



The Morton Partnership

Structural Engineers

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53 Oakley Square
London
NW1 1NJ

By email only:

Dear Mr Victorino

RE: 53 OAKLEY SQUARE, LONDON NW1 1NJ

We were instructed in November 2023 to visit site and install tell tale monitors across a crack/ joint between a rear extension and the rear of the original house. You had informed us that the rear extension was moving and a joint had opened up between the extension and the original building. The tell tales were installed in November 2023 and you continued to monitor the tell tales for a period of 13 months.

As mentioned in previous correspondence, it is likely that the foundations under the rear extension are not as deep as the foundations to the main house. Having buildings attached to one another can lead to problems with differential settlement when the foundations are founded at different depths. Deeper foundations are generally more stable and shallower foundations are susceptible to movement due to factors such as softening ground, leaking foundations and tree roots affecting moisture content of shrinkable clay sub soils.



Photograph 1: tell tale monitor installed across junction

Having looked at the data from the corner tell tale, this is quite unexpected. This shows movement varies between a maximum of -7mm (crack closing and getting smaller in width) in December 2024 and +14mm (crack opening and getting wider in width) in October 2024. I have formulated a table below showing the movement over the period of monitoring.

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Date of Reading	Reading	Change since previous reading
Nov 2023 - Installation	0mm base reading	
Dec 2023	-3mm	3mm narrower
Jan 2024	-5mm	2mm narrower
Feb 2024	-5mm	0 change
Mar 2024	-5mm	0 change
May 2024	-5mm	0 change
June 2024	-6mm	1mm narrower
July 2024	0mm	6mm wider
Aug 2024	+5mm	5mm wider
Sep 2024	+12mm	7mm wider
Oct 2024	+14mm	2mm wider
Nov 2024	+1mm	13mm narrower
Dec 2024	-7mm	8mm narrower
Jan 2025	-3mm	4mm wider

Interestingly, over the 12 months between November 2023 and November 2024, there was minimal movement, only 1mm increase in width since 1st installation.

The big variations occur between June and December. During this time, the crack starts at being 6mm narrower than when the monitor was installed to being 14mm wider than when the monitor was installed, a change in 20mm over 4 months. Another big change occurs between October and December where the crack narrows by 21mm.

The one noticeable trend is that the crack gets wider in the summer months and closes up again between late autumn and spring. This would lead us to conclude that in the summer months, the clay sub soils under the rear extension shrink in volume due to ground water being extracted from the large trees in the back garden. As the clay sub soils shrink in volume, this causes the rear extension to drop and rotate away from the rear wall of the main house, causing the crack to widen. In the wetter months, it appears that the clay sub soils rehydrate and expand in volume, pushing the rear extension upwards and causing the joint or crack to close.

The readings in November, December and January in 2023/ 2024 and 2024/ 2025 are very similar and moving in the same direction. This would lead us to conclude that the movement is cyclical and seasonal. The data suggests that the movement is not progressive ie, continually getting wider and not recovering.

From reviewing the data, it is likely that the roots from the large trees in the rear garden extend under the foundations of the rear extension and this is leading to changes in moisture content of the clay sub soils which then causes expansion and contraction of this material which then leads to differential movement of the extension in relation to the main house.

There are a number of options available to remedy this problem. The first is to carefully manage the trees and prune them back. This will result in them extracting less moisture from the ground under the rear extension and therefore the moisture content of the sub soils will remain constant which will prevent the seasonal changes in volume of the clay sub soils.

The second option would be to underpin the rear extension. This would involve excavating under the existing foundations and pouring new foundations that would extend to a depth below the ground that is affected by tree roots. This option is disruptive, costly and time consuming and is normally only considered as a last resort.

The preferable option would be to manage the trees and continue to monitor the situation. This would involve appointing an arboriculturist to survey the trees and provide advice regarding appropriate measures for pruning and managing the trees. If the council owns the trees, you will need to contact them and ask them to carry out the works. If the tree is owned by the freeholder, they are responsible for the management of the trees.

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I'm not sure if you have contacted your building insurers. They will appoint their own team to investigate the movement and if ground movement is covered in your policy, they should cover the costs of making good any damage. There will be an excess to pay as with any insurance policy. They may decide to underpin or manage the trees but they will appoint a loss adjustor to review the data and come to their own conclusions. They may ask for further investigations which will likely involve excavating a trial pit to confirm the depth of the existing foundation under the rear extension and also tests to determine characteristics of the ground including moisture content levels and tree root analysis which will confirm the species of any tree roots that extend under the foundation.

I hope the above is helpful, if you would like to discuss further then please let me know.

Yours sincerely

For THE MORTON PARTNERSHIP LTD

PETER CORCORAN BSc (Hons) MICE CEng