

Arboricultural Subsidence Report



SUBSIDENCE INVESTIGATION AT:

**4 Bury Lane
Codicote
Hitchin
SG4 8XT**

Client:	Auger
Reference No:	194196.1
Enviro Trees UK Ref No:	TM2267
Report Date:	09/01/2026

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Introduction

Enviro Trees UK was instructed by Auger to visit the insured property to:

- identify trees and shrubs within potential influencing distance of the area of damage at the insured property
- provide an opinion on the trees and shrubs being a causal factor in the damage to the insured property
- make recommendations on the immediate and future management of the trees and shrubs in relation to the damage at the insured property

The property was attended and assessed on 13/11/2025.

Shrinkable clay soil

Also known as shrink/swell clay, shrinkable clay soil shrinks as it dries and swells as it rehydrates. The top few metres of soil will tend to dry out in the summer months when the water demands of vegetation and evaporation exceed the replenishment by rainfall. During the winter months when trees have lost their leaves and/or become dormant, heavier rainfall exceeds the water demand of the vegetation and the soil moisture level increases again.

The composition and volume change potential of clay soils can be determined by laboratory analysis of soil samples.

Approximately 70% of all subsidence problems can be attributed to the behavior of clay soils. Structures built on clay soil will move up and down as the clay swells and shrinks through the seasons. Problems arise when different parts of a structure move at different rates leading to cracking of walls and foundations. This can be caused by a range of factors:

- Trees and other vegetation abstracting water leading to the drying and shrinking of the soil in one area more than another causing cracking. Approximately 60% of clay-related subsidence is exacerbated by the presence of trees and/or other vegetation.
- Leaking pipes can cause clay to swell and soften with a resultant drop in bearing capacity. The leak may also wash away the softened clay or smaller particles in non-cohesive soils leading to a loss of support for foundations.
- Different foundation depths: shallow foundations will be much more susceptible to seasonal volume changes of the clay whilst deep foundations may be founded below the level of seasonal influence. Different parts of a property built on different foundation depths may be subject to differential movement leading to cracking at the join.

This report concerns the first of these factors.

Almost half of all structural subsidence problems involve trees, and in a drought year this can increase to 70% of all claims. Size and leaf area are important factors in the water demand of vegetation so significant pruning will reduce the amount of water abstracted from the soil, but the effects are often short-lived. Trees and shrubs often respond to pruning with a prolific flush of growth that quickly replaces the lost leaf area. For this reason, removal of the influencing vegetation often offers a more reliable solution to rehydrate the moisture content of clay and stabilise the building. Where there are many trees and shrubs within potential influencing distance it may be appropriate to remove some and prune others. Follow-up monitoring will show whether the property has stabilised or whether further measures are required.

Environmental Impact Assessment (EIA)

The environmental impact assessment (EIA) process evaluates the potential biophysical, social and other effects of a subsidence request to avoid, mitigate or offset significant adverse effects. Its

function is to identify problems, recommend solutions and promote and maximise the proposals' positive effects.

Trees are important assets in rural and urban landscapes. Their benefits include:

- Social: trees line our streets forming prominent features in parks and gardens that create aesthetically pleasing and peaceful environments. Trees are landscape features and strengthen landscape character and sense of place. Research has found positive links between trees and human wellbeing, with corresponding reductions in the rates of non-communicable diseases such as cancer.
- Environmental and ecological: trees contribute to improving air quality and their canopies provide shade and help regulate temperature. They support a wide range wildlife and are important source of food and habitat, supporting biodiversity and ecological networks.
- Economic: they provide timber, food and fuel.

Trees also have perceived negative attributes, including:

- damage to buildings and structures from root and canopy encroachment
- inconvenience of leaf litter and honey dew
- overshadowing and overbearing effects
- unwanted wildlife such as loafing birds and insects
- risk of harm to people and property.

Arboricultural inputs play an increasingly important role in informing the process, demonstrating that the interrelationship between trees and subsidence impact has been fully considered and a solution is sustainable. For instance, whilst trees absorb carbon dioxide, concrete underpinning may emit more CO₂ than could be absorbed by the trees if they were retained.

Enviro Trees UK considers the carbon absorption for the trees' life span relative to other remedial measures such as root barriers and underpinning in our recommendations.

Limitations

This report assumes that engineers are satisfied that the damage to the insured property is attributable to clay soil shrinkage resulting from moisture abstraction by vegetation.

