

Brett-Pitt Associates Limited

Investigative Claims Handling in London and the South

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Date: 8th March 2022

SUBSIDENCE DAMAGE REVIEW REPORT

INSTRUCTING OFFICIAL:	Sue Addison
CLAIM REFERENCE:	Barnard Way
BPA REFERENCE:	9 Barnard Way
NAME AND ADDRESS OF CLIENT:	Peterborough City Council
SITUATION OF DAMAGE:	9 (& possibly 10) Barnard Way, Bretton, Peterborough PE3 9YZ
TYPE OF DAMAGE:	Subsidence, allegedly due to root induced subsoil shrinkage and tree root encroachment
DATE OF LOSS:	Summer 2018
CLAIMANT:	Mr & Mrs Kevin Benton

INSTRUCTIONS

Brett-Pitt Associates Ltd (BPA) has been instructed by Peterborough City Council (PCC) to review the information in the documents listed below regarding subsidence damage at 9 Barnard Way and provide comments upon them and the conclusions reached, with a particular focus on the above points:-

1. Whether we believe the cause of the damage to be subsidence or heave.
2. If this is subsidence, whether you consider a root barrier to be a suitable method of discharging our legal duty to abate the nuisance.
3. If a root barrier were to be constructed, this would have to be installed within two private gardens. Having considered the root barrier quote dated 21 Feb 2022, do you broadly consider the quote to be a fair and realistic estimate of costs.
4. If a root barrier is not a suitable option to discharge our legal duty to abate the nuisance, and the two properties had to be underpinned (should the Oak tree remain), what is your estimation of the likely cost of this (in making such an estimation, you should take into account of the size and nature of the properties in this case, but again the cost estimate should be based on typical costs for cases such as this).
5. Having reviewed all of the material provided, is there any alternative action that could be taken to the above, and if so, the degree to which this would discharge our legal duty to abate the nuisance and any risks you may wish to highlight.

MY EXPERIENCE

Ian Brett-Pitt is a Chartered Building Surveyor and owner of BPA. He has been involved in subsidence claims since 1988 and worked as a Loss Adjuster, Subsidence Claims Manager for a major UK insurer for 11 years and as a subsidence claims expert for insurers, homeowners and local councils. He is also a member of The Subsidence Forum Executive focussing on tree root related subsidence damage.

DOCUMENTS/EVIDENCE REVIEWED

1	Auger report	25 October 2018
2	Auger report	01 November 2018
3	CET report	19 December 2018
4	Auger report	14 February 2019
5	Auger report	05 March 2019
6	Richardsons root report	05 March 2019
7	Sedgewick report	10 April 2019
8	PRI report	04 November 2019
9	CET monitoring report	27 March 2020
10	PRI report PRI Application seeking consent to remove	15 May 2020
11	T1	20 May 2020
12	PCC letter of consent to remove T1 & T2	03 July 2020
13	Harpham report	22 December 2021
14	Paul Harris comments on Harpham report	22 December 2021

15	TreeLaw report	19 February 2022
16	Optera root barrier estimate	22 February 2022
17	TreeLaw Letter to PCC Councillors	22 February 2022

BACKGROUND

We are satisfied the background comments contained in The TreeLaw report (Appendix I) appear to be a fair and representative account of the issues in this matter. However, we would also make the additional observations which are referred to later in this report:-

- We understand the current owners of 9 Barnard Way are Mr & Mrs Benton and the insurer of the property is Legal & General.
- It is generally accepted that the hot/dry weather conditions experienced in parts of the UK, including the southeast of England, during the summer of 2018 is considered to have been an exceptional 1 in 42 year event.
- PCC has confirmed it provided Building Control approval/consent in relation to the construction of the main property at 9 Barnard Way, but not the subsequent rear conservatory.
- PCC has advised it's records show the foundations at the front of the property were constructed to depths between 1.3m – 1.5m and to a depth of 2.0m at the rear of the property.
- We are in receipt of various copies of PRI's report. The initial version which appears to have last been reviewed on 4/11/2019, recommends the removal of oak T2 and the reduction of oak T1 (Appendix II). However, a later version of PRI's report which appears to have been reviewed on 15/5/2020, recommends the removal of both oak trees T1 & T2.
- We are unaware of the exact date when oak tree T1 was removed, although it is believed to have been removed by July 2021.
- We have not been provided with any evidence of subsidence damage to 10 Barnard Way.
- PCC has confirmed the path at the rear of the property is deemed to be a *Public Footpath*.
- PCC is unable to confirm it owns the oak tree T2.
- PCC has undertaken previous maintenance works to oak tree T2 and believes it is responsible for controlling T2.

