

S1281-J1-R1

REPORT

on trees in relation to
62A Savernake Road, London, NW3 2JR

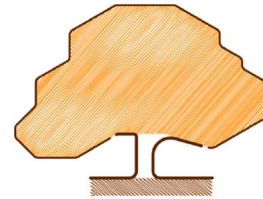
For Redbourne Consultants (ref: RC 2088/23)

on behalf of Ageas Insurance

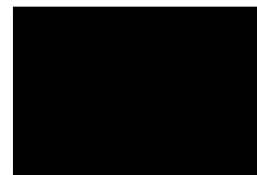
via: Woodgate & Clark Ltd.

Insured: [REDACTED]

(15th February 2024)



JOHN CROMAR'S
ARBORICULTURAL
COMPANY LTD



John Cromar, Dip. Arb. (RFS), F. Arbor A.



Company Registration No. 5195523. Registered in England and Wales. Registered Office: The Old School, Titley, HR5 3RN

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1 Introduction and instructions

This is a tree and building subsidence matter. I am instructed by Redbourne Consultants on behalf of Ageas Insurance (via Woodgate & Clark Ltd). I consider my instructions in essence to be to report on the applicability of tree pruning or removal to control a reported subsidence problem at 62A Savernake Road, London, NW3 2JR. Accordingly, I visited the property on 6 February 2024 in order to carry out an inspection.

2 Sources and documents

2.1 Matters reported by documents supplied

Factor	Footings, trial pit/ borehole	Comments
Cracking	F= underside of footing depth R= roots encountered to Borehole (BH) To= finished at [value in metres] below GL	Dwelling built c. mid-1940s. Extension built c. <i>(No report received)</i> Report received states: Internal and external cracking around left hand corner of rear addition.
Date of onset		<i>(No report received)</i>
Footings, Soil, Root presence Borehole	TP1 F=0.6m	Concrete over made ground overlying clay.
	BH1 R=1.5m To=5m	Made ground over firm to stiff clay; dry on completion.
P.I. range (modified if available)	All	48% - 59%

Factor	Footing, trial pit/ borehole	Comments																								
	F= underside of footing depth R= roots encountered to Borehole (BH) To= finished at [value in metres] below GL																									
Desiccation	BH1	Date of investigation: 20.12.23 Report received states: Soil suction: "although the suction pressures are relatively low, there is a clear peak in the profile at 2m." Driscoll: "there would appear to be significant desiccation between 1-2m below ground level." Vane: relatively normal with no evidence of any significant desiccation.																								
Root identification	<table border="1"> <thead> <tr> <th colspan="3" style="background-color: #f2f2f2;">TP/BH1, u/s footing - R.1</th> </tr> </thead> <tbody> <tr> <td style="width: 10%;">7 no.</td> <td style="width: 60%;">Examined root: LAURUS (Bay).</td> <td style="width: 30%;">Alive, recently*.</td> </tr> <tr> <td>5 no.</td> <td>Examined root: a member of the monocotyledon group of plants. Most are non-woody, but there are a few woody examples - such as Bamboos, Palms, Agaves, Yuccas and Cordylines.</td> <td>Alive, recently*.</td> </tr> <tr> <td>20 no.</td> <td colspan="2">Unfortunately all with insufficient cells for identification.</td> </tr> <tr> <th colspan="3" style="background-color: #f2f2f2;">BH1, 1.00m - R.2</th> </tr> <tr> <td>5 no.</td> <td>Examined root: LAURUS (Bay).</td> <td>Alive, recently*.</td> </tr> <tr> <td>4 no.</td> <td>Examined root: again like members of the monocotyledon group of plants - see above.</td> <td>Alive, recently*.</td> </tr> <tr> <td>12 no.</td> <td colspan="2">Unfortunately all with insufficient cells for identification.</td> </tr> </tbody> </table>		TP/BH1, u/s footing - R.1			7 no.	Examined root: LAURUS (Bay).	Alive, recently*.	5 no.	Examined root: a member of the monocotyledon group of plants. Most are non-woody, but there are a few woody examples - such as Bamboos, Palms, Agaves, Yuccas and Cordylines.	Alive, recently*.	20 no.	Unfortunately all with insufficient cells for identification.		BH1, 1.00m - R.2			5 no.	Examined root: LAURUS (Bay).	Alive, recently*.	4 no.	Examined root: again like members of the monocotyledon group of plants - see above.	Alive, recently*.	12 no.	Unfortunately all with insufficient cells for identification.	
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Drains		No report received.																								
Monitoring		Noted as recommended.																								

