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SALISBURY SQUARE

**AN ENGINEERING APPRAISAL & CERTIFICATION OF THE PROPOSED SCHEME
TO REDEVELOP THE SQUARE
UNDER PLANNING APPLICATION S6/2011/1994/MA**

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1. INTRODUCTION AND PURPOSE OF THE REPORT

This report relates to planning application number – S6/2011/1994/MA

This application was approved with conditions on 30 January 2013

This report specifically addresses condition 3 of that application.

Condition 3 is a pre-development clause requiring that no development shall take place until a structural design certificate, completed and signed by a chartered engineer, and a scheme to deal with the existing ground conditions has been submitted to and approved in writing by the local planning authority. It goes on to state that the certificate shall certify that appropriate site investigations have been carried out at the site. This scheme shall include an investigation and assessments to identify those precautions or measures deemed to be required in the design and construction of the proposed developments in order to minimise any danger which might arise as a result of ground conditions.

The reason given for citing this condition is to ascertain the stability of the site and to determine the structural suitability of the development thereof in view of prevailing ground conditions in accordance with the National Planning Policy Framework.

SFK Consulting has been engaged by Gascoyne Holdings to consider the information relating to the site as well as the proposals for development and produce a report to satisfy this condition.

2. TECHNICAL ASSESSMENT OF THE SUITABILITY OF THE SITE FOR THE PROPOSED DEVELOPMENT

SFK Consulting has assessed the site using the following data sources:-

- A visual survey of the existing structures and roads on and in the vicinity of the site.
- The site specific geotechnical investigation carried out by RSK.
- The geotechnical site investigation carried out by Structural Soils Ltd for the recent construction of the adjacent houses at Dunham Mews.
- A review of the historic map records held in the Hatfield house archive showing the development of the site over the last 150 years.
- A review of the historic photos held in the Hatfield house archive showing the houses on the site immediately before demolition in the 1970s.
- Brooks Murray Architects drawings nos. 789-10, 20, 109, 110, 111, 112, 113, 114, 115, 120, 130, 140, 150, 151, 152, 153, 155, 156, 157, 158, 159 showing the current site and the new proposals.
- A PPS25 flood risk assessment by WSP Development and Transportation

3. A VISUAL SURVEY OF THE EXISTING STRUCTURES AND ROADS ON AND IN THE VICINITY OF THE SITE

The proposed site is approximately centred on the building numbers 1 - 7 Salisbury Square (also known as The Parade). These buildings were constructed in the early 1970s and are of hybrid construction consisting of part concrete, part steel, part load bearing masonry. They have no known foundation or subsidence issues.

Surrounding the site is an approximate perimeter of new and historic buildings. Whilst all these buildings are of interest in relation to assessing the stability of the site as a whole, particular attention should be paid to the Great Northern Pub to the North West of the site and the row of early 20th century terraced buildings forming the southern boundary of the square. It may reasonably be expected that historic buildings of these types would bear evidence of historic ground movement. Movements would be particularly evident in large panels of masonry and also in the heads of windows - especially tightly constructed rubbed brick arches. Neither walls nor openings show any signs of any movement.

Many of the houses in Park Street are historic. None show signs of significant movement.

In a similar vein, and particularly as the site is sloping, it should be possible to pick up any signs of subsidence or instability in the paving and finishing of roads in and around the site. Such signs would include cracking of road surfaces and differential displacement either in a vertical or horizontal plane or perhaps both. No such signs were evident over the entire site area and its surroundings.

4. THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION CARRIED OUT BY RSK

RSK's report reference 241882-01(00) – March 2011 - provides a detailed description of the site and its soil conditions. Reference is made to the development history, geology, hydrogeology and hydrology, as well as ground contamination and engineering considerations.

The specific data relating to the soil strata is based on site investigations which included 2 boreholes, one to 12.8m depth and one to 14.5 m depth, 3 trial pits and 4 window samples of depths ranging from 3.0 to 5.0 m.

A clear picture emerges of a site underlain by boulder clay at an approximate depth of 5 m below current surface level. On top of this clay is a band of medium density and with some gravel deposits of glacial origin. Perched water lies within this sand.

The thickness of the sand strata varies depending on the depth of the made ground which lies above it and which forms the surface deposit. It is known that there has been a continual history of building on this site and some of the structures may well have had basements. The made ground therefore varies in depth from about 2.3 m in borehole 1 to about 4.9 m in borehole 2. The trial pits which are surface features therefore only pick up fill material whilst the 4 window samples confirmed the borehole data.

Chemical test results on soil samples demonstrated that no alleviation measures are considered necessary to facilitate the construction of the terraced housing in this part of the site. Various minor recommendations are made to cope with low levels of petroleum hydrocarbons, phytotoxic zinc, and GAC's. Recommendations are made in terms of soft landscaping.

The natural boulder clay is undisturbed in the area sampled.

Foundations structures must be designed to take into account the depth of the fill and it is most likely that the most versatile and effective solution would be to pile any new structures thus avoiding issues with surface instability.

Thus, the development would be constructed in the same way to that of the Arm and Sword Lane development recently completed immediately to the North of this site (6 three bedroom terrace houses and 2 commercial units) – which provides solid precedence for this approach.

