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Consulting Structural & Civil Engineers

Our Ref: IW/12-072
Your Ref:
Date: 27th March 2012

Dear Sirs,

Subject: 3 Ranulf Road, London, NW2 2BT
Structural Methodology Statement

1.0 Introduction

1.1 This letter is to support the planning application for the proposed development at 3 Ranulf Road, London, NW2 2BT, as submitted by Kamvari Architects.

1.2 This letter aims to address the requirements of the London Borough of Camden Basements and Lightwells Planning Guidance Document CPG4.

2.0 Proposed Works

2.1 Kamavari Architects has proposed to demolish the existing early 20th century building and replace this with a new 21st century eco-friendly and energy efficient showcase building. The new building arrangement is expressed on Kamavari Architects drawings. It can be seen that the proposed basement and lower ground floors have been located to best fit in with the existing topography of the site. The sides of the proposed basement and lower ground floor have also been situated inbound of the site boundary, this facilitates the forming of the basement and lower ground floors with the use of either a secant or contiguous piles retaining wall. The secant or contiguous piled retaining wall would be used as temporary and permanent retaining walls. This would avoid the need to underpin the adjacent houses and allows all works to be undertaken in the demise of the site. Once the secant or contiguous piled walls have been installed the ground can then be excavated safely to the required formation level. A reinforced concrete raft or piled foundation can then be formed within the bounds of the retaining walls. This would then allow for a reinforced concrete inner lining wall and reinforced concrete slab to be constructed to form a platform to construct the superstructure on.

3.0 Site Conditions

3.1 A site investigation has been undertaken by Chelmers Site Investigation Laboratories Ltd on 18th April 2011. A single borehole was taken in the front garden at approximately 6m from the existing pine tree in the garden of number 4 Ranulf Road. The borehole was taken at the highest level of the site and taken down 6m which would be the approximate level of the proposed basement. The lower ground floor would be in the region of 3m below this level. The results of this site investigation indicated firm mid brown/orange sandy silty CLAY between 0.6m to 2.0m, stiff mid brown/orange sandy silty CLAY between 2.0m to 5.4m and very stiff mid brown silty CLAY between 5.4m and 6.0m. Roots or 2mm diameter were found to a depth of 2.0m and water seepage was found at a depth of 5.3m

3.2 The results of the Site Investigation confirmed that a bearing capacity of 140KN/m^2 is achievable at a depth of 6m, this reduces to 120KN/m^2 at 4m, 82KN/m^2 at 2m and 60KN/m^2

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at 1m below ground level. No internal angle of shearing resistance was provided from the site investigation. Clays can possess high plasticity and are therefore particularly susceptible to volume change. The level of volume change potential should be provided and precautions for soil shrinkage and soil heave will then be incorporated into the design.

3.3 Ground water seepage was observed at 5.43m below the borehole which is within the depth of the proposed basement.

3.4 Analysis of the soils for acidity and water soluble sulphate and consideration BS8500[7.1] of an ACEC class should be carried out to ensure the new concrete elements have the required protection against the ground.

3.5 Due to the current use and age of the existing building it is most probable that all excavated material will be accepted at an Inert Waste Landfill. However, contamination testing certificates will be required prior to the disposal of excavated materials.

3.6 A hydrological report will be required to satisfy the London Borough of Camden Basements and Lightwells Planning Guidance Document CPG4.

4.0 Structural Design

4.1 Reference to BS8102[7.2] classifies the proposed basement as Grade 3.

4.2 Ground water seepage was observed at 5.43m below the borehole which is within the depth of the proposed basement. Suitable waterproofing and calculations will be required to satisfy the structural design and integrity. In addition, as mentioned above, a hydrological report will be required to assess the impact of the basement on the water course. The basement structure will need to be protected from the ingress of water. BS 8102[7.2] suggests three types of basement protection; Type A – Tanked Protection, Type B – Structural Integral Protection, Type C – Drained Protection. Each has varying degrees of performance and a hybrid version may be deemed most appropriate. The use of additives to enhance the performance of structural concrete may dictate the concrete mix design and constituents.

4.3 The ground water level shall be considered to be at ground level -1.0m when considering the horizontal pressures on the basement walls as stated in BS 8102[7.2].

