

Optera Structural Solutions

The Barn, Oxburgh, Fosse Way,
Stretton on Dunsmore, Rugby, Warwickshire.
CV23 9JF



SOW 20622 Outline underpinning proposal to stabilise property suffering from subsidence for Crawford & Company.

Date	Services Performed By:	Services Performed For:
January 29, 2026	Optera Structural Solutions The Barn, Oxburgh, Fosse Way, Stretton on Dunsmore, Rugby, Warwickshire. CV23 9JF	Crawford & Company Cartwright House, Tottle Road, Riverside Business Park, Nottingham. NG2 1RT

POLICY HOLDER:	[REDACTED]
POLICY HOLDER ADDRESS:	2 Greenside, Crowthorne, Berkshire, RG45 6EX
CLIENT REFERENCE:	1784404
OUR REFERENCE:	20622
PROJECT MANAGER:	Paul Milliam
PROJECT COST:	£330,000 - £350,000 plus VAT

This scope of works 20622 (hereinafter called the "SOW"), effective as of January 29, 2026, on approval by Crawford & Company is entered into by and between Contractor and Client.

This scheme quotation is strictly confidential and for the sole benefit of Optera's client, shown above. This document must not be passed in full or in part to another person, party, or organisation without the express written agreement of Optera, other than the Policyholder and insurance company responsible for the respective claim.

Project Description

Optera have been requested to provide a desktop estimate for a stabilisation scheme to arrest ongoing foundation movement to the above property. Crawford & Company provided the following information:

- 1) Crawford & Company – Sub-Structure Instruction Form – 14/01/2026
- 2) Crawford & Company – Technical Report – 02/03/2023
- 3) MWA – Addendum Report – 22/07/2024
- 4) Fastrack – Site Investigation Report – 11/2022
- 5) Night Associates – Level Monitoring – 05/23 – 09/25

The information provided details the history and circumstances of the subsidence movement affecting the property. Damage is primarily focused right side and front right corner of the property.

The site investigations findings are summarised below. The property has a concrete strip footing c810mm deep and resting upon a medium to high plasticity clay. Roots were found to the underside of the foundation down to a depth of 2.5m. These were tested and found to emanate from Pine and Oak this being consistent with trees of this type growing nearby. A moisture deficiency was recorded in the zone of root activity. It should be noted that the investigations were only undertaken to a depth of 3m. MWA have assessed vegetation surrounding the property and have implicated T4 Oak as being the primary influence with this tree standing 21m high and only 5m from the building. In addition, T5 Oak, T6 Oak and T7 Pine have been highlighted as future risk, these trees stand between 6-8.5m away from the property.

Site Investigations

Site investigations were carried out by Fastrack on 08/11/2022, when two trial pits were hand excavated to reveal the foundations, each with a borehole sunk through the base of the trial pit to determine subsoil conditions. A drainage survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP1	Concrete	800
TP2	Concrete	810

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Silty, sandy CLAY to 1.30m. Silty, clayey SAND to 1.60m. Silty, sandy CLAY to 1.90m. Silty, clayey SAND to 3.00m. Terminated at 3.00m.	24 – 45	Medium – High
TP/BH2	Silty, sandy CLAY to 1.40m. Silty, clayey SAND to 3.00m. Terminated at 3.00m.	21 – 31	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	2500	<i>Pinus spp.</i> <i>Quercus spp.</i>	Absent Present
TP/BH2	2500	<i>Pinus spp.</i> <i>Quercus spp.</i>	Absent Present

Level monitoring shows a cyclical pattern of movement affecting the majority of the right side of the property with the most significant movement to the front right corner and right flank nearest to the implicated vegetation.

Crawford & Company have confirmed root induced clay shrinkage subsidence to be the cause this having resulted from moisture extraction from nearby trees, mainly Oak T4.

