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13 November 2023
IG23/317/OV

Clare Kempkens
Lime Kiln House
Old Ipswich Road
Claydon
IP6 0AB

Dear Clare

**RE: LIME KILN HOUSE, OLD IPSWICH ROAD, CLAYDON, IP6 0AB**

We write following our inspection at the above property on Friday 20th October 2023. The purpose of our inspection was to review the structural condition of an existing roof spanning over a cellar and to provide a report of our findings. During our inspection the weather consisted of heavy rainfall.

The property was formally an early or mid-fifteenth century farmhouse, which has been significantly altered over the centuries with various extensions constructed in the 18th, 19th and 20th century. The area in question relates to the two-storey extension that was added to the north elevation in the early 20th century. The property is a Listed structure, entry number 1251231.

An inspection was undertaken of the cellar, the cellar is approximately 5m x 4m and is constructed in conventional masonry in a Flemish bond with a lime mortar. The internal face walls have been plastered, the masonry forming the wings to the stair consisted of a mixture of traditional fletton bricks and traditional Suffolk red bricks. The ceiling consists of a concrete floor of approximately 300mm depth with a plaster finish. No evidence of significant water ingress was observed in the cellar. A single air vent was observed on the rear window, no air bricks were observed in the cellar.

The concrete floor is constructed of reinforced concrete spanning onto steel joists at approximately 600mm to 700mm centres which transfers loads to the external walls. The joists are supported at mid span by a steel beam, which is also a steel joist, spanning from the masonry pier forming the side of the stairs and the opposite wall. Floor to ceiling height is approximately 2m. Significant spalling was observed to the concrete on the underside of the floor exposing large areas of the steel joists. The steel joists were observed to have significant corrosion with evidence of delamination resulting in section loss of the steel joists. Delamination was observed to be worse at the end bearing of the steel where it enters the external wall. It is understood that the concrete floor was installed circa 1930. Areas of spalling exposed sections of the reinforced concrete and exposing part of the steel reinforcement used in two sections. One section to the rear of the cellar consisted of steel flat bar which had corroded was evidence of delamination and section loss. The second area of exposed reinforcement

was a curved piece of steel plate of nominal thickness which is considered to be a piece of scrap metal. The exposed concrete at points of spalling were found to be brittle to touch. The concrete approximately 15mm to 20mm in from the surface which was exposed due to spalling was found to be non-brittle. The largest area of spalling was approximately 300mm diameter which exposed a 32mm wide piece of corroded flat bar.

The floor was inspected in the kitchen above at an area exposed adjacent to the cupboard. A significant crack of 5mm width was observed with an approximate length of 2m it is estimated the depth of the crack is 45mm deep. No evidence of the crack was observed to continue through to the underside of the cellar. It is understood that this section of floor in the kitchen has been loaded with a heavy boiler in the past.

The underside of the floor was found to be generally in a poor condition with significant areas of spalling localised around the steel joists. The steel joists were found to have significant corrosion. We consider the spalling is as a result of the steel work expanding due to corrosion which has subsequently caused the spalling of the concrete. The steel work has a significant section loss and has the potential to degrade further resulting in loss of strength in the steel joists leading to excessive deflection of the joists. The significant deflection of the steel joists may then subsequently result in the concrete floor breaking up further. We envisaged that the corrosion of the joists has been caused by significant moisture from condensation over the subsequent 90 years since construction. We envisaged this steel was installed during the original construction but not protected adequately to resist the affects of corrosion. In addition, when considering the age of the concrete, it is possible that the installed concrete will have a certain amount of chloride content in it which may result in acceleration of corrosion to the steel work.

To reduce the build up of condensation in the cellar, considerations should be given to installing additional vents in the cellar to reduce the rate of corrosion to the existing steel work. When considering the poor condition of the concrete floor, there is the significant potential for injury due to falling pieces of concrete by the ongoing spalling around the existing steel work. We advise as a remedial measure that the existing floor structure is supported by relieving steel work to extend the life of the existing floor. Once the new steel work is installed, we advise that brittle areas of significantly spalling around the steel work are broken out to expose the corroded flanges of the steel work. We advise that the corroded steel work is thoroughly wire brushed and cleaned to remove existing corrosion and repainted in a protective coating such as galvafroid paint to reduce the rate of corrosion. We advise that areas of spalling are then infilled. Should you require our services to design the remedial steel work then please do not hesitate to contact us.

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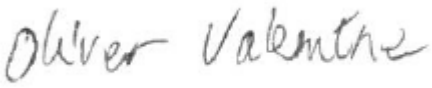
We trust the above is self-explanatory, however should you wish to discuss this further then please contact the undersigned. We enclose a note of our fees for your kind attention.

Yours sincerely



Oliver Valentine
For and on behalf of J P Chick & Partners Limited

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*Countersigned*
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