The report may be subject to review upon receipt of additional site investigation data, monitoring, engineering or other information.

The trees were inspected from ground level. Trees and shrubs that are not recorded are considered to be beyond the range of influence and/or are not significant in the context of the current damage or expected to pose a threat in the foreseeable future. Our assessment was made externally (no entry into the building required).

The report does not include a detailed assessment of tree condition or safety. The health, condition and safety of trees should be checked on a regular basis – best practice recommends that trees are inspected every 18 months when they are alternately in and out of leaf and following extreme weather events. Third-party owners are advised to seek their own advice on tree health, structural integrity and risk. Conclusions and recommendations are valid for a period of one year and validity may be reduced in the case of any change in conditions in proximity to the trees/shrubs or built structures.

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Property details

The property is a two-storey detached house. External walls are of brick construction, with a pitched roof finished with tiles. There is an integral garage to the front elevation with a paved driveway.

The site is generally level with no adverse topographical features observed.

Council area

North Hertfordshire District Council

Details of damage

Damage is observed affecting the rear right-hand corner of the property.

Recorded information

The following details were recorded for each tree or shrub and tabulated in the schedule of findings:

- Species
- Height in metres
- The radius of the canopy spread in metres
- Trunk diameter measured 1.5m above ground level (diameter at breast height – DBH) and number of stems (# denotes estimated measurement where trunk is inaccessible)
- Estimated age and life stage based on trunk diameter and species
 - Young: establishing, usually with good vitality but as yet of limited significance in the landscape.
 - Semi-mature: established, normally vigorous, increasing in height and of increasing landscape significance.
 - Early-mature: established; approaching mature height with crown spreading.
 - Mature: fully established trees around the middle of their typical life expectancy; generally retaining good vitality and achieving full height but their crowns still spreading.
 - Over-mature: fully established trees toward the end of their typical life expectancy with declining vitality.
- Distance from property in metres ('#' denotes estimated distance)
- Tree owner/location
- Vitality, previous works and comments
- Statutory protection (Tree Preservation Order or Conservation Area)

Data for subsidence risk

Arboricultural assessment considered the Auger Subsidence Site Note Pack.

Underlying geology

The BGS Geology Viewer suggests that the bedrock geology is likely to be Lewes Nodular Chalk Formation-Chalk. These sedimentary rocks are shallow-marine in origin. They are biogenic and detrital, generally comprising carbonate material (coccoliths), forming distinctive beds of chalk.