4.4 Reinforced concrete is not resistant to the ingress of water vapour but it is generally accepted that water vapour is unlikely to increase the risk of dampness within heated basements.

4.5 An arboriculture survey would need to be undertaken to assess the impact of the basement and lower ground floors to any adjacent trees.

4.6 The design team will consider the mitigation of health and safety risks in accordance with the Construction (Design and Management) Regulations 2007.

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5.0 Sustainable Design

5.1 The sub base to ground bearing basement and lower ground floor slabs will comprise recycled Type 1 aggregate.

5.3 All concrete will be specified to comprise a 30% replacement of Portland cement with Flyash or Ground Granulated Blast-furnace Slag (GGBS). These Portland cement replacement constituents are by-products of the coal power station and steel manufacturing processes respectively. Additional to the environmental benefits of using these constituents, other benefits include; the concrete will have greater compressive strength, increased chemical resistance and durability, substantially higher fire resistance, a rapid strength gain, and lower shrinkage. The use of Flyash or GGBS with concrete additives such as Caltite will have to be confirmed by the manufacture of any such additive.

5.4 If commercially viable to the UK markets, the design team will endeavour to specify Green Concrete, such as Novacem, which utilises a magnesium oxide based cement instead of the traditional carbon heavy Portland cement. Green Concrete absorbs more carbon dioxide than is omitted which and this will contribute to the long-term target of reducing 80% of Carbon Dioxide by 2050.

5.5 We believe the integration of the above elements will help satisfy the London Borough of Camden Basements and Lightwells Planning Guidance Document CPG4

6.0 Construction Techniques and Methodology

6.1 Given the location of the site and to help minimise the impact on adjacent buildings it is envisaged that continuous flight auger contiguous piles at regular centres would be used along the basement and lower ground floor wall line. Continuous flight auger piling systems are used to minimise vibration and noise. Once the reinforcement is placed and the concrete poured, vibrated and sufficiently cured, the ground can be excavated to formation level to create workable space for the construction of the remainder of the basement and lower ground floor.

6.2 The contractor shall monitor the ground water within a standpipe on a daily basis throughout the duration of the ground works.

6.8 Waterproofing of the structure shall develop depending upon the protection regime opted for.

6.9 To ensure the requirements of the Construction (Design and Management) Regulations 2007 are met, the client shall be encouraged to employ a competent contractor with a knowledge and experience of working on developments similar those being proposed at 3 Ranulf Road. The contractor shall adhere to the contract drawings and specifications, and any ancillary information issued with the contract documents. The contractor's working procedures shall be developed around the information presented in the ASIL site investigation report.

6.10 Any demolition works shall be carried out by competent and experienced persons only and in accordance with BS6187.

6.11 The Contractor will be encouraged to join the London Borough of Camden Considerate Builders scheme.

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7.0 References

7.1 Code of Practice BS8500-1:2006 'Concrete – Complementary British Standard to BS EN 206-1, Part 1: Method of specifying and guidance for the specifier'
7.2 Code of Practice BS8102:2009 'Protection of structures against water from the ground'
7.3 Code of Practice BS8002:1994 'Design of earth retaining structures'
7.4 Code of Practice BS8004:1986 'Design of foundations'
7.5 Code of Practice BS8007:1987 'Design of Concrete Structures for Retaining Aqueous Liquids'
7.6 Code of Practice BS8110-1:1997 'Structural use of concrete – design and construction'
7.7 Code of Practice BS6187: 2011 'Demolition'
7.8 Building Regulations 2000 Approved Document A – Structure
7.9 Building Regulations 2000 Approved Document C – Site preparation and resistance to contaminants and moisture.
7.10 BRE Good Building Guide 72, Parts 1 and 2 – Basement construction and waterproofing
7.11 Ciria Report 139 – Water resisting basements
7.12 Geotechnical Report on the Ground Investigation for 15 Loudoun Road, London, NW8 0LS produced by Ashdown Site Investigation Limited

We hope that the above information is sufficient for your needs and that all aspects of the London Borough of Camden Basements and Lightwells Planning Guidance Document CPG4 have been addressed. However, if further information is required please contact the undersigned.

Yours faithfully,

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