Statement of Work

Optera Structural Solutions

The Barn, Oxburgh, Fosse Way,
Stretton on Dunsmore, Rugby, Warwickshire, CV23 9JF
Telephone: 02476 553 776. Email info@optera.co.uk.

SOW OPT-20619 Scheme proposal for a Compact root barrier on behalf of Sedgwick UK.

CLIENT ADDRESS:	**2 The Boulevard, City West One Office Park, Leeds. LS12 6NY**
POLICY HOLDER:	
POLICY RISK ADDRESS:	**24 Broomfield Drive, Billingshurst. West Sussex. Rh14 9TJ**
CLIENT REFERENCE:	**SDO 00227095 - SRS 00227157**
OUR REFERENCE:	**OPT-20619**
PROJECT MANAGER:	**Spencer Caizley**
DATE	**31st July 2026**

Specifications of Barrier					
Barrier Type	length	Max Root Depth from SI	Minimum depth to be achieved with barrier	Distance between tree / Vegetation and barrier	shortest distance between barrier and foundation
Copper	**18m**	**2.4m**	**3.5m**	**7m**	**1m**



Fig 1. Aerial plan indicating a proposed 18m length and alignment of Compact Root barrier.

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

Scheme Considerations

The area of risk addressed—specifically the conservatory—is accessed via a narrow passageway to the left-hand side of the property. When considering Barrier solutions, it is evident that only a compact root barrier is viable in this instance.

William Hunt Consulting was instructed by Optera Structural Solutions to undertake a site investigation at the rear of the property to assess the causes of reported movement. The investigation comprised two trial pits, two boreholes, soil sampling, laboratory testing and root identification.

The ground investigation identified a layer of made ground beneath the paved surface, overlying predominantly clay soils. Both boreholes encountered soft to firm silty clay to approximately 2.2m depth, underlain by firmer gravelly silty clay extending to the termination depths of 4.7m and 5.7m. No groundwater was encountered during the investigation.

Root activity was recorded within both boreholes at depths ranging from approximately 1.0m to 2.4m below ground level. Laboratory analysis identified the roots predominantly as Oak (*Quercus*) or Sweet Chestnut (*Castanea*) species, with one probable Cypress-family root also identified. Although the roots were small in diameter, their presence at depth confirms an influence from nearby vegetation within the clay strata.

Foundation investigations revealed substantial concrete footings. Trial Pit 1 exposed a 700mm thick foundation founded at 1.10m below ground level, while Trial Pit 2 exposed a 1,200mm thick foundation founded at 1.60m below ground level.

In summary, the investigation confirmed the presence of clay soils susceptible to moisture variation, together with tree root influence at depth.

The installation of a root barrier along the left-hand side of the property presents several practical constraints. Existing drainage infrastructure occupies this side of the house, which is already restricted by a narrow access pathway, making the installation of a barrier wholly within the risk property's boundary difficult.

Furthermore, a review of the pattern and location of the reported damage indicates that any effective root barrier would need to provide protection along the full length of this elevation. As a result, we have proposed that the barrier extends into the adjoining neighbour's property. Extending the barrier in this manner would provide a more comprehensive exclusion zone, helping to protect the property from the influence of the trees located to the rear.

The accompanying arboricultural advice suggests that limited vegetation removal within the neighbouring property may also be required to facilitate the works and provide an effective long-term solution.

Discussions with the adjoining owner have commenced; however, any proposal involving works outside the risk property's boundary will be subject to the neighbour's agreement. It is assumed that these arrangements and any necessary permissions will be coordinated by the client.

Method Statement

- Pre-Start: Tree root severance application to be submitted to the local authority
- Pre-Start: Party wall notice to be served on LH neighbour. Assumed to be undertaken by Sedgwick at this time. WHC can act if required. No costs are allowed at this time.
- Pre-Start: Service search to identify all services in the locality.
- Set up a site compound on the drive and board and protect. Take down gates down pathway and form a ramped access to the rear for machinery
- Mark out barrier in the garden.

- Remove fence between the two gardens and set aside for later reinstatement.
- Starting from the rear left hand side, drill and form a secant trench, drilling a series of sequential 150mm diameter holes to 3.5m and remove arisings to the skip.
- Once the first 2m has been drilled and formed, line the trench with the copper impregnated barrier and backfill with 10mm pea gravel to the surface.
- Repeat this exercise until all of the barrier is drilled and formed.
- At this time, we have assumed all soft landscaping and w ill backfill the remaining trench with topsoil and seed with grass seed on completion.
- Off hire and clear all plant and protections from site and leave area clean and tidy.

