

Our ref: 20_017 SR 01

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Dear Richard

**4 THONG LANE THONGSBRIDGE
STRUCTURAL INSPECTION OF DEFECT TO NORTH BOUNDARY RETAINING WALL**

Further to your recent verbal instructions, we confirm we have made a structural inspection of the retaining wall to the North boundary of 4 Thong Lane and report as follows.

The purpose of the inspection was to assess structural damage and lateral movement noted to the North boundary retaining wall, comment on the likely cause of damage and most appropriate remedial action.

Our inspections were limited to visual inspection of the North boundary retaining wall between the existing double garage belonging to 4 Thong Lane and the return boundary wall to the West of the properties plot. All inspections were carried out from the 4 Thong Lane side of the wall, assisted where necessary with the use of surveyors extendable ladders.

A selection of photos taken during the inspection are appended to this letter report. The photos are intended to supplement the text of the report, but not provide an extensive record of defect.

The subject boundary retaining wall varied in height over its length, but is estimated to be around 2.2 metres high from the 4 Thong Lane side. The wall retains ground to the land to the North of the wall. Ground levels to each side of the wall vary, with a general slope down towards the East; in the local vicinity of significant defect noted to the wall the wall projects approximately 1.2 to 1.4 metres above the adjoining land. Accordingly, the retained height, or difference in ground levels between the two plots, is estimated to be in the order of 1 metre at the point of most significant defect noted to the wall.

The wall is of dry stone construction and where it projects above the neighbouring land is estimated to be in the order of 400 – 450mm thick. The wall is capped with a course of mortared coping stones.

There is evidence of some lateral movement and distortion over the full length of wall. However, the movement is particularly significant and clearly visible over a length of approximately 7 metres, starting approximately 2 metres North of the existing garage West elevation, and extending towards the West boundary. Over this length there is significant bowing and outward lean of the wall; simple checks using a builders spirit level showed the lean of the wall to be in the order of 240mm over a 1200mm long spirit level. The bow in the wall is clearly seen along the coping stones of the wall (Photos 2 & 3) and is accompanied by stepped fractures in the wall and coping stone joints (Photos 4 & 5).

The length of wall that has suffered the significant defect is coincident with the position of a mature broad leaf tree to the neighbouring North side of the wall. The mature tree is in very close proximity to the subject wall, with the closest part of the trunk within approximately 1 metre of the North side of the boundary wall.

The significant damage and lateral movement to the dry stone boundary retaining wall over the most severely affected section of wall, is being caused by physical damage from the mature broad leaf tree within close proximity of the wall.

Cracking to the external wall of the West elevation of the garage was also noted during our visit to carry out the inspection. Cracking to the external, stone built leaf of the garage wall was noted over the full wall height. The raking cracking was tapered, narrowing towards external ground level and widening towards eaves; the crack positioned approximately 2 metres from the front (South) elevation of the garage at eaves level and raking away to the North towards ground level (Photo 6). Cracking to the internal, blockwork leaf of the wall was approximately coincident with the cracking to the external leaf, and widened towards wall plate level (Photo 7).

The raking cracking to the garage is characteristic of foundation movement and, whilst the exact cause of foundation movement to the garage can not be determined through visual inspection alone, it is considered likely that the close proximity of existing mature trees is at least contributing in part to the apparent foundation movement.

The section of boundary retaining wall that has experienced the most significant movement is in a potentially unstable condition and does require careful removal and rebuilding. The damage to the wall has clearly been caused through physical action from the close vicinity of the mature tree, and the tree will, no doubt, continue to present risk of continued physical damage to rebuilt sections of wall and more widespread damage to the remaining sections of wall.

To mitigate risk of continued damage to any rebuilt sections of wall, further widespread damage to remaining sections of wall, and further widespread damage to the adjacent garage building, it is recommended that measures are put in place to allow for the safe removal of the tree. Safe removal of the tree prior to rebuilding the section of subject

boundary retaining wall will also help mitigate risk of instability of the tree occurring whilst ground is inevitably disturbed to allow rebuilding of the wall.

We understand that an arboricultural report has been commissioned to assess the condition and value of the existing trees around the boundary of the site, and the findings of this report should be consulted for further comment on the condition and safety of the subject tree.

We trust that the above meets with your immediate requirements, but should you wish to discuss in further detail then please don't hesitate to contact me.

Yours sincerely

Dan Sawyer MEng CEng MStructE

Director
Sawyer Consulting Engineers

Appendix A

Photographs



Photo 1 – Proximity of mature broad leaf tree to boundary retaining wall.



Photo 2 – Lateral distortion and bow to head of wall in vicinity of mature broad leaf tree.



Photo 3 – Lateral movement and distortion to existing dry stone boundary retaining wall



Photo 4 – Elevation on worst affected section of wall – fractures to wall each side of mature tree.



Photo 5 – Distortion, lateral movement and fracture to existing dry stone boundary retaining wall.



Photo 6 – Racking crack in mortar joints to stone outer leaf to existing Garage, West Elevation



Photo 7 – Cracking to internal leaf of blockwork, garage. Coincident with cracking to external leaf, West elevation