Arboricultural Consultancy for Lloyds Bank

Note: This report is intended for use between the client, Environmental Services and any parties detailed within the report. It is based on the understanding at the time of visiting the property that Engineers are satisfied that damage is attributable to clay shrinkage subsidence exacerbated by vegetation.

1. Case Details

Insured	Mrs Inger Freeman	Address	8 Brookfield Park, London, NW5 1ER		
Client	Subsidence Management Services	Contact	Kevin Dean	Claim No.	IFS-LBG-SUB-17-0073223
ES Ref	SA-240141	Consultant	Giles Mercer	Contact No.	0330 380 1036
Report Date	23/01/2018				

Scope of Report: To survey the property and determine significant vegetation contributing to subsidence damage, make recommendation for remedial action and assess initial mitigation and recovery prospects. The survey does not make an assessment for decay or hazard evaluation.

2. Property and Damage Description

The insured property is a two storey semi-detached house; a rear single storey extension was built circa 1973. The site is level with no adverse topographical features.

Damage relates to the rear of the subject property. Please refer to the engineers report for a full description of damage.

3. Technical Reports

In preparing our report we have had the benefit of the following technical investigations:

Foundation Detail ☑ Root Analysis ☑ Borehole Log ☑
Engineers Report ☑

4. Action Plan

Mitigation	
Insured involved?	Yes
Local Authority involved?	No
Other third party Mitigation involved?	Yes
Recovery	
Is there a potential recovery action?	Yes

Treeworks	
Local Authority	Camden London Borough
TPO / Conservation Area / Planning Protection Searches	Insured: Conservation Area Adjacent & Adjoining properties: Conservation Area
Additional Comments	
Awaiting Further Instructions. A potential recovery action has been identified. Engineers should consider focusing investigations to strengthen factual evidence for disclosure to third party tree owners.	

5. Technical Synopsis

This report is based upon our understanding at the time of visiting the property that Subsidence Management Services's engineers are satisfied that damage is due to clay shrinkage subsidence exacerbated by vegetation.

Site investigations were carried out by SubsNetUK; a single Trial Pit was excavated at the subject property (please refer to the Site Investigation report for the exact location of the Trial Pit/Borehole).

The Trial Pit (TP) was hand excavated in order to reveal the foundation depth and specification and then a Borehole (BH) were sunk through the base of the Trial Pit in order determine the nature of the subsoil.

The physical characteristics of the soil were logged and in-situ testing was carried out to determine the Shear Strength and/or the Consolidation of the soils.

Soil samples are retrieved during the investigation process and analysed by a UKAS accredited Laboratory (to relevant BS, EN and ISO standards).

Site Investigations indicate that the foundations to the property extend to a depth of 690mm below ground level in TP1.

Foundations are noted to bear onto subsoil described within the borehole log as Clay, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

NHBC chapter 4.2 (2010) categorises the supporting subsoil as being of HIGH plasticity, i.e. capable of significant volumetric change potential in response to moisture content.

Atterberg tests demonstrate that the load bearing capacity of the soil has not been compromised by excessive water content due to leaking drains and is therefore capable of bearing the imposed load.

Moisture content comparison with plastic limit is a reliable indicator of desiccation, whilst moisture depletion at the depths identified are beyond that to which ambient soil drying can be influential and thereby indicate a vegetative influence in the movement/damage.

Site Investigations revealed the presence of roots in Trial Pit/Borehole 1 to a depth of 1800mm; this depth is in excess of foundations which extend to a depth of 690mm.

Samples of these roots were recovered from underside of foundations and throughout the borehole, these roots were identified (using anatomical analysis) as having emanated from the genus Prunus spp. (includes Blackthorn, Cherry, Cherry-laurel, Portuguese laurel, Peach, Plum, and related species).

We have therefore been instructed to advise on the causal vegetation and to deliver management proposals which will ensure on-going stability allowing repairs to be undertaken.