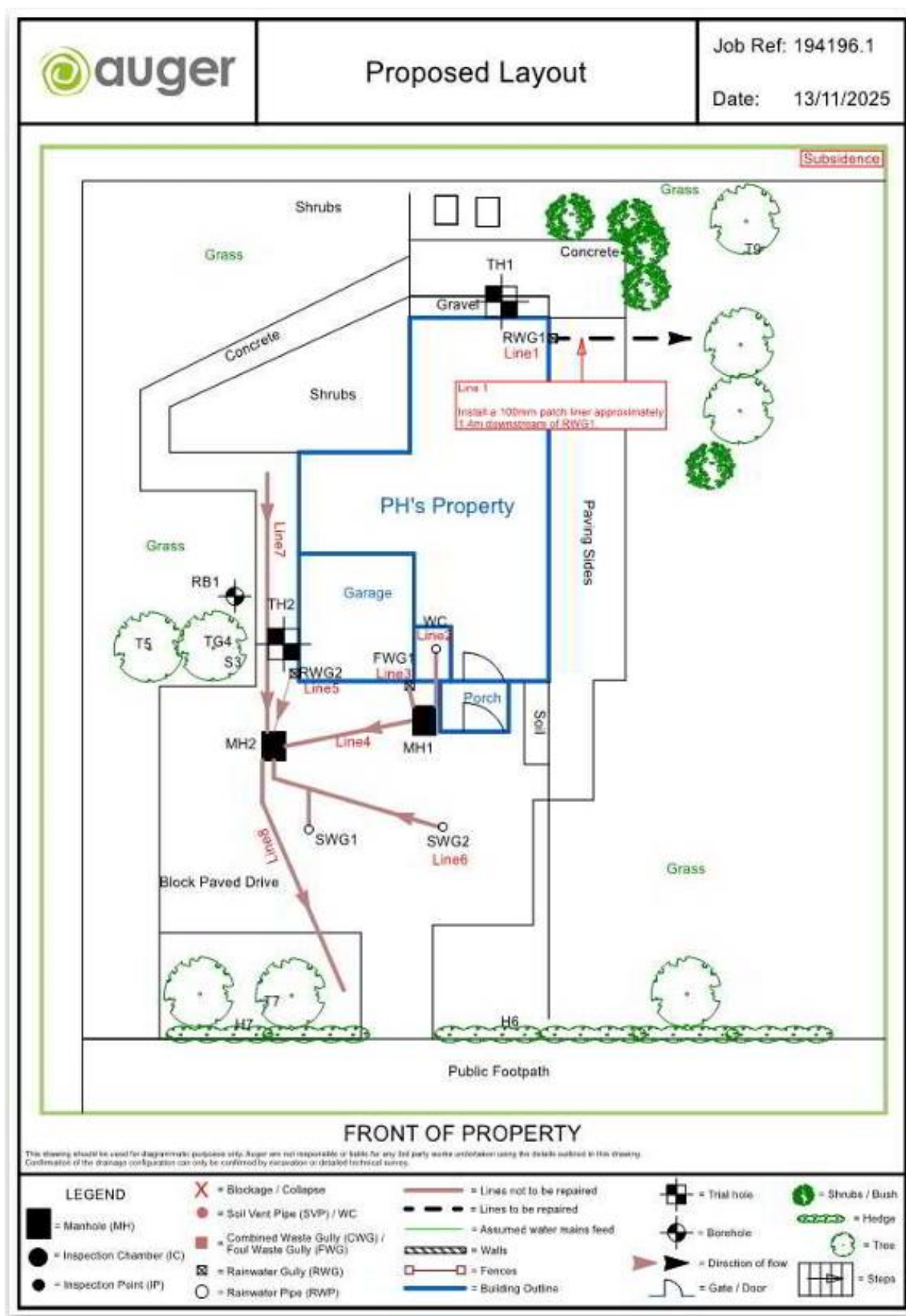
Superficial deposits are Lowestoft Formation-Gravelly sandy clay. These sedimentary deposits are glacial in origin. They are detrital, created by the action of ice and meltwater, they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.

Site Investigations

Site investigations involve digging trial pits to determine foundation depths, soil type and plasticity (shrinkability), and to identify any roots found below the foundations. They can also investigate other possible influences such as the integrity of drains. The information they provide can be useful in determining the cause of structural movement.

Site investigations were carried out by Auger on 13/11/2025 when trial pits were excavated to reveal the foundations and to determine subsoil conditions. The results are summarised in the plan and tables below.

Site investigation plan showing location of boreholes



Drilling Report

Date	13/11/2025
Service Provider	Auger
Number of Trial pits (TP)	2
Number of Bore Holes (BH)	1

Foundations

TP/BH Number	Type	Depth at Underside (mm)
TP1	Concrete	1200

Roots

TP/BH Number	Roots observed to depth (mm)	Identification	Root Dia. (mm)	Starch
TP1	1200	Examined root: PRUNUS (Cherries, Plums and Damsons, Almonds, Peaches and Apricots, Blackthorn/Sloe, as well as the shrubby Cherry-laurel and Portugal-laurel).	-	Alive, recently.
	1700	Examined root: Also like the PRUNUS group (as listed above).	0.8	Alive, recently.
RB1	0	Examined root: a conifer - particularly like the family CUPRESSACEAE (cypresses ('macrocarpa', 'Leylandii' etc.), Thuja (Western Red Cedar), Junipers).	-	Alive, recently.
		Examined root: an herbaceous (non-woody) plant.	-	Alive, recently.

Soils

TP/BH Number	Description	Plasticity Index %	Volume Change Potential (NHBC)
BH1	Brown fine to medium gravelly silty CLAY	17 - 41	Low - High
	Brown fine to medium gravelly sandy silty CLAY		
	Brown fine to medium gravelly sandy CLAY		

Drains

The survey of the below ground drainage system revealed the following:

- Line 1 - From RWG1 downstream to outside area of concern
Survey of line 1 revealed cracking.
- Line 2 - From MH1 upstream to WC
Survey of line 2 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 3 - From MH1 upstream to FWG1
Survey of line 3 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 4 - From MH1 downstream to MH2
Survey of line 4 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 5 - From RWG2 downstream to MH2
Survey of line 5 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 6 - From MH2 upstream to SWG2
Survey of line 6 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 7 - From MH2 upstream to outside area of concern
Survey of line 7 revealed no significant defects to the pipework on this line which could be allowing an escape of water.
- Line 8 - From MH2 downstream to outside area of concern
Survey of line 8 revealed no significant defects to the pipework on this line which could be allowing an escape of water.

