lower ground floor under the area of the garages adjacent to No. 90 Elsham Road together with a new basement below the existing lower ground floor that will be used as basement car park and plant room.
4. **Design and Performance Parameters:**

The new construction shall be designed in accordance with current British Standards, Code of Practice and Building Regulation. The structure and foundation shall be designed for all dead, imposed and wind loads to which it is likely to be subject. Load combination will be applied to the building to see which combination will create the worst load case once the factor of safety has been applied.

4.1 **Dead Load**

The dead load allows for the self-weight of the structure, floor screed, finishes and external and internal walls and cladding.

4.2 **Imposed Load**

Imposed load defines as the load assumed to be produced by the intended occupancy or use, including the weight of moveable partition and snow load.

4.3 **Wind Load**

Wind load allows for the wind pressure applied to the building on all direction ad horizontal loads which can cause horizontal movement.

4.4 **Durability**

The design life of the new structure is taken as 60 years, which falls within Category 4 in table 1 of BS 7543 : 1992: Durability of Buildings and Building Element and corresponds to a “normal” category of building.

4.5 **Disproportional Collapse**

The Building will be designed and constructed so that in the event of an accident the building will not suffer collapse to an extent disproportionate to the cause. The building is classed as Class 2B in Table 11, Building Regulation Part A. Effective horizontal ties, as described in the Codes and Standards listed under paragraph 5.2 for framed and load bearing wall construction will be provided.

5. **Proposed New Building**

5.1 **Foundation & Basement**

Inspection shows that the existing masonry retaining walls are in good condition and can be sustained. Furthermore, we can also confirm that the existing masonry retaining wall are not propped or supported by any other structure therefore fully independent. Trial holes shows that the existing 440mm thick masonry walls have 5 corbel steps equal to 500mm projection each side of the masonry walls. Therefore the total width of the footing is 1440mm.

In order to construct the -2 level basement levels it is proposed to drive down metal interlocking sheet piles along the internal face of the existing perimeter walls to act as temporary retaining earth structure. These interlocking sheet piles will be propped at high level by wailing beams, props and knee bracings at the corners in order to allow for excavation. In order to prevent the bottom section of the sheet piles to move, the sheet piles will require to be buried into the ground to provide sufficient anchorage. Sheet piles will be design and installed by piling contractor. Once the excavation has commenced to formation level, new reinforcement bases together with the reinforced basement slab will be constructed. This conventional method will ensure that there is minimal disturbance.
to the existing structure and the surrounding.

We are also aware of the high water table and therefore it has been proposed to provide anchorage piles to the slab in the temporary condition to prevent any uplift. Since the superstructure is of reinforced concrete frame structure the self-weight of the building have been calculated and is sufficient to withstand the uplift forced generated from the high water table.

The works will be carried out in an engineered sequence to make sure the existing masonry retaining walls are not undermined.

Once the sheet piling installation is completed and before the full excavation of the -2 level basements it has been proposed to erect temporary structure in forms of horizontal walling beams and props to prevent any movement.

After completion of the excavation, the new structural reinforced concrete basement slab will be constructed fully butted against the sheet pile wall. A new reinforced concrete wall will be constructed in front of the existing masonry wall and in front of the new sheet piling to act as the permanent earth retaining structure. This will provide a “Box-within the Box”.

Furthermore, a series of concrete fin walls have been proposed to act as buttressing to the perimeter retaining walls. These fin walls will be supported over concrete foundation and also be designed as rectangular columns so that they can transfer the load down to foundations.

It is proposed to construct a 250mm thick reinforced concrete slab at -1 basement level fully tied and supported on the new perimeter RC wall. The RC perimeter wall will be extended to support the ground floor level as shown on drawing 1382-PH02-006.

5.2 Ground Floor

Ground floor to be reinforced concrete slab supported on perimeter capping beam and RC perimeter wall. This reinforced concrete slab will act as permanent prop to the RC retaining wall.

5.3 Structural Frame

The structural frame proposed is reinforced concrete flat slabs supported on reinforced concrete columns and walls. The core of the building which forms the staircase and lift shaft area will be formed of solid reinforced concrete walls which will also act as shear walls as well as loadbearing walls. These shear walls, as the building is a rectangular shape will be the main structural wall which will support the stability of the frame.

5.4 Roof

The proposed roof will be also reinforced concrete slab designed to take services such as solar panels and other mechanical services that is proposed to be supported.
6. Construction Phase Plan & Method Statement for Structural Works

Reference should be made to the accompany drawings to assist with the following described stages of construction.

The construction methodology will be agreed with a suitably experienced ground works contractor as follows:

6.1 Site set up and Mobilization

6.1.1 Mobilize welfare facilities, portable toilet, portable cabin to facilitate canteen & washing facility and site office with first aid room.
6.1.2 Erect timber hoarding to protect and secure site.
6.1.3 Fix all necessary health and safety sign to the hoardings.
6.1.4 Fix site entrance gates and access and secure all in place.

6.2 Demolition and Disposal

6.2.1 Contain an asbestos report.
6.2.3 With reference to the asbestos report demolish the existing garages and all demolished material to be removed by licensed contractor.
6.2.4 Brake out existing slab and foundations and dispose by licensed contractor.

6.3 Foundation and Ground Works

6.3.1 Carry out a below ground services survey.
6.3.2 Carry out a topographic survey.
6.3.3 Prepare the ground floor and existing basement slab for installation of sheet piles.
6.3.4 Install sheet piling as per Piling Contractor drawings and specifications.
6.3.5 Installation of temporary works.
6.3.6 Excavation to reduce level.
6.3.7 Construction of reinforced concrete slabs and walls.

6.4 Below Ground Services and Drainage

6.4.1 Excavate suitable trenches and lay out drainage pipes and pea-shingle as per engineer’s drawings.
6.4.2 Construct manholes as per engineer’s drawings.
6.4.3 Construct sump as per engineer’s drawings.

6.4 Construction of Super-Structure

6.4.1 Erect concrete frame supported on perimeter capping beam and internal columns and walls.
6.4.2 Construction of perimeter cavity wall and installation of lintels to the window opening and doors.
6.4.3 Fitting of external cladding.
7. Conclusion

It is concluded that the outline proposal to demolish the existing building and replace it with a new four storey concrete framed building with a newly formed lower ground floor & basement for the full footprint of the new building is structurally feasible.

The structural choice of sheet piling and sustaining the existing masonry retaining walls, which are currently in good condition particularly suits the site and will minimise any impact upon adjacent buildings and infrastructure.

Moreover the construction methodology has been developed to maintain the structural integrity of 2B, 12 Russell Gardens Mews and No.90 Elsham Road domestic dwellings together with the adjacent structures during and after construction.

Signed:........................

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For and on behalf of Engineering Force

Dated .......... 20th August 2014