Our survey has identified vegetation within normally accepted influencing distance of the property foundations accordingly the observed damage is potentially as a result of vegetation related clay shrinkage subsidence.

In terms of species profile, size and proximity to the damaged structure the Prunus (T2) is, in our opinion the dominant vegetation proximate to the area of damage, the source of the roots recovered and accordingly we have identified it as the principal cause of the observed damage.

However, whilst not positively implicated, T5 (Fig) cannot be discounted as contributing to the overall level of soil drying proximate to the area of damage and is therefore also considered to retain a contributory influence, albeit in a secondary capacity when compared to T2.

The influence of the above vegetation is determined by the size and proximity of the tree relative to the area of damage, whilst also taking into account species profile and site topography.; it is our opinion on balance of probability that roots from the above vegetation will be in proximity to the footings of the insured property.

T5 (Fig) is therefore also judged to be a significant, albeit secondary factor in the current movement/damage,

Considering engineers conclusions, results of site investigations and our observations on site, vegetation management is considered appropriate with a view to restoring stability.

Please refer to Section 6 for management prescriptions.

In order to mitigate the current damage and allow soils beneath the property to recover to a position such that an effective engineering repair solution can be implemented we recommend a program of management as listed by this report.

Vegetation management in the form of removal and appropriate stump treatment will help to promote the restoration of long-term stability to the insured property; pruning should not be considered as representing an effective or reliable long-term alternative solution given the size and proximity of the vegetation.

Pruning is generally ineffective and in the context of the current claim we consider the above vegetation is simply too large and/or close for pruning to be effective.

Removal of T2 and T5 will offer the most certain and reliable arboricultural solution likely to restore long-term stability.

Please note; T5 has very recently been subject to robust crown reduction works; the extent of this work is likely to accord with the parameters recommended by published research and consequently a meaningful reduction in soil drying should be expected.

It seems inevitable that the owner will require sufficient time to fully assess the efficacy of the recent works and as such we would advise that T2 is removed promptly and the property is monitored.

Where movement persists, then pruning can be confirmed as ineffectual and full removal pursued; our management advice assumes movement persists.

Replacement planting is considered appropriate however due consideration must be given to the ultimate size of the replacement and future management requirements. Species selection should be appropriate for the chosen site and ultimate tree height should not exceed 75% of the available distance to built structures.

We recommend the efficacy of the management recommendations be qualified by means of further monitoring to confirm stability.

Please note that the footing of the insured property fall within the anticipated rooting distance of additional vegetation which we believe presents a foreseeable risk of future damage and accordingly we have made recommendations in respect of this.

Extensive tree felling would be necessary to fully mitigate the potential risk associated with this vegetation; it is unlikely that such significant levels of tree felling would be acceptable to the tree owner and based on current circumstances such an approach is considered disproportionate.

Given the nature of the vegetation on site, future risk could be reduced (although not fully eliminated and this should be accepted by all parties) by means of applying a variety of management techniques such as selective removals and replacement planting with lower water demanding species, coppicing, pollarding and/or periodic crown reduction works.

We would advise the owners review and adopt appropriate action to mitigate future subsidence risk to the subject property.

The extent of vegetation management required to restore and maintain long-term stability at this property is high and its impact acknowledged. However, we consider the impact on the wider public amenity from the proposed tree works is mitigated by the presence of further trees and the scope for replacement planting.

Is vegetation likely to be a contributory factor in the current damage?	Yes
Is vegetation management likely to contribute to the future stability of the property?	Yes
Is replacement planting considered appropriate?	See Above
Would DNA profiling be of assistance in this case?	No

6.0 Recommendations

6.1 Current Claim Requirements

These recommendations may be subject to review following additional site investigations.

Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
T2	Prunus	1	9.6	4.6	C - Insured	Remove	Remove close to ground level; do not treat stump due to translocation risk. Where such a risk exists, we advise that any emergent regrowth is removed annually.
T5	Fig	1	3.4	4.7	A - Third Party 6 Brookfield Park London NW5 1ER	Remove	Remove close to ground level and treat stump to inhibit regrowth.
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

* Estimated

6.2 Future Risk Recommendations

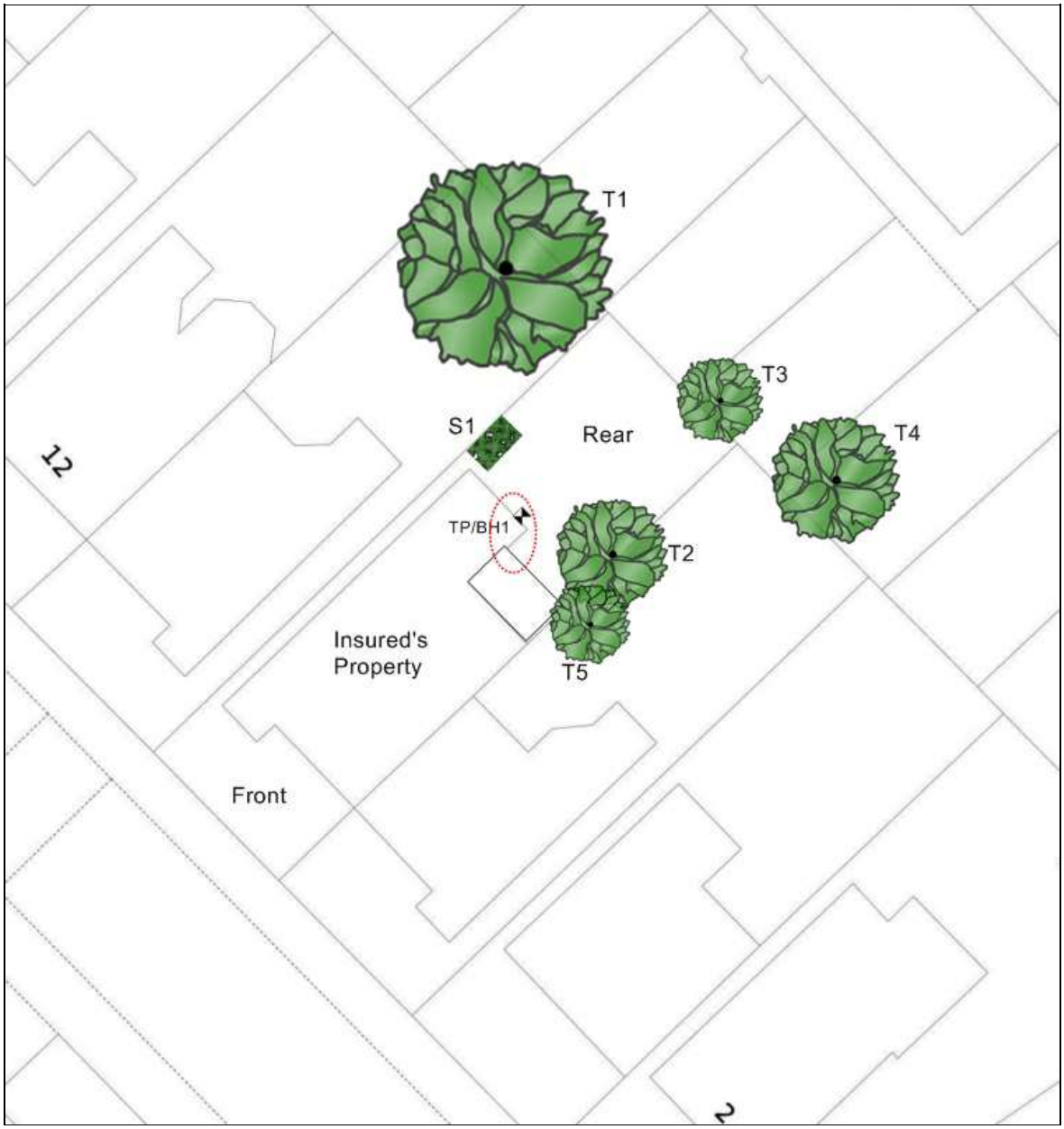
These recommendations may be subject to review following additional site investigations.

Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
S1	Laurel	1	2	1.1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T1	Walnut	2	22	10.6	A - Third Party 10 Brookfield Park London NW5 1ER	Action to avoid future risk	Crown reduce by 3m – 4m all around and maintain at reduced dimensions by way of regular re-pruning (3-year max).
T3	Yew	1	8.2	11.3	D - Unknown	No action	No works.
T4	Ash	1	18.5	14.8	D - Unknown	Action to avoid future risk	Crown reduce by 3m – 4m all around and maintain at reduced dimensions by way of regular re-pruning (3-year max).
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

* Estimated

Third party property addresses should be treated as indicative only, should precise detail be required then Environmental Services can undertake Land Registry Searches

7. Site Plan



Please note that this plan is not to scale. OS Licence No. 100043218

8. Photographs

S1 & T1

S1 & T1

T3

T4

Arboricultural Consultancy for Lloyds Bank

T2

T2 & T5

T5

Front of property

Date: 23/01/2018 Property: 8 Brookfield Park, London, NW5 1ER

9. Tree Works Reserve - Does not include recommendations for future risk.

Insured Property Tree Works	£720.00
Third Party Tree Works	£525.00
Provisional Sum	£0.00

- The above prices are based on works being performed as separate operations.
- The above is a reserve estimate only.
- Ownerships are assumed to be correct and as per Section 6.
- A fixed charge is made for Tree Preservation Order/Conservation Area searches unless charged by the Local Authority in which case it is cost plus 25%.
- Should tree works be prevented due to statutory protection then we will automatically proceed to seek consent for the works and Appeal to the Secretary of State if appropriate.
- All prices will be subject to V.A.T., which will be charged at the rate applying when the invoice is raised.
- Trees are removed as near as possible to ground level, stump and associated roots are not removed or included in the price.
- Where chemical application is made to stumps it cannot always be guaranteed that this will prevent future regrowth. Should this occur we would be pleased to provide advice to the insured on the best course of action available to them at that time. Where there is a risk to other trees of the same species due to root fusion, chemical control may not be appropriate.

10. Limitations

This report is an appraisal of vegetation influence on the property and is made on the understanding that that engineers suspect or have confirmed that vegetation is contributing to clay shrinkage subsidence, which is impacting upon the building. Recommendations for remedial tree works and future management are made to meet the primary objective of assisting in the restoration of stability to the property. In achieving this, it should be appreciated that recommendations may in some cases be contrary to best Arboricultural practice for tree pruning/management and is a necessary compromise between competing objectives.

Following tree surgery we recommended that the building be monitored to establish the effectiveness of the works in restoring stability.

The influence of trees on soils and building is dynamic and vegetation in close proximity to vulnerable structure should be inspected annually.

The statutory tree protection status as notified by the Local Authority was correct at the time of reporting. It should be noted however that this may be subject to change and we therefore advise that further checks with the Local Authority MUST be carried out prior to implementation of any tree works. Failure to do so can result in fines in excess of £20,000.

Our flagging of a possible recovery action is based on a broad approach that assume all third parties with vegetation contributing to the current claim have the potential for a recovery action (including domestic third parties). This way opportunities do not “fall through the net”; it is understood that domestic third parties with no prior knowledge may be difficult to recover against but that decision will be fully determined by the client.

A legal Duty of Care requires that all works specified in this report should be performed by qualified, arboricultural contractors who have been competency tested to determine their suitability for such works in line with Health & Safety Executive Guidelines. Additionally all works should be carried out according to British Standard 3998:2010 *“Tree Work. Recommendations”*.