Recommendations:

- Line 1
Install a 100mm patch liner approximately 1.4m downstream of RWG1.

Level Monitoring

Level monitoring measures the seasonal movement of the foundations. Downward movement over the summer and upward recovery in the winter can highlight the influence of nearby vegetation.

No level monitoring reports were available at time of writing so recommendations will be based on the limited data available.

Schedule of findings

Ref.	Species	Height (m)	Canopy radius (m)	DBH (cm) No. of stems	Estimated age and Life stage	Distance to area of damage (m)	Tree owner/ location	Vitality, previous works, comments	TPO/ CA
H1	Cypress	3.8				4.8	Insured	Poor. Reduced High-water demand.	CA
TG2	Oak	15	3	100 #	200 Mature	9	Insured	Good. High-water demand.	CA
S3	Spirea	2				1.5	Insured	Good. Moderate-water demand.	CA
TG4	Cypress, Juniper	3		15 #	30 Semi-mature	3	Insured	Good. High-water demand.	CA
T5	Spirea	3	1	10 # 3	15	5	Insured	Good. Moderate-water demand.	CA
H6	Conifer	2.5				9	Insured	Good. Reduced High-water demand.	CA
TG7	Oak, Laurel, Holly, Elder, Symphoricarpos,	10	4	75 #	160 Early-mature	10	Insured	Good. High-water demand.	CA
SG8	Euonymus, Erica, Mixed shrubs	1.5				1.3	Insured	Good. Moderate-water demand.	CA
T9	Cherry	3.5	4	35 # 2	50 Mature	7	Insured	Good. Regular pruning Moderate-water demand.	CA
T10	Oak	13	4.5	125 # 1	260 Mature	18 #	Insured	Good. Regular pruning High-water demand.	CA

Ref.	Species	Height (m)	Canopy radius (m)	DBH (cm) No. of stems	Estimated age and Life stage	Distance to area of damage (m)	Tree owner/ location	Vitality, previous works, comments	TPO/ CA
T11	Cherry	7	3	50 # 2	80 Mature	16 #	Insured	Good. Regular pruning Moderate-water demand.	CA

denotes that the distance was estimated

Tree plan



Tree plan showing area of damage with red circle and location of neighbours as detailed below.

Reference	Address
Council	North Hertfordshire District Council Council Offices, Gernon Road, Letchworth Garden City, SG6 3JF

Analysis

- Cypress (H1) has a high-water demand and is toward the maximum distance for damage in the C&R study.
- Oak (TG2) has a high-water demand and is within the 50% distance for damage in the C&R study.
- Spirea (S3) is toward the outer limit of the zone of influence defined by NHBC.
- Cypress, Juniper (TG4) has a high-water demand and is within the 75% distance for damage in the C&R study.
- Spirea (T5) is unlikely to be of influence.
- Conifer (H6) has a high-water demand and is toward the maximum distance for damage in the C&R study.
- Oak, Laurel, Holly, Elder, Symphoricarpos, (TG7) has a high-water demand and is within the 75% distance for damage in the C&R study.
- Euonymus, Erica, Mixed shrubs (SG8) is within 50% of the radius of influence defined by NHBC.
- Cherry (T9) is toward the maximum distance for damage in the C&R study. Laboratory analysis of the roots found below foundation depth during the site investigation identified them as Prunus spp.
- Oak (T10) has a high-water demand and is toward the maximum distance for damage in the C&R study.
- Cherry (T11) is unlikely to be of influence.
- At time of writing, no level monitoring reports were available to confirm seasonal movement therefore any recommendations to mitigate current or future risk are based on the limited data available.

Note: the radius of the zone of influence is taken from “*Tree Roots & Buildings*” Cutler, D.F. and I.B.K. Richardson, (1989) or determined in accordance with NHBC Standards Chapter 4 2021.