Notes and Assumptions

i. **The Estimate is valid for 60 days from the date of this report, after which we reserve the right to review the scheme and costs accordingly.**
ii. It is assumed that the excavations will be undertaken in virgin ground and able to achieve the proposed depth.
iii. It assumes that the drainage is private and Optera are allowed to temporarily disconnect then

Carbon Emissions

The installation of a copper impregnated geotextile fabric is the most carbon neutral option available to the insurance repair marketplace. The average tree absorbs 21 kg of CO_2 per annum based upon a mature species. Felling trees releases carbon and replanting saplings takes many tens if not hundreds of years to offset the effect of felling the original species.

Traditional engineering solutions consume vast quantities of carbon, both in their execution with plant, spoil to landfill and the vehicle movements to and from site. In addition, the manufacture of concrete generates in the region of 72kg of CO_2 per ton and contributes 8% of all manmade carbon output in the world today.

From Optera's own investigations and research, we estimate:

- The average underpinning scheme omits 12 tons of CO_2.
- The average piled raft scheme omits 44 tons of CO_2.
- PU injection treatment omits 3 tons of CO_2.
- By contrast, a 10m root barrier omits just 1 ton of CO_2.

Not only is the root barrier installation both less disruptive and much quicker to install than traditional engineered techniques, but it offers carbon savings of between 88 and 95% and is still 67% more carbon friendly than our closest innovative competitor.

Warranty Details

All Optera whole life scheme designed barriers are issued with a 10 year company warranty, the details of which are seen below:



Warranty Note

Building Repair Warranty

Contractor	Optera Ltd
Warranty Reference Number	xxxx
Supplier Registered Office Address	Seven Stars House, 1 Wheler Road, Coventry, England, CV3 4LB
Supplier Company Number	07468088
Supplier Job Reference Number	xxxx
Commencement Date	xxxx
Expiry Date	xxxx
Homeowner's Name	xxxx
Location of Works	xxxxx
Description of works undertaken and Warranted (the "Works")	Works completed pertaining to Optera's Statement of Work Dated xxxxx

Signed for and on behalf of Optera Ltd:-

Name: Spencer Caizley

Sign: Spencer Caizley

Position: Director

Date: xxxx

Warranty

The Contractor warrants that for a period of 10 years from the date of completion of the Works detailed above, the Works undertaken and/or the materials installed shall be free from defect. In the event of a failure, proven to be due to faulty workmanship by the Contractor, or materials supplied and installed by the Contractor, the Contractor will make or cause to be made, all repairs necessary to enable performance in accordance with this warranty.

Any dispute as to whether any defect or failure is attributable to faulty or sub-standard workmanship or materials shall be referred to an arbitrator, who should be a suitably qualified and experienced Chartered Engineer or Chartered Surveyor (i.e. a chartered civil, or structural engineer (MICE/IStructE), or a chartered building surveyor (MRICS)).

This warranty is specific to the location and Works as detailed above and is subject to the following qualifications and conditions:

Qualifications

The Homeowner acknowledges that the Contractor shall not be responsible for remediation of any of, or any combination of the following causes:

1. The cost of routine maintenance, overhaul or modifications or loss or damage arising therefrom, or for which compensation/recourse is provided by legislation such as the Consumer Credit Act 1974;
2. Any wilful acts or wilful omissions of the Homeowner or persons acting on their behalf;
3. Any loss of use, any consequential or economic loss of any kind or description whatsoever including but not limited to loss, costs, damages, expenses or penalties for any reason;
4. Any damage caused by war risks, ionising or nuclear radiations;
5. Any damage or defect caused by wear and tear, sunlight, normal deterioration, neglect in maintenance, any change in colour, texture, opacity or discolouration or staining or superficial deterioration or marring of finishings or surface appearance or aging process;
6. Any claims first notified outside the period of this warranty or any claims for any defects that the Homeowner should reasonably have been aware of any defects for which the Homeowner receives a discount/reduction in the cost of the Works;
7. The use of the Works for any purpose other than that for which they were originally intended and as stated in the documents;
8. Any claim, loss or damage caused by or consequent upon a peril that can be insured under a Household or Commercial Buildings or Property Owners Insurance policy whether insured or not, other than in respect of subsidence, heave or landslip as a direct result of defective workmanship or materials in the Works herein warranted;
9. Placement, erection or construction of anything on or through the Works without the written permission of the contractor;
10. Any costs, losses, expenses or damages for death, bodily injury, disease, illness or injury to mental health;
11. Any abnormal use of the Works or the imposition of any load greater than that for which the Works were designed in whole or in part, structural alterations, repairs, modifications to the Works during the period of this warranty unless agreed in writing by the Contractor;
12. Any claim, loss, destruction or damage caused by pollution or contamination;
13. Any claim involving cosmetic cracking or blemishes that do not affect the performance of the Works;
14. Any claim, loss, destruction or damage due to defective design;
15. Any issues caused by the materials after expiry of the manufacturers product guarantee.