THE IMPLICATED TREES

T1 – Oak

According to the various PRI reports, the tree is a 12.3m high mature oak in fair condition growing in the rear garden of 9 Barnard Way at a distance of 8.9m from the property. We understand this tree was removed by July 2021. The stem diameter was estimated to be 730mm and the tree has been subject to past management.

T2 - Oak

According to the various PRI reports, the tree is a 17.5m high mature oak in fair condition growing on land at the rear of 9 Barnard Way at a distance of 14.9m from the property. We understand this tree has not been removed but some reduction work has recently been undertaken in preparation for its proposed removal. The stem diameter was estimated to be 1,000mm and the tree has been subject to past management. The tree is growing in line with the rear boundaries of 9 & 10 Barnard Way.

The location of T1 was much closer to 9 Barnard Way whilst T2 appears to be growing at similar distances between 9 & 10 Barnard Way. Based on the comparable size and estimated stem diameters of the oak trees, it is reasonable to assume that T2 is likely to be considerably older than oak T1. Therefore, it is also reasonable to assume the following;-

- Both T1 & T2 had the potential to affect the subsoils under 9 Barnard Way.
- T2 had/has the potential to affect the subsoils under both 9 & 10 Barnard Way.
- Roots from T1 are less likely to have affected the subsoils under 10 Barnard Way.

STATUTORY ISSUES AFFECTING THE OAK TREES T1 & T2

Tree Preservation Order (TPO)

PCC has confirmed that both oak trees were subject to the same TPO, (06/00004) which has been in force since the 1970's and revised in 2006. The Town & County Planning Act (TCPA) requires that in the event of consent being sought for the removal of trees protected by TPO which are alleged to be causing subsidence, mandatory evidence is required in support of an application (Appendix III). If insufficient evidence were submitted in support of an application to remove a TPO tree causing subsidence, the recipient planning authority would be entitled to refuse acknowledgment/processing of the application. However, if a planning authority were to acknowledge and process an application, it then has a responsibility to determine the application irrespective of the supportive evidence. Further, failure to determine an otherwise acknowledged application would be deemed refusal which then creates rights of appeal and compensation to the applicant.

In this case, we understand that no DNA analysis, adverse heave analysis and up-to-date monitoring was submitted in support of the 20th May 2020 application seeking consent to remove T1. PCC would have therefore been within its rights to refuse to acknowledge and process the application had it chosen to do so. Nevertheless, it appears that PCC processed the application and consented to the removal of T1 (& T2). It is therefore reasonable to conclude that PCC was satisfied the evidence presented in support of the application for the removal of T1 (&T2) was sufficient to show that either or both trees were, and would continue, causing subsidence thus warranting their removal.

As mentioned above and in The TreeLaw report, the application submitted on 20th May 2020 was for the removal of T1 only. However, it appears the applicants and PCC agreed the application should include both T1 & T2 and we note consent for the removal of both trees was provided by PCC on 3rd July 2020. In this regard we have noted it has been suggested PCC did not follow due process in relation to the TCPA. Notwithstanding this, it should be noted that The Court of Appeal found in *Perrin v Northampton BC* [2008] (Appendix IV – s.54) that in circumstances where TPO protected trees are causing an ‘actionable nuisance’ such as subsidence to property on neighbouring land, then s198(6)(b) of the TCPA applied meaning the implicated tree/s had no statutory protection. It is notable The Court reached the same conclusion in the subsequent case of *Khan v Kane* [2013] (Appendix V – s’s.70 – 75).