5. THE GEOTECHNICAL SITE INVESTIGATION CARRIED OUT FOR THE RECENT CONSTRUCTION OF THE ADJACENT HOUSES AT DUNHAM MEWS

A site investigation was carried out by Structural Soils Limited on behalf of Brooks Murray Architects. It was carried out in 2008. The survey was necessarily not as extensive as the Salisbury Square survey but provided information from 4 window samples to a maximum depth of 5 m and 5 trial pits.

The findings were similar to that of the Salisbury Square investigation but the depth of fill material overlying the natural strata was much less (maximum recorded 1.4 m). This is consistent with this theory that the Salisbury Square site has been developed and filled on a number of occasions. It also demonstrates a consistent underlying geology to the immediate area.

Ground water was found but quickly drained away suggesting a perched table.

6. HISTORIC MAP RECORDS HELD IN THE HATFIELD HOUSE ARCHIVE SHOWING THE DEVELOPMENT OF THE SITE OVER THE LAST 150 YEARS

The following OS maps are available in the Hatfield house archives:-

- 1879
- 1898
- 1924
- 1937
- 1971

The maps demonstrate a continual history of structures on the proposed site. By far the most substantial building on record is the brewery which used to fill the South Centre part of the site. This building is believed to have had basements and it is probable that RSK's borehole 2 was sited over part of it (where fill depth was found to be 4.9 m). Despite the demolition of structures local to the Square to form the new layout in the early 1970's many historic buildings still surround the site area.

We are not aware of any records of any historic subsidence or even undue settlement in any of the historic records or existing buildings.

7. HISTORIC PHOTOS HELD IN THE HATFIELD HOUSE ARCHIVE SHOWING THE HOUSES ON THE SITE IMMEDIATELY BEFORE DEMOLITION IN THE 1970S

This set of photographs forms of valuable historic record to the type and condition of the structures on the site prior to the 1970's development. It further reinforces the fact that the site has been significantly developed in the past but has not suffered from a history of ground instability.

8. A PPS25 FLOOD RISK ASSESSMENT BY WSP DEVELOPMENT AND TRANSPORTATION

WSP's report number 110823-FRA-13 September 2011 provides a detailed assessment of the current exposure of the site to flood risk as well as the provisions necessary to comply with future flood risk requirements within the context of the new proposals.

It states that the Environment Agency has been contacted regarding the proposed development at the site and they have confirmed that a PPS25 flood risk assessment is not required for the proposed scheme.

It goes on to identify that the Environment Agency's flood zone map shows the entire site to be located in a flood zone 1 which is an area of low flood risk comprising of land assessed as having less than 1 in 1000 annual probability of river flooding in any one year.

It concludes that based on the information currently available it is assumed all the existing site discharges to the Thames Water culvert. Thames Water has been contacted for comments on the proposed works and has confirmed that the surface water discharge rates are acceptable although the Environment Agency recommend that water be discharged at reduced run-off rates. It is proposed in the report that this is achieved by the inclusion of a 90m³ attenuation tank as part of the scheme.

The Environment Agency has requested de-culvertising of the existing watercourse but the WSP report identifies that this is impractical. The Environment Agency has also requested that no buildings should be constructed within 5m of the centreline of the culvert which the report again identifies as being impractical. A build-over approval is subject to a formal application.

The report concludes that the site is sustainable in terms of flood risk and compliant with the criteria set out PPS25.

9. CONSIDERATION OF THE PROPOSED DEVELOPMENT

The proposed development is based on the removal of the existing buildings at 1 to 7 Salisbury Square. These buildings are of hybrid construction and have no special loading specifications. There will therefore be a temporary nett reduction in load applied to the ground in the footprint of these buildings.

The proposed new structure will not be sited wholly over the site of the existing structures. However, the bulk of the South end will be approximately over the basement area (or at least the footprint area) of the historic brewery whilst the new western wing will extend northwards over the site of the existing buildings and on into the current car park area which once was covered in a number of minor structures - probably domestic housing.

Whilst the bulk of the proposed structure is greater than that of the existing structure (although probably not the historic brewery) the nett increase in load will be reduced by the removal of some of the historic fill in order to form basement areas. It is likely that the final nett loading on the ground at depth will not therefore be greatly increased.

Due to the unconsolidated nature of the surface fill the method by which the construction is achieved will need to be based around sound ground-works engineering. Such engineering is commonplace particularly with the growth in the amount of basement construction in urban environments, particularly in London where similar conditions commonly exist, and may be considered to be tried and tested. A piled solution will provide the on-site workability (for a safe working site) as well as securing a robust long term solution for the permanent foundation design.

10. CONCLUSION

The scope and scale of the development is readily achievable from an engineering perspective.

A piled foundation arrangement with in-situ concrete substructures will ensure a robust solution enabling both the retention of the surrounding ground and the transfer of new load increments to depth whilst safe-guarding retained ground and neighbouring structures.

Given the context of the site, its historical development and usage as well as the site specific and surrounding geotechnical and flood risk data SFK Consulting therefore does not consider there to be any technical engineering barriers to delivering the project.

11. CERTIFICATION

On the strength of the above assessments and the appropriate site investigations that have been carried out I can certify on behalf of SFK Consulting that the proposed scheme to deal with the existing ground conditions is appropriate to the site and will enable the construction of the project as shown on the planning application drawings.

Richard Fewtrell

Signed by Richard Fewtrell on behalf of SFK Consulting LLP