Conclusions

- Reference to the British Geological Society Geological Viewer indicates that the underlying soils are likely to include shrinkable clay.
- The site investigations have shown the presence of shrinkable clay soil.
- This survey has identified woody vegetation within influencing distance of the property.
- The site investigations have found roots below the foundations which have been matched to the vegetation identified in the schedule of trees and shrubs in this report.
- Engineers are satisfied that the damage to the insured property is attributable to clay soil shrinkage resulting from moisture abstraction by vegetation.

Recommendations - Current claim

These recommendations are made based on the information available and may be revised on receipt of additional information.

A period of level monitoring is also recommended to establish a seasonal pattern of movement that would indicate the influence of nearby vegetation.

Consideration has been given for pruning alone as a means of mitigating the vegetation impact. However, in this case this is not considered a viable long-term solution.

Ref.	Species & estimated age	Height DBH (m)	Dist. to area of damage (m)	Vitality & previous works	Tree owner/ location	Recommendation	TPO CA
H1	Cypress	3.8	4.8	Poor Reduced	Insured	Remove stems within 6 metres of area of damage and maintain remainder at no greater than current size through regular pruning.	CA
TG2	Oak 200 Mature	15 (1.00)	9	Good	Insured	Remove close to ground level and treat stumps with herbicide to inhibit regrowth.	CA
TG4	Cypress, Juniper 30 Semi-mature	3 (0.15)	3	Good	Insured	Remove close to ground level.	CA
TG7	Oak, Laurel, Holly, Elder, Symphoricarpos, 160 Early-mature	10 (0.75)	10	Good	Insured	Remove close to ground level and treat stumps with herbicide to inhibit regrowth.	CA
SG8	Eunonymus, Erica, Mixed shrubs	1.5	1.3	Good	Insured	Remove close to ground level and treat stumps with herbicide to inhibit regrowth.	CA
T9	Cherry 50 Mature	3.5 (0.35)	7	Good Regular pruning	Insured	Remove close to ground level and treat stumps with herbicide to inhibit regrowth.	CA

denotes distance was estimated

Recommendations - Future risk

The following recommendations are made to reduce the risk of a recurrence of the damage in the current claim.

Ref.	Species & estimated age	Height DBH (m)	Dist. to area of damage (m)	Vitality & previous works	Tree owner/ location	Recommendation	TPO CA
S3	Spirea	2	1.5	Good	Insured	Maintain at no greater than current size through periodic pruning.	CA

Ref.	Species & estimated age	Height DBH (m)	Dist. to area of damage (m)	Vitality & previous works	Tree owner/ location	Recommendation	TPO CA
H6	Conifer	2.5	9	Good Reduced	Insured	Maintain at no greater than current size through regular pruning.	CA
T10	Oak 260 Mature	13 (1.25)	18 #	Good Regular pruning	Insured	Maintain at no greater than current size through periodic pruning.	CA

denotes distance was estimated

Statutory protection

The presence of Tree Preservation Orders (TPO) or Conservation Area status should be confirmed prior to any tree works being implemented. Failure to do so can result in fines in excess of £20,000.

Trees and wildlife

Trees are hosts to nesting birds and mammals. Under the Wildlife and Countryside Act it is an offence to disturb any nesting bird or bat. Before carrying out any works it is important to ensure that there are no birds or bats in residence.

Tree Ownership

In cases where ownership is noted as “unclear”, investigations have already been undertaken to establish ownership, including title boundary and satellite mapping analysis, Land Registry checks, and engagement with relevant stakeholders where possible. Where absolute certainty of ownership is necessary, appointment of a topographical surveyor is recommended to provide formal confirmation.

Implementation of Tree Works

Tree removal offers the best long-term outcome, helping the ground to recover, and allowing property repairs to commence sooner and be completed without future disruption.

Tree pruning is considered a less effective tree management solution; however, it may be the preferred option of the Local Authority tree owner(s). While insurers may initially accept this approach as a form of mitigation, such acceptance would typically be on a ‘*without prejudice*’ basis. Any pruning should take into consideration the findings of BRE guidance IP 7/06 ‘Pruning Trees to Reduce Water Use’

Tree work is skilled and potentially dangerous. Work should be carried out by trained and certificated contractors working to BS 3998: 2010 *Recommendations for Tree work*.

Stump Height and Ground-Level Removal

Where tree removal is specified as “*cut close to ground level*”, this refers to reducing the stump to approximately 50 - 100 mm (5 - 10 cm) above the surrounding ground surface, provided that site conditions allow.