In the absence of any deep site investigations, we can only provide out an outline stabilisation scheme and indicative costs. It is considered that the property is of traditional cavity brick construction under a pitched tiled roof. The ground floor is assumed to be ground bearing concrete. Drainage to the property runs across the rear. The property is assumed to have a kitchen, lounge, hallway and bathroom on the ground floor, with upper floor bedrooms. Access into and around the site is good, although we do not know if access permissions are required to cross land onto the site.

Due to the species of trees and their close proximity to the property a root barrier or external underpinning to the depth required will not be possible. Oak roots were found to a depth of 2.5m but in the absence of any deep site investigations we have to assume roots are most likely deeper. Given the depth of roots and closeness of the trees mass concrete underpinning is not considered appropriate. To achieve suitable depth beyond the influence of roots a piled scheme is warranted. The level monitoring shows widespread movement and roots are likely to extend under the main core of the property. In this regard we would suggest stabilisation of the house be regained by the installation of a piled raft. We have not designed the scheme to include the garage or connecting canopy.

At this stage, no detailed design works have been undertaken, but the proposal is based on the use of 250mm Augered piles to a depth of 6m slip sleeved to the top 3m. The piles will be installed incorporating T16 reinforcement and connected to 450mm x 300mm concrete needles. Z bars will connect the needles to a new 250mm concrete reinforced raft. Once the new foundation has been installed the floor levels will be made up with 150mm insulation with a 75mm screed laid over.

To allow the installation of the piled raft rig access will be needed and obtained through the widest door opening. To allow the piling rig to move around we will need to cut and form openings in masonry walls and remove non load bearing partition walls. All services running within the floor will need to be isolated and removed.

At commencement of the works, a compound area will be set up at the front of the property. Plyboard protection over polythene will be laid to the work area and haul route. Heras fencing will be in place to protect and delineate the working site. To facilitate the installation of the raft significant enabling works will be required. The house will need to be cleared of contents and all floor coverings removed and placed into storage by others before work starts. All services need to be isolated and capped and skirting boards, architraves and door frames cut down or removed as required. The kitchen units and work tops will need to be removed and stored in a container unit or off site depending on the time of year works are to be undertaken. The bathroom/wc suite will be removed and set aside for later refitting. All tiles to floors and walls will be removed. The internal doors will also require removal and storage. The internal floor oversite broken out and the ground reduced in level to the required depth. The piled raft would then be installed as detailed above.

Once the new foundation has been installed reinstatement can take place. Plumbing and electrics first fix will be undertaken and will be wired back to the original consumer unit that is considered to be compliant. A DPM will be laid under 150mm Celotex insulation laid over with a 75mm fibre floor screed. Structural crack repairs and brick stitching can be undertaken to return the integrity of the main structure. The internal dividing walls will then be reinstated. Door lining, stops, architraves will be fitted and the doors rehung. Existing ironmongery to be reused. Crack repairs and plastering can then be completed and the walls, ceilings and woodwork prepared for redecoration. The existing kitchen units and worktops will then be refitted before retiling the walls and retiling the floor as per original configuration. The bathroom will be refitted utilising the original suite. Painting and decoration to walls, ceiling and woodwork can then be undertaken as per the original colour scheme. Second fix plumbing and electrics can then be carried out and tested and commissioned. On completion the site will be cleared of all plant and machinery and left clean and tidy. The carpet can then be re-laid by others and the furniture returned.

Project Cost

Optera have been asked to provide preliminary details and costs for the stabilisation scheme proposed. No site visit has been undertaken and our assessment has been undertaken purely on the basic information that has been made available. Basic measurement have been obtained from aerial satellite images. A deep mechanical site investigation will be required before a full Engineer designed scheme can be developed and priced. We provide our cost estimate based on similar projects undertaken on similar size properties. The cost may vary depending on the quality of fixtures and fitting within the property. We have not allowed for any specific access permissions and would expect the property to be cleared of all contents and empty. The works are likely to take c9 months.

Allowing for all preliminary cost, professional fees, enabling works, piling, RC raft formation, reinstatement and decoration we would estimate costs to be in the region of **£330,000 to 350,000 plus VAT**