Conditions

A. The Homeowner shall notify the Contractor in writing of any defect within 21 days of discovery and give the Contractor reasonable opportunity to inspect the alleged defect and the area affected. During such an inspection, the Contractor shall be permitted to take such notes, photographs and/or samples as he deems necessary.

B. In the event of a failure attributable to workmanship, the Contractor's sole responsibility shall be limited to the costs of making good such repairs as necessary to enable the Works to perform as originally warranted.

C. Any work carried out to rectify any failure or deterioration covered by this warranty shall not extend the duration of this warranty.

D. If an alleged failure or deterioration is proven to not be the responsibility of the Contractor, then all costs associated with the investigation of such failure shall be borne by the Homeowner.

E. This warranty does not become valid or enforceable until such time as payment in full for the Works has been received by the Contractor.

Intervention Explained

Clay-shrinkage subsidence is typically related to the encroachment of tree roots into the clay soils beneath the foundations of the property.



To ameliorate tree-root induced clay-shrinkage subsidence, the first option is generally removal of the implicated tree(s). However, where the tree(s) cannot be felled, for whatever reason, the next option would be to sever the roots between the tree and the property and form a barrier to prevent reestablishment of the roots.

The barrier will be positioned between the offending tree(s) and the affected part of the building, and will be installed to a depth designed to cut the tree(s) roots between the tree and the foundations; the act of excavation severs the roots, causing any roots beneath the foundations to wither and die. This prevents the tree(s) from extracting moisture from the clay supporting the foundations, allowing the clay to rehydrate and recover their natural moisture levels. Naturally, there is a period of time required for the recovery process to take place, but repairs can typically be undertaken shortly after the installation is complete.

The root barrier material favoured by Optera is a tough, copper impregnated geotextile membrane. This is normally installed using an excavator measuring no more than 2m in width. A trench is formed with the excavator and the arisings are either disposed of off-site or are stored on-site for use as backfill material.

The barrier is typically formed in 5m sections. Once the first 5m of the trench is excavated, the leading edge is bunded with a trench-sheet and the copper impregnated bio-barrier is installed, before backfilling with free-draining stone, or excavated arisings as appropriate to the site. Where 'as-dug' material is used, the backfill is placed in layers and consolidated with a compactor plate attached to the excavator. The process is then repeated until all of the designated barrier has been installed. If reinstatement works are to be undertaken by another contractor, Optera will fill the trench to the surrounding surface as a temporary measure to allow consolidation and avoid a trip-hazard until the permanent reinstatement can be completed. Any excess spoil will be cleared from site along with the plant, welfare, and protections.

How do Copper Root Barriers work?

In the UK the shrinking and swelling of clay soils, particularly when influenced by trees, is the single most common cause of foundation movement that damages domestic buildings.



Trees are known to cause clay soils to shrink by drawing water through their roots, predominantly during the Spring and Summer months. The shrinkage results in both vertical and horizontal ground movement that, when transmitted to a building's foundations, cause damage to the building's structure. The amount of shrinkage depends on the type of clay soil, the type and size of vegetation, and on weather patterns.

The moisture content of a clay soil tends to vary with depth. Closer to the surface there can be relatively large changes in soil moisture content between summer and winter as a result of evaporation from the ground surface, the drying effect of the Sun and general vegetation, including grasses. Such variations are normally confined to the upper 1m of the ground. However, where trees are growing within influencing distance of a building, then the soil moisture profiles will fluctuate much more widely through the seasons and to a much greater depth; in response, soil volume changes are amplified, and consequential building movements will be far greater.

It is quite possible that a building will coexist with nearby trees for many years without any noticeable damage, so what is the trigger for the onset of damaging levels of movement? The answer is usually a combination of the tree(s) getting bigger and developing larger leaf areas, but very often it is linked with a particularly hot, dry period of weather.

The process of clay-shrinkage subsidence is a reversable one and buildings experiencing damage in response to a period of hot, dry weather will typically see an improvement (crack widths will reduce) following a corresponding period of cooler, wetter weather when the clay is able to recover its moisture levels and swell back to its former volume.

The intention of the Bio-root barrier is to divorce the building (or more specifically the clay soils supporting the building's foundations) from the influence of the trees and thereby stop the seasonal soil moisture fluctuations, allowing the building to remain stable throughout the year.