In some circumstances, it may not be practical or safe to achieve this height — for example, where the tree is located on a slope, where access for cutting equipment is restricted, or where the stump

contains embedded debris such as metal, stone, or concrete. In such cases, the stump may be left slightly higher to avoid equipment damage or safety risks.

Herbicide Application and Stump Management

Where herbicide treatment has been recommended or applied, it should be understood that herbicide acts as a growth inhibitor rather than a guaranteed means of killing a stump. While it can significantly reduce the likelihood of regrowth, complete dieback cannot be assured due to variations in species resilience, stump size, timing of application, and environmental conditions.

It remains the responsibility of the property owner or manager to monitor and manage the treated stumps following the initial application. This may include reapplying a form of commercially available herbicide where signs of regrowth appear, or arranging for further mechanical treatment (such as stump grinding or excavation) if regrowth persists.

Regularly removing any suckers or shoots that emerge from the stump or roots can also help suppress regrowth by depleting the remaining root system's stored energy. Consistent management over time is usually necessary to ensure the stump becomes inactive.

Enviro Trees cannot guarantee that herbicide treatment alone will permanently prevent regrowth, and subsequent management remains the ongoing responsibility of the property owner or manager.

Replacement Planting

Replacement planting may be possible but would require careful choice of species and position to avoid a recurrence of the current claim.

