



## Case study Graves End

**Client:** Innovation Group

### The Problem

A detached garage to a property near Graves End was suffering significant seasonal foundation movement from clay shrinkage subsidence. Despite 5 years of trying, the neighbour had refused to remove their tree and the local authority confirmed it's statutory protection as the houses were within a conservation area. Insurers were faced with demolishing the garage and extension to the rear and reconstructing on a piled footing. Monitoring showed foundation movements in the order of 20mm. Cracks in the building along the left hand flank wall had been previously repaired but continued to open and at our visit, we identified that the flank elevations were not tied into the roof and the mid span buttress had been retrospectively built and was not tied to the flank wall. Consequently, we had two very slender panels of brickwork, unrestrained and subject to notable seasonal fluctuations. The floor slab was also cracked in various locations and sloped in accordance with the ground movement.

### The Optera Solution

Optera were asked to produce a solution that avoided costly and extensive piling works whilst retaining the tree. We engaged our arborist and structural teams who produced a scheme to protect the garage from the root activity of the tree and create a new foundation on which to construct the garage. Our solution was

to install a 3m deep root barrier across the rear of the garage, cutting off the roots path to the foundation as well as supplying a new reinforced raft on which to reconstruct the garage.

We retained the right hand flank wall and rear extension of the structure as they had suffered relatively little cracking and tied the raft into the existing foundations thus allowing the new structure to act monolithically. Root severance was granted by the local authority and the barrier installed. The turf was lifted and protections laid across the works area. The barrier was installed to three metres. The garage was subsequently elementally demolished and the new raft installed. The project was delivered on time and budget with the insured electing to contribute towards an alternative sloping roof.

### Project Conclusion

Root barriers have historically been considered a risky approach to solving subsidence issues as barriers have often failed. Our barriers are interwoven with chemical repellent such that not only does it act as a physical barrier, but the chemical additive acts as an additional safety factor. The barriers are also water permeable meaning that their insertion will avoid a build up of hydrostatic pressure on either side. Cost savings on this project are estimated to be approximately £30,000.00.

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