As it is apparent both the applicants and PCC were satisfied that both oak trees were causing subsidence to 9 Barnard Way, it follows that both parties also considered that T2 was causing an ‘actionable nuisance’ to property on neighbouring land. Applying The Courts decisions, it follows that s198(6)(b) of the TCPA applies and T2 had (and potentially still has) no statutory protection under the TPO. The same logic does not apply to T1 because a) it was not causing damage to a neighbouring property and b) it has been removed.

The Highways Act 1980

As has been mentioned above, the oak T2 was growing adjacent to the public footpath located at the rear of the affected property. In this regard, we have noted that in 1993 The Department of Transport advised that any tree within falling distance of the highway was considered to be a ‘highway tree’ (Appendix VI). Therefore, it is reasonable to conclude that oak T2 is by definition a ‘highway tree’.

Given the above, The Highways Act (HA) conveys various responsibilities on councils to maintain ‘highway trees’. Indeed, s. 96 outlines *Powers of highway and local authorities to plant trees, lay out grass verges, etc.* (Appendix VII) and it is worth noting ss (6) as follows:-

(6)No tree, shrub, grass verge, guard or fence shall be planted, laid out or erected under this section, or, if planted, laid out or erected under this section, allowed to remain, in such a situation as to hinder the reasonable use of the highway by any person entitled to use it, or so as to be a nuisance or injurious to the owner or occupier of premises adjacent to the highway.

As mentioned above, although PCC has previously managed and apparently accepted control of T2, it is unclear whether T2 is growing on PCC land. Therefore, should it transpire that PCC do not own T2 it seems reasonable to assume that any previous management of T2 undertaken by PCC was in respect of PCC’s duties under The HA and therefore not in respect of their duties to manage and control the tree as owners. This point may prove to be relevant in the event of any future litigation.

SITE INVESTIGATIONS (including monitoring and heave analysis)

Our engineering expert has reviewed the available site investigations undertaken and made the following comments:-

Given the subsoils were found to have a low - medium volume change potential (see below), it appears the foundations of the main house appear to largely comply with the relevant NHBC guidelines applicable at the time of construction. However, the foundations of the rear conservatory were found to be only 0.85m deep yet the relevant NHBC guidelines applicable at the time of construction recommended the foundation depths [for construction on low/medium shrinkage soils within 9m of a mature oak tree] should have been a minimum 2,200mm. It follows there is a strong argument the damage which occurred to the conservatory was largely inevitable and possibly foreseeable depending on any pre-purchase survey inspection advice Mr & Mrs Benton obtained prior to their purchase of the property in July 2014. We note the PRI reports advise that both T1 & T2 were subject to previous management which may well have been undertaken to mitigate ongoing and known risks of subsidence.