The bio-root barrier is strong and flexible, with very high tear resistance, as well as being water-permeable, thus allowing the natural movement of water through the ground without impediment. The Copper contained within the core of the membrane also acts as a chemical repellent to the roots without constituting a hazard to plants or animals. The Copper foil securely bonded within the porous geotextile membrane, releases Copper ions into the adjacent soil by forming Copper Carbonate (verdigris); these signal adverse conditions to any roots growing towards the barrier, preventing a proliferation of roots close to the barrier. The levels of Copper generated do not constitute a burden on the eco-system or impact groundwater quality.



Outdated, impervious barriers divert rather stop roots and may prevent the movement of groundwater causing unintended consequences. The use of Optera's permeable barrier stops roots both by forming a physical impenetrable obstacle and by acting as a chemical inhibitor to the reestablishment of roots.

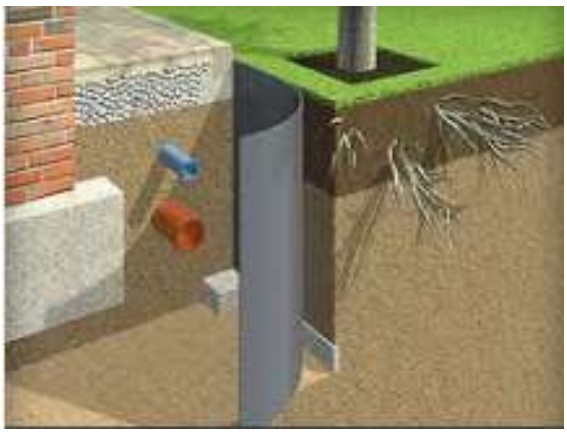
The multi layered membrane is welded together, retaining its flexible qualities, allowing it to be cut and effectively resealed to fit round buried services. The barrier material itself has a 60 year service life expectancy.

The chemical inhibitor effect prevents the proliferation of root against the barrier face, which was often a problem associated with conventional barriers, where increased moisture levels could encourage root growth.

Following installation of the root barrier, the trench may be backfilled with 20mm single sized stone, alternatively, and dependent upon site conditions, backfilling could be done with as-dug material, which would be placed and compacted with a plate-compactor mounted on the excavator arm. In specific circumstances, we may also use no-fines concrete on the structure side of the shield.

Some degree of surface settlement can be experienced following completion, where this happens, Optera will return to top-up the trench; typically this occurs within the first six months of installation.





1. Definitions

• "Client" or "Employer": the party commissioning the Works.

• "Contractor": Optera Structural Solutions ("Optera").

• "Administrator": any contract administrator appointed by or on behalf of the Client/Employer.

• "Works": the services, labour, plant and materials to be provided by Optera as set out in the quotation, estimate, or tender including any agreed variations.

2. Basis of Contract

The Works are based on information supplied by the Client/Employer or their Administrator. Optera will provide the labour, materials and plant required. If supplied information is varied, incorrect or incomplete, Optera may recover associated loss and expense and a reasonable extension of time.

3. Scope of Works

Optera will supply and install the systems and solutions described in the quotation and drawings using industry-standard methods and materials appropriate to the project (including, where applicable, root barrier systems for tree-root management).

4. Design Reliance & Client-Provided Information

In preparing any design, specification, recommendations or installation methodology, Optera may rely upon information provided by or on behalf of the Client/Employer or third parties (e.g., surveys, arboricultural reports, soil data, structural drawings, utility and drainage plans, tree species and root spread assumptions, site investigation reports).

Optera is entitled to rely on the accuracy and completeness of such information unless otherwise agreed in writing, and shall not be responsible for loss, delay, cost or performance issues arising from inaccuracies, omissions or inconsistencies within that information. Where information proves incorrect or incomplete, Optera may suspend Works for safety/design review and recover reasonable additional costs and time.

5. Information & Documents from Others

Where drawings and other relevant information are prepared by others, they must be issued within an agreed period prior to commencement. Optera is not responsible for delays, errors or additional costs resulting from late or incomplete information.

6. Acceptance Period

Unless stated otherwise, offers or tenders remain open for acceptance for 12 weeks from the date of issue.

7. Commencement

Commencement is subject to availability of labour, plant and materials and receipt of an acceptable order.

8. Completion Period

Completion periods assume normal weekday working hours (08:00–17:00), exclude public holidays, and assume no obstructions, split visits or circumstances beyond Optera's control. Variations may affect completion unless agreed in writing.