3 Appraisal of reported factors

3.1 Mechanism

A consideration of the matter of trees and the subsidence of buildings requires some discussion of the processes involved.

Evapo-transpiration is the process by which water is lost to the atmosphere from living plants. This process demands water uptake from the soil into the roots, from where it passes into the vessels of the plant, is conducted to various parts of the plant, and is finally lost to the plant mainly through pores in the leaves.

This process can dry clay soils so that they shrink and allow foundations resting on them to sink or move. (This can be termed 'indirect damage'). There is a higher risk of this happening in very low rainfall periods. The buildings constructed on those footings may then crack.

Removal of trees involved in subsidence almost always arrests further cracking, whereafter the previously dried clay will, usually fairly rapidly (i.e. within a season or two) return to its normal proportions by the natural action of rainfall, and consequently will lift the footings back to the position they were in prior to the damage, thus closing or nearly closing the cracks. Redecoration internally is often all that is required.

By contrast, what may be termed 'direct damage' is caused by physical pressure of parts of a tree, such as roots or trunk, on a structure, and this can occur on any soil type.

3.2 Footings

The footings were not noted to be particularly shallow. On heavily-worked agricultural clay soils, obvious cracking related to drying can open up to a metre or perhaps more in depth during droughts, but this depth of cracking is rarely seen in other circumstances. I therefore consider it more likely that damage by soil drying involved the roots of vegetation.

An impermeable cap covered the trial pit location and this was naturally enough, adjacent to the footings.

This feature would have effectively retarded or prevented simple evaporation. It can therefore safely be concluded that a root system would be needed to cause any soil drying below the footings.

3.3 State of borehole

As per 2.1 above, the borehole was noted to be dry on completion. This suggests that drain failure is unlikely to be significant in the damage.

3.4 Filter paper suction test profile

The filter paper suction test profile indicates elevated suctions to a depth of about 2m below ground level. These suction readings tally reasonably well with the reported depth of penetration of fine roots (to about 1.5m below ground level).

3.5 Root identification

The root identification indicates that vegetation (bay 2 and likely, certain bamboo in G1) near the property has developed roots close to or under the footings. Questions therefore arise over how such vegetation could be managed in order to reduce soil drying near the footings.

3.6 Monitoring

If crack monitoring confirms a seasonal pattern of damage with cracks opening in summer and closing in winter, or level monitoring show levels falling in summer and rising in winter, it can safely be concluded that vegetation is involved in the damage.

4 Photo



5 Remedy

5.1 Amenity assessment

No items listed are of any significant public value, nor of any significant local amenity value. Replacements could satisfactorily address any losses.

5.2 Vegetation appraisal

The main influence on soil drying is likely the bay tree 2. That having been said bay as a species is typically not very often involved in vegetation-related subsidence damage cases. They responds well to pruning and can be fairly straightforwardly maintained as topiary. As far as the clump of bamboo is concerned, these appear to consist of *Phyllostachys aurea* and *P. nigra*, black bamboo. The latter is probably not involved in the soil drying in my view (they are much smaller than the former) but the larger golden bamboo probably is. It could be practically difficult to extract the golden bamboo from the black.

