

Reference: A153-0421

Date: 28/04/2021

FAO Jessica Wilkinson

RE: Structural Engineer Report: 623 Burnage Lane, Manchester

Introduction & Clients Brief

We were commissioned to carry out a visual inspection and produce a Specific Defect Structural Engineers Report for the property at 623 Burnage Lane, which our Client owns.

The purpose of our inspection was to examine the foundations of the front bay window structure. A trial pit was excavated to enable us to inspect the foundations. No other area in the property was inspected or form part of this Specific Defects report findings.

To aid our evaluation we have been provided with a copy of the Atkinson Peck Consulting Engineers Structural report dated 28 August 2019.

Mr Paul Davies. B.Eng (hons) C.Eng; M.I.StructE of PKD Consulting Engineers Ltd carried out the visual inspection on the 27/04/2021.

Brief Description of the Property.

The property is a traditional 1930s semi-detached house constructed with cavity brick walls.

**Find below the key structural items observed during our inspection.
Annotations of views are assumed facing the front elevation.**

At time of my inspection the drains to the front of the property were being re-laid. I understand a CCTV drainage inspection had discovered several significant defects primarily due to root damage.

Our Client has recently noticed new external cracking at the front right-hand corner of the front bay window. A trial pit was excavated below the area of cracking to allow visual inspection of the foundations and bearing strata.

A large woody tree root was discovered in the trial pit passing through the cavity brick wall of the bay structure. The root is of considerable diameter and had obviously been growing through the wall for many years. The root appears to be

from the large tree (possibly an Elm tree) located alongside the front drive of the neighbouring property.

The cracking to the bay window brickwork (visible internally and externally) is likely due to the stresses imposed on the masonry as the large tree root grows in diameter. I also suspect the cracking to the front left-hand internal wall in the hallway is also due to the same root causing damage to brickwork and foundations.

The bay structure has been partially rebuilt in the past. However, it does not appear the bay was underpinned as part of this repair work. The previous Structural Engineers report identified tapered stepped cracking on the left and right corners of the bay. Due to the evidence uncovered in the trial pit, the cracking is likely due to subsidence caused by tree roots. I suspect subsidence was the reason the bay was rebuilt years ago. Unfortunately, further movement has occurred, and I suspect is ongoing.

Recommendations

The trial pit confirmed the bay structure is bearing onto sandy clay cohesive stratum and has relatively shallow footings. As the subsoil is clay, it will be susceptible to seasonal variations in ground water due to the nearby trees.

I understand the drains to the front of the property were damaged due to extensive tree root infestation. Although it is possible drainage defects contributed to the subsidence that has occurred to the front bay structure, the prime cause is obviously due to the large tree root causing actual structural damage. There is also indication of subsidence caused by the roots affecting the water content of the clay bearing strata.

Due to the damage that has and could still occur from the nearby tree, I would strongly recommend the tree be removed. It is obvious the tree is causing significant structural damage and is affecting the properties foundations and drainage system.

Once the tree is removed, I would recommend the entire bay structure be underpinned due to the shallow foundations. The area where the large tree root has passed through the brickwork should also be rebuilt. Where bricks have cracked, they should be replaced. Helifix Helibar bed joint reinforcement should then be installed to strengthen the masonry below the ground floor bay window. The 8mm diameter Helibars should be installed at 300mm vertical centres the full width of the bay and be resin fixed in place. The wall should then be repointed in matching mortar.

Subject to whether the tree can be removed, will affect the underpinning method adopted. If the tree is removed, the bay can be underpinned using a traditional

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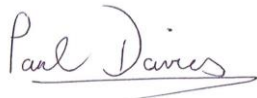
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mass concrete method, poured in sections in accordance with Structural Engineers details. However, if the tree cannot be removed, the underpinning may need to be a more expensive mini-pile solution to avoid excessive excavation. A root barrier would also be required to help prevent further damage.

I would also recommend removing a few floorboards in the hallway or living room alongside the left-hand wall in the entrance hall. This is to allow visual examination of the sub floor to determine if the large tree root has caused damage to the internal masonry. The cracking to this wall is also due to subsidence caused by the nearby tree. Therefore subject to findings, underpinning may be required.

In the first instance I would recommend you contact your Building Insurance company for them to advise you how they wish you proceed.

Yours faithfully



Mr P. Davies B.Eng (Hons) C.Eng. M.I.Struct.E.

Photographs



Trial pit – large tree root passing through the wall of the bay window. Base of hole at foundation depth.

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Cracking to the right hand corner masonry caused by the tree root & subsidence. Crack has recently got worst with a brick split, which indicates ongoing movement has occurred.

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Tree located near property

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Cracking to internal wall between living room and entrance hall. (noted in 2019 report)
Opposite side of wall in entrance hall has recently been plastered.

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Cracking below the bay window (right hand side).
Noted in 2019 report, but may have got worst.

Limitations of the Report

The contents of this report are specific to the clients brief. **No other areas of the property** were inspected or form part of this specific report. Therefore, we cannot verify/confirm if there are any other defects to the structural.

The contents of this report does not cover the condition of the dpc, possible damp penetration, condensation or the condition of the timber components with regard to rot and infestation. We will not inspect building services (gas, electricity, water, heating), manholes and drainage systems, garages and other outbuildings, the boundary structures, retaining walls, paths and drives, windows, doors and other joinery items, internal and external décor / plaster / ceiling finishes, rainwater goods, kitchens and bathrooms or any areas without ready access.

The report should not be construed as a valuation or homebuyers report and is not an inventory of every single defect, some of which would not significantly affect the use of the property. If the report does refer to some minor defects, this does not imply that the building is free from other such defects.

This report is restricted to a visual inspection and no mechanical testing of any kind was carried out, nor any precise measurement taken. We did not expose any other part of the structure that was covered, unexposed or inaccessible and this includes pulling up laid carpets etc, or loft areas without ready & safe access. We are therefore unable to report that any such part of the property that is covered is free from defect.

Any opinions expressed in this report, as to the likely occurrence of movement, settlement or subsidence cracking etc is given in good faith in an attempt to assist our client. However, where such opinion is that further movement is unlikely, this should not be taken as a guarantee. It is therefore important to understand the opinions expressed in this report reflect the limitations of this type of visual inspection.

The above is not intended to be an exhaustive list of minor defects. They are purely significant structural defects apparent from a visual inspection. Further defects may be encountered upon more extensive investigation, involving exposure of structural elements etc.

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We will consider the re-issue of the report in its original form to a third party within 6 months of the original report date. Upon the lapse of a 6 month period, the report can only be re-issued following a full re-inspection, which will attract a full inspection fee.

We reserve the right to refuse copies of the report to any third party (other than those named above). We also reserve the right to amend our opinions in the event of additional information being made available at some future date.