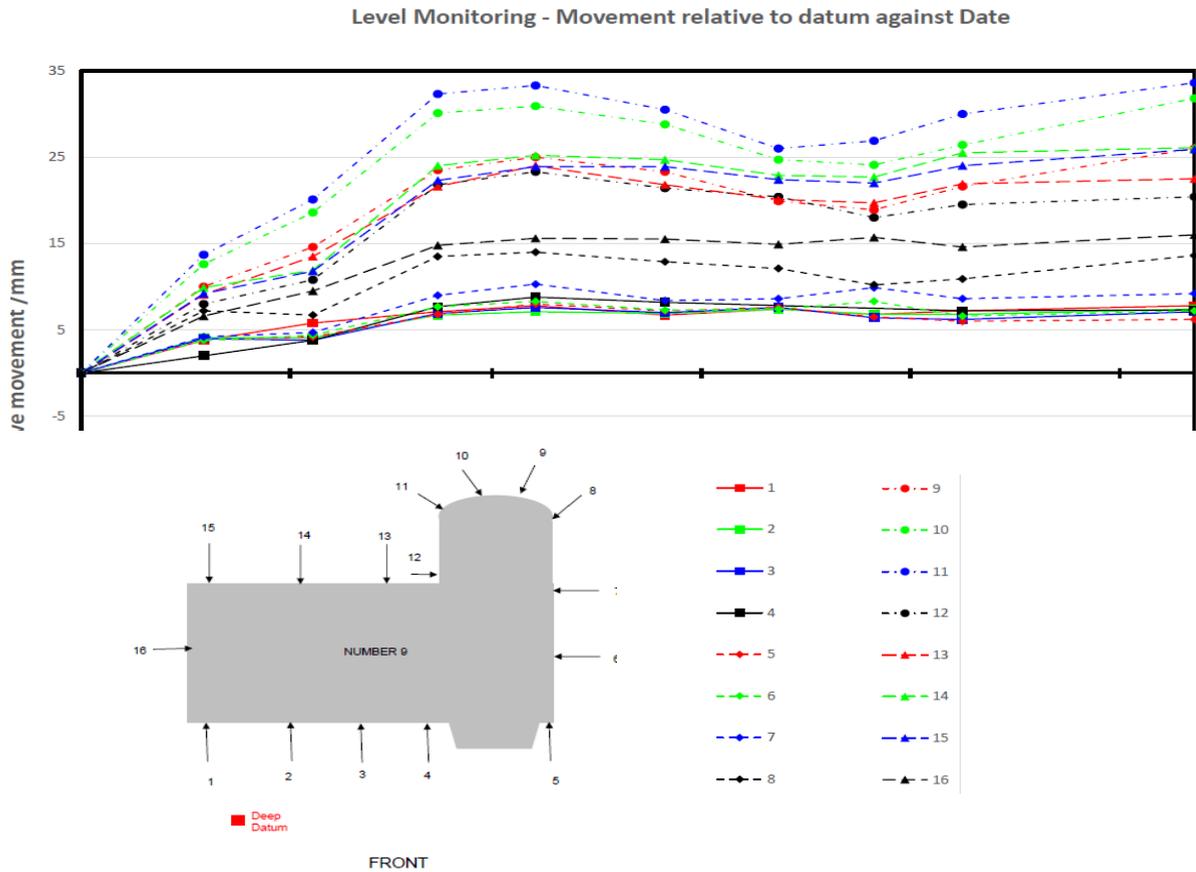
There appears to be very little soil data. What there is indicates the surface soil to have a significant granular content – 17 to 31 % retained on the 425 micron sieve. To comply with NHBC Chapter 4.2, the recorded plasticity index needs to be modified pro-rata to reflect this retention. It doesn't look as though this was done by Auger, the soil testing laboratory, and if so most of their 'medium VCP' assessments are probably wrong. Modified Plasticity Index (PI) is generally less than 20%, actually making the soil 'low' VCP.

The British Geological Survey geology viewer shows the surface soil at the site as 'Cornbrash' with no overlying drift. According to various online searches, Cornbrash is "a term originally applied in Wiltshire to certain stony or brashy soils that are well suited to the growth of cereals. The typical lithology is a brown, fossiliferous non-oolitic, rubbly limestone with abundant shell debris and a marly matrix". Clearly, this description is not consistent with a shrinkable soil.

More importantly, a soil with a 17 to 31% granular content is going to be relatively permeable, so the potential for a 'persistent moisture deficit' is limited. This is borne out by the level monitoring results which show major (> 30 mm) rehydration recovery in the 2018/19 winter followed by minor (c. 5 mm) seasonal changes. I have assumed this is a response to the dry summer of 2018 rather than anything to do with tree management. It is also suspicious that all the points at the front of the property moved equally and there is a suggestion, therefore, that the monitoring datum may have settled by about 6mm during the first winter period. This doesn't have any bearing on the limited scale of the seasonal movements in summer 2019.