5.3 Pruning appraisal

Pruning to trees to reduce soil drying near buildings is generally unreliable unless repeated frequently. It is most likely to be effective when there is considerable separation between the affected building and the tree. This is not the case here. A *very regular* pruning regime to trees near buildings *over an extended time and at close intervals* may reduce both the likelihood of damage and limit the scale of damage if it does occur. This means that although transpiration and soil drying associated with it will be reduced temporarily by a *severe* pruning, it will very rapidly recover as new leaves grow, which can in summer be a matter of a very few weeks. Research has demonstrated that a 50% loss of leaf does not reduce the water uptake by as much as 50% as remaining leaves generally transpire greater amounts than previously. A single heavy pruning will not succeed in my view in remedying the situation reliably. Sometimes a single pruning may be followed by a period of normal or wet weather, which may allow more credit to be given to the pruning as having effected a 'cure' than is strictly due. 'Hortlink' project 212 'Controlling Water Use of Trees to Alleviate Subsidence Risk' (2004) established that the reduction in water use following heavy pruning of trees is lost after two seasons.

5.4 Heave

Trees certainly do not pre-date the structure. I note construction was at least 75 years ago. The trees are less than 35 years old. Heave consequent to tree removal is not considered a significant threat in this case.

5.5 Root barrier not suitable

A root barrier has been considered and rejected as inapplicable owing to potential for tree damage, etc.

6 Conclusions

- Prospects for control by vegetation management are good if vegetation is confirmed as involved and if vegetation considered significant can be removed: much less certain if pruning alone is relied upon.
- Further information is needed via crack or level monitoring in order both to confirm causation and to determine the response of the building to any initial tree control measures.

7 Tree data and summary of recommendations

7.1 Tree data table

Please read the table in conjunction with the plan S1281-J1-P. All dimensions are approximate and are in metres/millimetres.

Tree number	Tree type	Height (m)	Stem diameters (mm)	Proximity (m)	Comments	Cost - £
G1	golden and black bamboo	7.5	<40, <40, <40, <40, <40	1	Phyllostachys aurea and P.nigra. Remove the former.	
2	bay	9	No access	3	Reduce to and maintain at 5m in height as a topiarised item.	
G3	common ash	10	<150	6	Poorly sited for growth to maturity. I recommend they are removed, the stumps ground out to 250mm below ground level and something more suitable planted for example, say three <i>small</i> trees arranged along the left boundary.	

Proximity is the distance from the specified property or structure.

Cost is solely a guide to industry charges; it is neither a quote nor an estimate.

8 Compliance and re-inspection

8.1 Tree work standards

Any tree work should be carried out to BS 3998:2010 'Tree work—Recommendations'.

8.2 Statutory constraints

Conservation Area restrictions do apply and therefore a formal notification of intent should be given to the local planning authority and the notification period allowed to expire, before carrying out work to any such protected trees.

8.3 Re-inspection

All trees growing close to life and property require regular inspection and sometimes maintenance to minimise conflict between the arboreal and human spheres of existence. This should be carried out yearly by a properly qualified arboriculturist, such as a Fellow of the Arboricultural Association.

9 Mitigation by planting

9.1 Tree replacement

The amenity provided by trees is often of general public benefit. The location appears reasonably favourable for a suitable tree or trees : if the trees in G3 are removed I suggest that consideration is given to planting one or more of a species with a good track record as far as lack of involvement in building damage is concerned, such as *Amelanchier arborea* 'Robin Hill', *Hoheria sexstylosa* 'Stardust', or *Carpinus betulus* 'Frans Fontaine', or *Magnolia grandiflora* 'Galisonniere', at least 7m from the structure.

10 Report limitations

10.1 Client use

This is a report for the sole use in connection with the above matter only of the client named above and the client's professional advisors. It may be copied and used by the client. Its reproduction or use in whole or in part by anyone else without the written consent of the writer is expressly forbidden. ***The appended schedule of tree work, and the plan, may, without the written consent of the writer, be reproduced to contractors for the sole purpose of tendering.***

10.2 Preliminary nature

This report is preliminary in nature in that further investigations may be identified as necessary in order to reach firm conclusions and/or recommendation(s) for action.

10.3 Not a full safety survey

This is primarily an arboricultural report. Whilst comments relating to matters involving built structures or soil data may appear, any opinion thus expressed should be viewed as qualified, and confirmation from an appropriately qualified professional sought. Such points are usually clearly identified within the body of the report.