9. Client/Employer Obligations

Provide, without charge: adequate lighting and water, electrical power for portable tools, emergency telephone access, reasonable secure storage for plant/tools/materials; maintain all relevant site/structure insurances; ensure compliance with Health & Safety, Fire Officer and Building Control requirements and any applicable local regulations.

10. Contractor Obligations

Optera will comply with applicable laws and regulations, give required notices, pay relevant fees/charges (recoverable unless allowed for in the contract), maintain required insurances, and exercise due care consistent with Health & Safety obligations for the scope of the Works.

11. Bill of Quantity Rates / Sums

Rates and sums assume the Works are available to allow continuous and efficient use of resources. Disruption beyond Optera's control may result in recoverable loss/expense and a fair extension of time.

12. Variations

All additions, omissions or alterations to the scope/specification shall be valued and confirmed in a signed Variation or Additional Works Order and will adjust the Contract Sum and programme accordingly.

13. Dayworks & Waiting/Standing Time

Where delays or waiting arise beyond Optera's control, dayworks and standing time will be charged at standard day rates, inclusive of site plant and equipment.

14. Materials & Title

Materials are offered on usual trade conditions; samples are indicative only; equivalent materials may be substituted where necessary. All unfixed and fixed materials supplied by Optera remain Optera's property until all sums due under the contract are paid in full. For defective supplier materials, Optera will use best endeavours to obtain redress from the supplier.

15. Underground Services & Hidden Obstructions

Optera will take reasonable precautions when excavating. Where the location of services is inaccurate, incomplete or omitted from information supplied by others, Optera shall not be responsible for resultant damage. Unexpected conditions discovered during installation may require method adjustments and may result in additional costs.

16. Programme & Delays

Installation schedules are estimates based on known conditions. Completion dates will be extended where delays arise from variations, design changes, strikes/lockouts, supply or subcontractor delays, adverse weather, restricted access, hidden services or other events beyond reasonable control. Optera will use best endeavours to minimise delays.

17. Loss & Expense

If the Client/Employer prevents or impedes Optera's execution of the Works or breaches these terms, Optera may adjust the price to recover resultant loss and expense.

18. Warranty & Defects Liability

Optera warrants that its installation Works will be carried out with reasonable care and skill. This warranty does not cover failure or reduced effectiveness caused by: (i) incorrect or incomplete information provided by the Client/third parties; (ii) subsequent ground disturbance; (iii) tree growth beyond anticipated parameters; or (iv) alterations to site conditions after installation.

Any defects in Optera's workmanship/materials for which Optera is liable and which are notified within 6 months of completion will be corrected, subject to receipt of all payments due.

19. Payment & Invoicing

Optera may issue stage/interim invoices and requests for payment commensurate with the value of work completed; payment is due within 7 days unless agreed otherwise in writing. A final valuation (including agreed variations) is payable by the date stated on the invoice. Invoices are deemed accepted unless disputed in writing within 14 days. All prices are subject to VAT at the rate prevailing at invoice date.

An initial payment is due prior to commencement to cover mobilisation, materials, equipment hire and/or professional services carried out prior to site works.

20. Overdue Payments

Overdue sums accrue finance charges at 1.25% per month (calculated daily) until payment is received. Reasonable costs, time and administration incurred in recovering overdue sums are fully recoverable.

21. Warranties & Guarantees – Issue Condition

All sums (including retentions and any disputed amounts) must be paid before formal warranties or guarantees are issued to the Client/Employer. Optera only issue extended warranties for root barriers for a period of 10 years from the date of completion. Any additional warranty required should be requested in writing prior to the commencement of works.

22. Limitation of Liability

To the fullest extent permitted by law, Optera's aggregate liability in connection with the Works is limited to the Contract value for those Works. Optera shall not be liable for indirect or consequential losses.

23. Termination (Determination)

Optera may terminate by written notice if: (i) the Client/Employer fails to make payments when due; or (ii) the Client/Employer becomes bankrupt, insolvent, enters administration, or liquidation. Upon termination, all Works undertaken (whether invoiced or not) and resulting loss/expense become immediately payable.

24. Dispute Resolution – Arbitration

Either party may refer disputes or differences to arbitration. The arbitrator shall be agreed between the parties or appointed under the rules of the RICS/JCT current at the relevant time. The arbitrator's decision shall be final and binding.

25. Order of Precedence (Contrary Conditions)

If there is any conflict between these Terms & Conditions and the covering letter/offer, the covering letter/offer shall prevail.

26. Acceptance

Acceptance of the quotation and/or commencement of the Works constitutes acceptance of these Terms & Conditions unless otherwise agreed in writing.