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BLUE ENGINEERING

Dear Mary,

Mary Hurst of Formative London Ltd appointed on behalf of the Charities Aid Foundation Blue Engineering to provide structural engineering advice for the proposed development at The Firs, Church Grove.

The work undertaken by Blue Engineering to date has largely focussed on the subterranean aspect of the greater development. Which looks to bring nine residential units to The Church Firs site, including underground parking for all the units. Details pertaining to the proposed development can be reviewed in the Design Access Statement produced by Flower Michelin.

It Is understood that as part of an emerging policy within the borough of Kingston Upon Thames: "*redevelopment of the existing site should normally only take place where it has first been demonstrated that the existing housing is incapable of improvement or conversion to a satisfactory standard to provide an equivalent scheme*."

The purpose of this letter is to provide a statement on the existing condition of the property and give recommendations as to the constructability of the proposed development taking into consideration the retention of the existing building.

As part of the Stage 2; Concept Design, a visual inspection of the site was undertaken. The property is a detached single occupancy home, which historic ordnance survey maps indicates was constructed circa 1930's.

The building is two storeys high with single storey extensions to the rear and sides. The external walls are formed from solid masonry, the floors and roof of the main body and extensions are formed from solid timber joists/rafters.

It is noted that the building has clearly been unoccupied for several years and there was a strong smell of damp throughout the property.

There are signs of both lateral and rising damp penetration to the external walls. There is vertical cracking to the internal walls located around the head of doorways, where adjacent walls meet and at the head of the walls which would indicate there has been structural movement to the property.

The dormers to the rear and the single storey extension are in a poor condition. The dormers have widespread rot and there is collapse of the timber framework. This has led to cracking to the masonry surrounding the opening.

The extension which is located to the rear has vertical cracks running down the side and rear façade. Above the window in the rear façade there are signs that previous remedial works have been undertaken with grey cementitious fill. Spalling brickwork can be seen near the right-hand side of the window.

The rear of the main pitched roof can be seen to be bowing. The timber soffit has become rotten and there is vegetation growing along the ridge.

The paving around the building is affected by movement probably due to changes in the cohesive top ground strata. There are trees close to the house which will have affected this. It is likely that the drains are also affected. There are some slight signs of foundation movement in the building.

Photos taken at the time of the visual inspection can be found in appendix A and appended to this document.

The visual inspection confirmed that the building has suffered decay in recent years. The site is overgrown with vegetation which has enclosed upon the property. This has likely led to lateral penetrating damp in

the walls, damage to the roof and movement to the foundations. As no intrusive exploratory works were undertaken it is hard to ascertain the full extent of the damage.

The proposed development looks to provide additional residental units through increasing the existing two storeys to four and introducing a full footprint subterreanean level. There would be a significant increase in permanent and variable actions on the existing walls due to the addditional wall height/floors and imposed loading respectively. A low compressible strength in the brickwork would need to be taken due to the age and damaged noted.

Given the above, it is not plausable that the existing walls would meet current design codes and as such retention in its current state would not be safe. In this instance the walls would either need to demolished and rebuilt or strengthening works to the existing walls would need to be undertaken.

At the time of construction, typical building practice for the support of the floor plates would either be to build the joists into the wall or supporting the joists off timber wall plates. The floor plates would need to be upgraded to meet current design codes with disproportionate collapse being a governing factor in the design.

The proposed devlopment looks to provide underground car parking and as such the ground floor construction would be subject to class 2B requirements:
"Provide effective horizontal ties to floors and roofs plus effective vertical ties or apply notional column/wall removal or design as key elements."

To achieve the requirements as outlined above the existing floor construction would require such a degree of strengthening it would be classified as new construction.

The first floor would be subject to class 2A requirements which would be a lesser degree of restraint, however, the timber floor plate would need to be upgraded and strengthened to achieve current requirements:
"*Provide effective horizontal ties or effective anchorage of suspended floors and roofs to walls, as described in the materials codes. BS EN-1991-1-7 states that for this class of structure, horizontal ties should be used for frame structures, and anchorage of suspended floors and roofs should be adopted for loadbearing wall construction. In some cases, it may also be appropriate to adopt horizontal tying for loadbearing wall construction."*

The Architectural schemes reviewed it has not been possible to achieve the Housing London Standards for area and layouts without much of the existing structure removed. This would require strengthening works and new structural elements to be installed to enable retention of the existing structure in the permanent case. Whilst under construction the existing elements to be retained would need to be temporarily propped. It is hard to see how this would not add significant cost and time to the programme to implement.

In conclusion; the building has suffered decay over recent years and no maintenance has been carried out. Structural remedial works would be required to make the property habitable again.

It is proposed to develop the site with nine residential units and underground car park. To achieve the required modern-day standards of living in terms of layout and footprint as outlined in Housing Standards London Plan would require significant modification to the existing fabric if retained. Given the proposed development, where the existing structure can be retained it would not meet current design standards. The examples given above indicate that the external walls and ground floor construction, in their existing state are not sufficiently sized or of an adequate strength to comply with current codes of practice or be safe. As such the degree of strengthening works required out would essentially form new construction.

I hope the above is clear. Should you have any queries regarding the proposed please do not hesitate to contact me.

Yours sincerely,

James Sharp BEng (hons)