This is not a full arboricultural safety survey. This can be supplied but will be subject to a further fee. Where matters of tree condition with a safety implication are noted during an inspection they will of course appear in the report.

10.4 Tree management recommendations

It will be appreciated, and deemed to be accepted by the client, that the formulation of recommendations for the management of trees will be guided by:

1. the need to address reasons for damage;
2. the cost-benefit analysis (cost being in terms of amenity), of tree work that would remove all risk of tree related damage; and
3. the arboricultural considerations—safety, good practice and aesthetics.

10.5 External sources

The client is also deemed to have accepted the limitations placed upon any recommendations by the sources quoted in section 2 above, and, especially in view of the inherent uncertainties of climate to accept recommendations in respect of indirect damage as formulated to reduce risk rather than as a guarantee of zero risk. Where sources are limited by externally imposed time or cost restraints this will be identified in the report and may lead to an incomplete quantification of risk. No responsibility can be accepted for the consequences in such a case.

10.6 Re-inspection timescale

Conclusions and recommendations in respect of trees retained on site are valid for a period of three years from the date of inspection, after which a re-inspection is recommended. This is important if new risks such as from trees growing from wind-sown seeds are to be identified, and risks that may be developing as a result of changes to the site, e.g. trees that start to grow at an increased rate due to alterations in immediate environs. Re-inspect using a properly qualified and experienced arboriculturist, such as a Fellow of the Arboricultural Association, within three years of the date of this report, unless there is cause to consider an earlier re-inspection of that

nature prudent, for example if obvious deterioration, gale or other damage has taken place, or fungal fruiting bodies (mushrooms or bracket-type) appear on or close to the tree.

11 Bibliography

Biddle, P. G. (1998). *Tree Root Damage to Buildings* (Vol. 1).

Biddle, P. G. (1998). *Tree Root Damage to Buildings: Patterns of Soil Drying in Proximity to Trees on Clay Soils* (Vol. 2).

Cutler, D. F., & Richardson, I. B. (1989). *Tree Roots and Buildings*.

Gasson, P. E., & Cutler, D. F. (1998). Can We Live With Trees in Our Towns and Cities? *The International Journal of Urban Forestry*, 22(1).

12 Signature

Date of completion: 15 February 2024

Signed:



John C. M. Cromar, Dip. Arb. (RFS), FArborA

on behalf of John Cromar's Arboricultural Company Limited.

13 Schedule – Farfan, 62A Savernake Road, London, NW3 2JR

Please read in conjunction with appended plan

Trees in relation to 62A Savernake Road, London, NW3 2JR ref: S1281-J1-P

Please note that this a provisional schedule of works considered necessary if vegetation control alone is adopted as a remedial measure.

Tree number	Tree type	Height (m)	Stem diameters (mm)	Proximity (m)	Comments
G1	golden and black bamboo	7.5	<40, <40, <40, <40	1	Remove the Phyllostachys aurea from the group.
2	bay	9	No access	3	Reduce to 5m in height and 4m in spread as a topiarised item.
G3	common ash	10	<150	6	Remove, grind stumps out to 250mm below ground level.

NOTES:

- All tree work should be carried out to BS 3998:2010 'Tree Work – Recommendations'.
- The Wildlife and Countryside Act 1981 protects (with certain exceptions) all birds and their nests. It is an offence to destroy such nests or take or injure such birds in the course of tree works operations.
- If a tree is a bat-roost, a licence to work on the tree must first be obtained from the relevant Statutory Nature Conservation Organization (in England: Natural England¹.) Acting without a licence is likely to be justifiable only in acute emergencies threatening human life and where all other legally available options such as footpath diversion, fencing and warning signs cannot be applied. I saw no sign of bat occupation.

¹ Natural England can be contacted on 0300 060 3900. Their website is: <https://www.gov.uk/government/organisations/natural-england>

14 Plan

ref: S1281-J1-P