TH Trial Hole	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Passing 425mm %	NHBC Chapter 4.2	Remarks
TH1	D	0.85	20	43	20	23	83	MEDIUM VCP	CI Intermediate Plasticity
TH1	D	1.35	19	38	17	21	84	MEDIUM VCP	CI Intermediate Plasticity
TH2	D	1.30	30	67	27	40	73	MEDIUM VCP	CH High Plasticity
TH2	D	1.80	30	61	23	38	69	MEDIUM VCP	CH High Plasticity
TH2	D	2.30	35						
TH2	D	2.80	29	53	26	27	72	MEDIUM VCP	CH High Plasticity

Based on the available evidence, on the face of it adverse 'heave risk' at the site is not something the parties need to worry about unduly. Further, if one tree has already been removed then there is a reasonable expectation that pruning of the retained tree would be sufficient to limit the risk of a recurrence. If subsequent evidence were to arise showing continuing significant movement capable of causing damage i.e. 10mm+, then consideration should be given to either removal of T2 or Hortlink compliant tree reduction coupled with the installation of a root barrier.



Given the above, the following references should be noted:-

1. The 2014 revised Hortlink study concluded that a 50%+ crown volume reduction of a tree coupled with biennial pruning is likely to be sufficient to mitigate the risks of subsidence (Appendix VIII). In this regard, it is worth noting The Court found in the case of *Robbins v Bexley* [2012] that Hortlink compliant management of trees was found to be a reasonable and proportionate response to mitigating subsidence risk. It is also worth noting the initial 4/11/2019 PRI report (Appendix II) recommended that T1 be subject to Hortlink compliant reduction although this appears to have been changed in PRI's subsequent 15/5/20 report.

It should also be borne in mind that a 50%+ crown reduction will have a significant impact on the appearance of T1 and therefore its amenity value will arguably be diminished.

2. The leading recognised authorities such as The Building Research Establishment advise that vertical movement less than 10mm is unlikely to cause damage to traditionally constructed property (Appendix IX). However, we are mindful the damaged property in this case appears to have been constructed in the late 1990's and is therefore likely to have been constructed with cement based mortar making the masonry less able to resist movement without cracking. Notwithstanding this, we consider that vertical movement less than say 6mm is unlikely to cause damage in this case.

QUESTIONS RAISED BY PCC

1. Whether we believe the cause of the damage to be subsidence or heave.

Based on our assessment of the limited soils investigations, it is reasonable to conclude the damage which has occurred to 9 Barnard Way was probably caused by root induced subsidence exacerbated by the exceptional summer of 2018.

We do not believe there is any evidence which shows the damage was caused by heave movement.

2. If this is subsidence, whether you consider a root barrier to be a suitable method of discharging our legal duty to abate the nuisance.

We have not been provided with or aware of any recent evidence which shows, following the removal of T1, that T2 is continuing to cause damage to 9 & 10 Barnard Way.

If there is evidence of continuing significant movement and damage to nearby property, then PCC will have a duty to mitigate any ongoing movement. Therefore, PCC would need to consider one or more of the following:-

- a) Removal of T2 – This would eliminate the risks of any continuing/future damage and claims arising. We note PCC have estimated the costs of such would be in the region of £10,000.00 - £12,000.00 including replacement trees.
- b) Retaining T2 but with PCC meeting the costs of underpinning to any affected properties - Provided the underpinning was constructed properly and effectively, this would minimise the risks of any continuing/future damage and claims arising. We have estimated below the costs of underpinning would in the region of £150000.00 per affected property. It should also be borne in mind that any underpinning works would be arranged by the homeowners and their insurers and thus responsibility for the integrity of underpinning would not be PCC's responsibility. It is also probable that any underpinning would have the benefit of insurance backed independent warranties.
- c) Retaining T2 but with PCC meeting the costs of a root barrier to be constructed in the rear gardens of any affected properties - In our opinion, the efficacy of root barriers is questionable as roots, particularly from large mature trees, are known to grow under and around root barriers. It also has to be borne in mind that any root barrier would be dependent on all affected homeowners agreeing for its contiguous construction which can be disruptive. The costs of a suitable root barrier is likely to be in the region of £30,000.00 per property. The effectiveness of a root barrier will be dependant on its continuity across private land and thus the goodwill of any affected homeowners. In our opinion, the success of root barriers cannot be guaranteed. Nevertheless, a professionally designed and constructed root barrier is likely to be seen as a reasonable and proportionate response to mitigate the risks of continuing/future subsidence.

