Longsight Design Consultancy Ltd
Consulting Civil & Structural Engineers

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Your Ref :

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Mr M Ludlam
Darley Cliff Hall
Sheffield Road
Barnsley
S70 4HQ

Dear Mark

Darley Cliff Hall – Structural assessment of damage caused to boundary wall

Further to my visit on the 14/05/2020 to the above property please see my observations, conclusions, and recommendations below.

All of the boundary wall from the neighbour's side as access on the Darley Cliff Hall side could not be made due to dense vegetation.

1.0 Observations

Longsight Design Consultancy Ltd (LDC Ltd) was instructed by Mr Mark Ludlam to investigate structural movement of a boundary between Darley Cliff Hall adjoining property situated to the left-hand side (Southern side).

The Darley Cliff Hall and the adjoining property are constructed in Ashlar stone masonry with slate tiled roofs and estimated to have been constructed in the 17th Century. The properties are separated by a solid brick masonry wall topped with stone masonry coping stones. Both properties and the boundary wall are Grade II listed buildings.

Access to the neighbour's property runs adjacent to the boundary wall and is separated by a small low level shrub boarder.

Generally, the boundary wall is in good condition with no loss of the brickwork face or pointing. However, there is approximately a 3.00m length of wall which is exhibiting uplift and an outward lean. The centre of the uplift is adjacent to a large Tree on land in the ownership of Darley Cliff Hall. The tree is located less than 500mm from the boundary wall.

The joint between two adjacent coping stone has moved laterally by 30mm and has lifted upwards 25mm at the location of the tree. There is also an outward lean of approximately 10-15mm into the neighbouring garden

There are two vertical cracks running the full height of the wall. The first is approximately 500mm from the lateral movement in the coping stones. It generally follows the line of the mortar joints but does pass through bricks in several locations. A repointing repair has been carried out to historic cracking which has now opened up again and varies from 5mm in width at the top of the wall to 2mm at ground level. The second crack is approximately 1.50m away from the large tree and closer to the two properties. Again, the crack is generally vertical following the mortar joint lines and passing through occasional bricks. This crack is again varying from 5mm in width at the top of the wall and 2mm at ground level. No previous attempts at repairs have been undertaken.

An Arboricultural Safety Survey was carried out on 15/01/2020 by JCA Limited (Report Reference 15687/DK). The report identified the tree as a Cooper Beech approximately 40 years old, with a trunk diameter of 0.76m, height of 20m+ and spread of 20m. The report also notes that tree currently has a tree preservation order (TPO) and its condition is described as good.

2.0 Discussion

From the findings of the Arboricultural Safety Survey the boundary wall outdates the Copper Beech Tree.

As such the movement observed in the wall has been caused by growth of the tree and its root system. This is also noted in the Arbporicultural Safety Survey. The pattern of large cracks and lateral movement at the top of the wall are consistent with movement caused by uplift caused by tree root growth. The Arbporicultural Safety Survey also notes that the tree is not at final maturity and that continued movement will occur. This continued growth is evident in the opening of a previously repaired crack.

There is a significant risk that as further growth continues the uplifting and outward lean of the wall will continue to a point where copings could be dislodged, or complete collapse of the wall could occur. As the outward lean is into the neighbouring garden this poses a third-party injury risk. In addition, there is also potential damage to a Grade II listed building.

3.0 Recommendations

From the above observations and conclusions, it is considered necessary to safely fell the Copper Beech Tree to ground level and treat the stump to prevent further growth. Consent to remove the tree will need to be gained from the Local Authority due to its TPO status.

Once the tree is removed it is recommended that the cracks and movement noted are made good to prevent further deterioration of the wall.

Repairs are to take the form of stitching and repointing of the cracks with Helifix stainless steel bars and relaying any loose coping stones

I hope this is sufficient for you to progress the necessary preventative works. If you require any further assistance, please do not hesitate to contact me.

Yours sincerely

Antonio Rubino
BEng(Hons) CEng MICE

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Photograph 1 – View of lateral and uplift movement of coping stone adjacent to Copper Beech Tree

Photograph 2 – View of cracking close to movement in copings
(note prevent point repair of crack and wider joints)

Photograph 3 – View of cracking 1.50m from Copper Beech Tree

Photograph 4 – View along wall showing outward lean into neighbouring garden