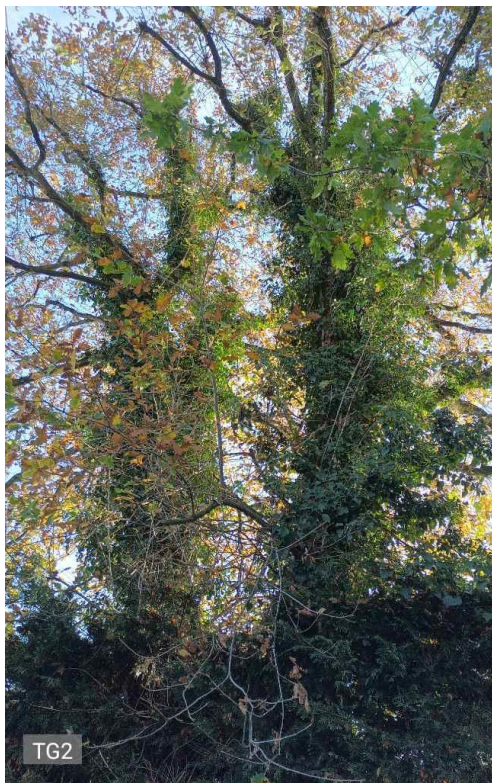
Photographs



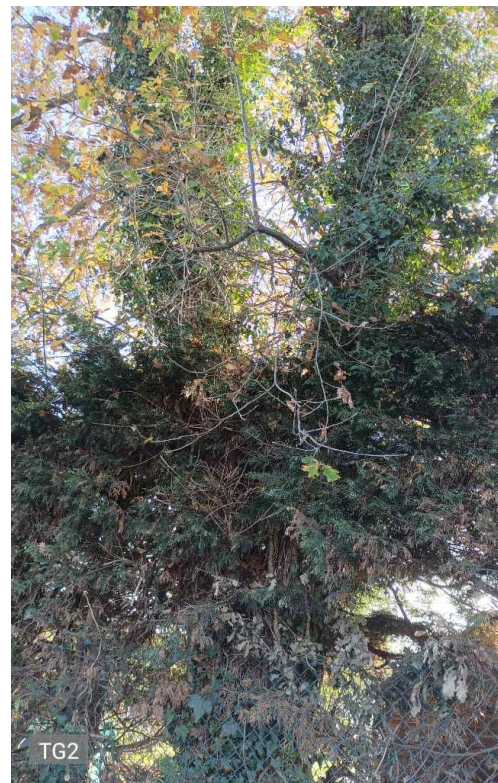
H1



H1



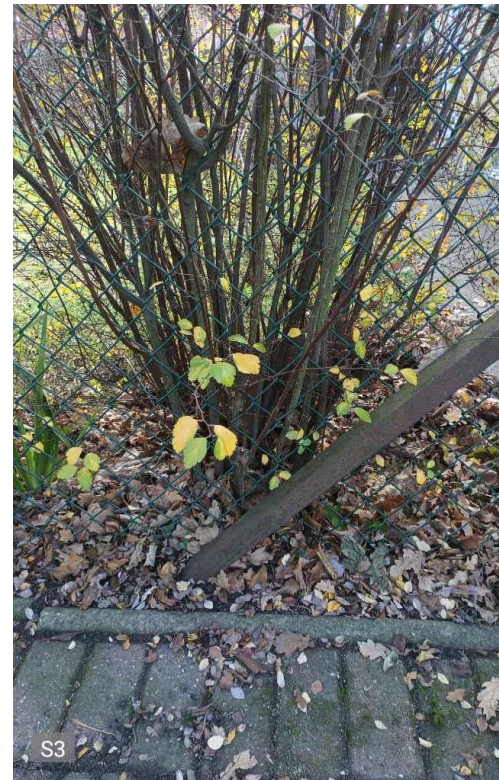
TG2



TG2



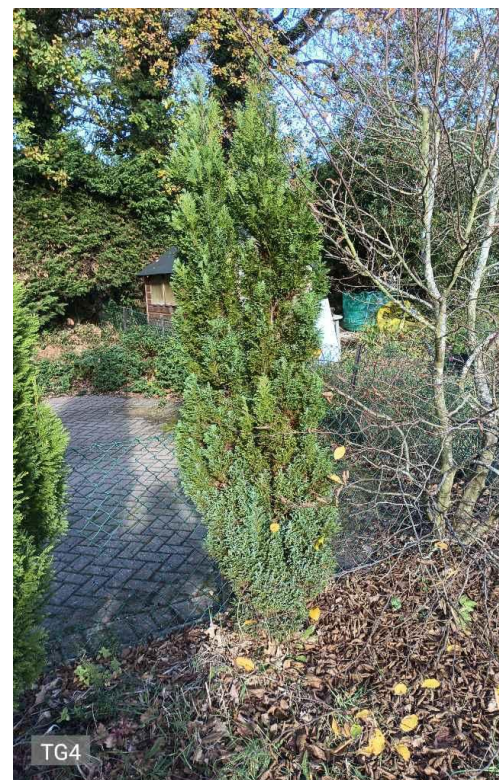
S3



S3



TG4



TG4



T5



T5



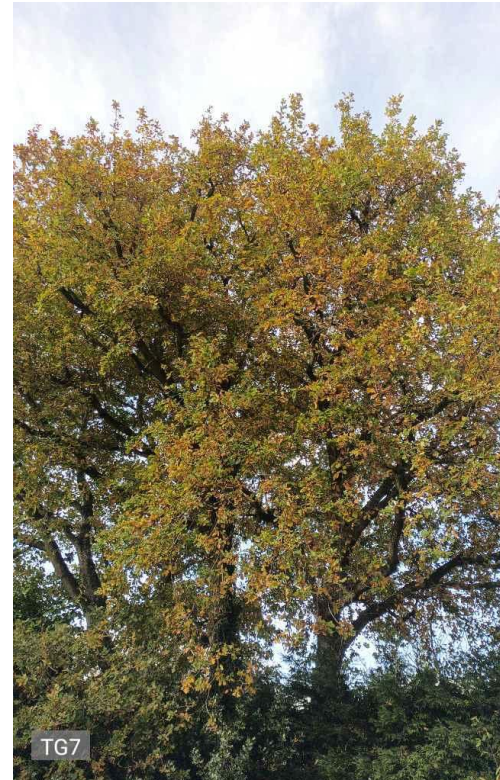
T6