- d) Retaining T2 but with PCC undertaking a 70% Hortlink compliant management and control of T2 i.e. 70%+ crown volume reduction followed by biennial pruning – This would have a significant impact on the visual appearance of the tree reducing it to a ‘Totem Pole’ and would therefore effectively destroy its amenity value. PCC advise the biennial costs of retaining the tree in this manner would be £1,000.00. Taking into account the low - medium shrinkability of the subsoils and T1 has been removed, the risks of further subsidence movement and damage are likely to be substantially reduced. It should also be borne in mind The Court has found that Hortlink compliant management of trees is considered to be a reasonable and proportionate response to mitigate subsidence risk. PCC is also unlikely to have any liability for damage arising from unforeseen exceptional weather conditions.
- e) Retaining T2 but with PCC undertaking a 40%+ Hortlink compliant management and control of T2 coupled with a suitable root barrier as per C & D above. i.e. 40%+ crown volume reduction followed by biennial pruning and the construction of a root barrier across the rear gardens of all affected properties – This would enable retention of T2 with a reduced impact on its visual appearance but would be dependent on future pruning and the installation of a root barrier as above.

3. If a root barrier were to be used, this would have to be installed within two private gardens. Having considered the root barrier quote dated 21 Feb 2022, do you broadly consider the quote to be a fair and realistic estimate of costs.

Provided access is available at the rear of all affected properties and the owners are prepared to allow appropriate and necessary access mindful of the inevitable disruption and inconvenience that will arise, based on our recent experience costs of around £30,000.00 per property seem to be reasonable. However, the efficacy of a root barrier would also be dependant on it being constructed in a contiguous manner across the land of all affected property.

4. If a root barrier is not a suitable option to discharge our legal duty to abate the nuisance, and the two properties had to be underpinned (should the Oak tree remain), what is your estimation of the likely cost of this (in making such an estimation, you should take into account of the size and nature of the properties in this case, but again the cost estimate should be based on typical costs for cases such as this).

We have noted it has been suggested by the parties representing Mr & Mrs Benton and their insurers that in the event of retention of either or both T1 & T2 necessitating underpinning, the costs of underpinning would be as much as £75,000.00. Although these costs seem appropriate, we are mindful of substantial recent increases in construction costs and would therefore recommend any underpinning costs are more likely to be in the region of £100,000.00 + VAT for each property, i.e. £200,000.00 + VAT. Suitable allowance for temporary accommodation should also be taken into consideration. Overall, the costs of any underpinning works is likely to be in the region of £150,000.00 for each property.

5. Having reviewed all of the material provided, is there any alternative action that could be taken to the above, and if so, the degree to which this would discharge our legal duty to abate the nuisance and any risks you may wish to highlight.

Please see our answers to question 2. above.

CONCLUSIONS

- A. PCC was entitled to consent to the removal of oak T1.
- B. It is arguable whether T2 is actually protected by the TPO.
- C. In the absence of DNA analysis and/or the availability of monitoring undertaken following the removal of T1, it is not possible to conclude that roots from T2 have caused and will continue to cause subsidence to nearby property in Barnard Way.
- D. The foundations of the rear conservatory do not comply with recommended NHBC guidelines and it can be argued the subsidence damage which has occurred was largely inevitable and possibly foreseeable.
- E. It appears the previous subsidence damage was a one-off occurrence during/following the exceptionally hot and dry summer 2018 weather conditions. Given the low – medium shrinkability of the subsoils found at the property and the subsequent removal of oak T1, we believe the risks of significant future subsidence movement in normal UK summer weather conditions is low. This does not however eliminate the possibility of minor cracking damage occurring.
- F. There are no obvious signs of significant underlying residual heave apparent at the site.
- G. We have not been provided with any recent evidence showing that T2 is causing/continues to cause movement and damage to any nearby property at Barnard Way.
- H. We recommend that any decision to remove/retain T2 should be predicated on recent/current evidence of movement and subsidence recorded in the [assumed] ongoing claims at 9 & 10 Barnard Way.

Ian Brett-Pitt

Ian Brett-Pitt MRICS
For and on behalf of BRETT-PITT ASSOCIATES LTD