T6



TG7



TG7



TG7



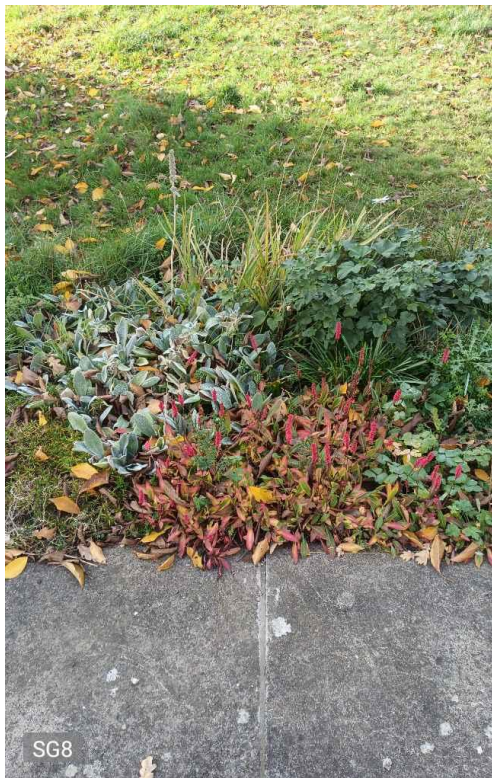
TG7



TG7



TG7



SG8



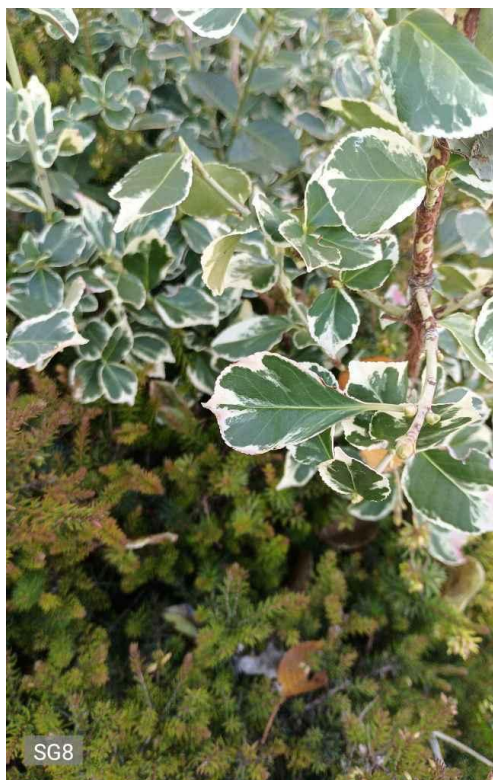
SG8



SG8



SG8



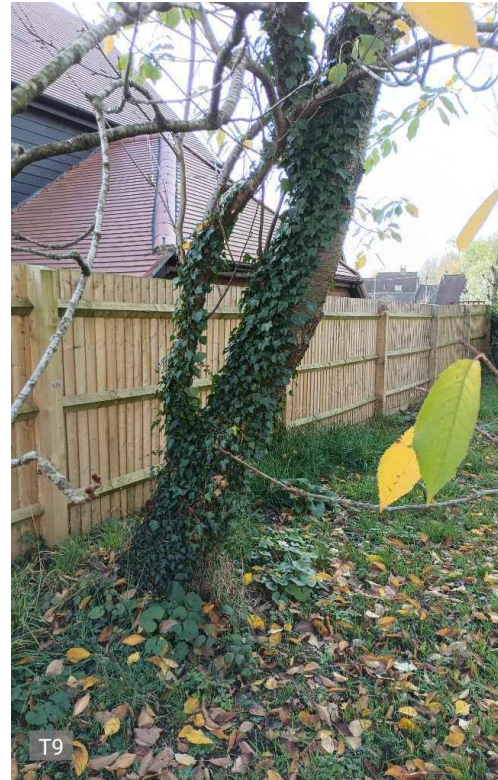
SG8



SG8



T9



T9



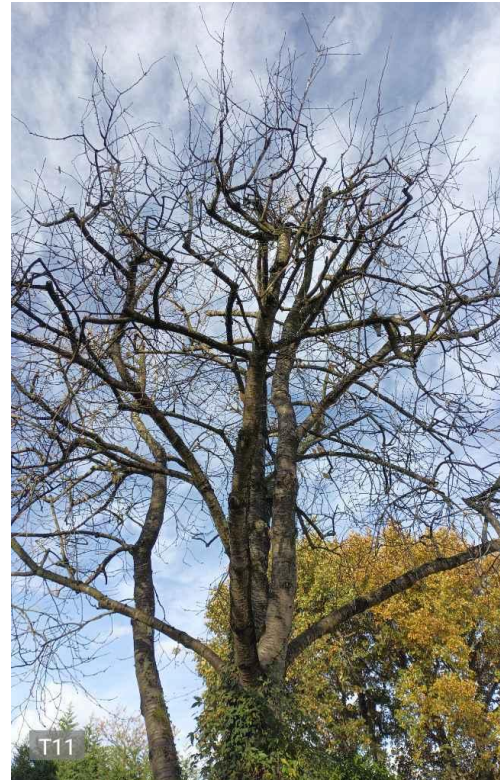
T10



T10



T11



T11