Arboricultural Report

Detailed Tree Inspection

Client:	Fernando Martins
Site:	15 Woburn Square London WC1H 0NS
Report Produced by:	Alan Elderton BSc (Hons) Managing Arboricultural Consultant
Contractor Address:	Salcey Group Ltd Unit 2 Silverstone Business Park Shacks Barn Farm Nr Silverstone Northamptonshire NN12 8TB
Enclosed:	Tree Condition Survey Tree Data Table Site Plan
Job No.	36834
Inspection Date:	15th December 2016

Contents

1. Executive Summary

1.1 Cracks on an internal wall inside 15 Woburn Square appear to be emanating from the location of a tree located adjacent to the property.

1.2 The location and direction of the cracks associated with the position and age of the tree suggest the roots are the cause of the structural damages.

1.3 Although the tree is a prominent arboricultural landscape feature, it is advisable the tree is removed to eliminate the risk of future damage of roots pushing directly against the wall of the building.

2. Brief

2.1 Salcey Group Ltd has been instructed to determine if cracks within the masonry on a wall, on the lower ground floor are the result of a tree in close proximity to the property. In addition to this, the inspection is to define if the tree is likely to cause future damage both above and below ground and to outline a suitable removal strategy causing minimal soil movement.

3. Report Objectives

3.1 The objectives of the report are as follows:

- To assess the health and condition of the tree via a ground level Visual Tree Assessment (VTA).
- Identify and prioritise any maintenance works which might be necessary to remove risk to public safety and property.
- Identify if the tree and/or its roots have caused the observable internal cracks and compromised the future structural stability of the property.

4. Report Constraints

4.1 The assessments of tree health that were carried out and reported are a snapshot of health and condition at the time of the assessment. They represent observations

made following an external assessment of symptoms from ground level, no invasive tools or machines will have been used during the assessment.

4.2 Trees are living organisms and their condition may have changed on completion of the site visit for a variety of reasons, including but not limited to:

- as a natural consequence of their pattern of growth, and/or
- in response to the changes in neighbouring plants or manmade infrastructure, from whatever cause, and/or
- in response to the weather, either an extreme weather event or a prolonged spell of consistent weather, and/or
- as a consequence of infection or infestation, and/or
- as a consequence of a pollution incident, and/or
- in response to changes in soil condition or structure

4.3 The conclusions, and any recommendations following from those stated within this report, relate to the conditions found at the time of the assessment. The conclusions are valid for a period of no more than six months from the date that the site was surveyed, or

- until such time as any work is carried out at the site, either in accordance with the remedial action prescribed or for other reasons which may be outside the authors control such as those stated in section 4.2, or
- until the site is re-surveyed, whichever is the sooner

5. Legal

5.1 For the purposes of this report it has not been confirmed if the surveyed tree is subject to a Tree Preservation Order or if the site falls within a Conservation Area. Before any recommended works are undertaken, checks for the stated orders must be carried out with the Local Planning Authority.

6. Methodology

6.1. All observations were from ground level without invasive investigations. Measurements were taken using a diameter tape, digital clinometer and laser

measure. Where this was not possible or reasonably practical, measurements have been estimated by eye.

7. Site Visit

7.1 Alan Elderton, Managing Arboricultural Consultant who holds the formal qualifications BSc (Hons) Arboriculture and the LANTRA Professional Tree Inspection, undertook the data collection and assessment of the trees on site.

8. Non Arboricultural Comments

8.1 The data collected and advice provided within this report is supplied in the interests of sound arboricultural management. As such it should be clearly understood that Salcey Group Ltd are arboricultural experts, and therefore not qualified to provide detailed comment on structural or geotechnical matters. In the event that the advice received does not allow the evaluation of the risks for the relevant purposes, then it is strongly advised that a structural or geotechnical expert is contacted for further comment on buildings or soils.

9. Visual Observations and Discussion

These comments should be read in conjunction with the site plan and tree data table where a full list of observations of individual trees can be found. This section provides a more comprehensive analysis of trees with visible concerns that require remedial works or features that merit explaining in greater detail. Details of the data collected are as follows:

9.1 As stated in the structural report dated the 20th December 2016, the cracks appear to stem from a similar position to that of the external ground level. Associated to this, shown in Figure 1, the cracks on the wall are emanating from the precise location where the tree is located in the courtyard, 610mm from the external wall.

Figure 1: Damage to masonry in close proximity to tree located in court yard

9.2 With regards to the external ground level and the trees proximity of the wall, the cracks are stemming from an area where the tree will have produced its primary support and anchorage roots. These are the larger woody roots within the rooting framework, capable of causing the damage seen in figure 1.

9.3 Shown in figure 2 and 3, roots are growing directly towards the property and causing the soil to heave, indicating the presence of large roots within the immediate area of the damaged wall. Due to this observable root formation, it is likely the damage seen in figure 1 is the result of physical contact between the roots and the wall.

9.4 Above ground, the tree is displaying healthy looking vitality, typical of species and age. It is currently early mature in age with approximately 20 to 25 years of life remaining with notable height and width growth potential. The soil volume available to the tree is capable of supporting consistent growth for the stated duration of time.

Figure 2: Soil heave indicating presence of large roots

Figure 3: Root growing directly toward damaged area of wall

9.5 In addition to interpretations of above ground features, during the time of inspection the tree appeared in good structural condition. Seen in figure D Appendix 3, no physical defects were observed that would result in branch of stem failure to risk causing property damage without significantly strong or prolonged weather conditions.

9.6 Noted within the Geotechnical Interpretive Report dated June 2017, elements of shrinkable clay soils were identified within the soil structure in which the tree is situated. Although clay is a significant contributing factor with regards to arboricultural related property damages, the position of the roots (seen in figures 2, 3, A, C and E) are considerably more likely to be the cause of the damages.

10. Conclusion

10.1 There is sufficient observable evidence to suggest the damage to the property is the result of direct contact between the wall and the roots and of the Sycamore tree located in the court yard (Tree 1, Appendix 2).

10.2 As stated in section 9.4, the tree has 20 to 25 years of growth potential. If the roots are causing the issue as suspected, the damage will continue to worsen. For this reason, it is advisable the tree is removed to ground level and the stump chemically treated.

10.3 When the tree is felled, the roots will cease to increase in size, thus the pattern of the damage will not continue as it has done to date. As the roots decay however, pressure applied to the wall through the roots will weaken and will eventually disappear over a number of years, resulting in a rapid collapse in soil structure. Conversely to this, water abortion will stop, potentially causing heave in the soil, applying pressure to the wall.

10.4 To alleviate the risk of sudden, unpredictable soil movement, it is advisable the tree is removed in stages to slow the process of forces exerted on the wall. This course of action will additionally facilitate internal structural inspections to assess the condition of the wall.

11. Recommendations

The priority ratings for the recommended works are determined by several factors; namely the condition of the tree, the likelihood of any parts failing, the size of the parts that may fail and the target that the parts may affect. To alleviate the identified safety concerns, recommended works are prioritised as follows;

Urgent	-	Urgent works to be undertaken within 30 days from submission of this report or sooner if stated
Priority 1	-	Works to be completed within 6 months
Priority 2	-	Works to be completed within 6 to 12 months
Priority 3	-	Works to be completed within 12 to 24 months

11.1 Where necessary, higher priority and technical remedial works are explained in greater detail within this section. A full list of recommendations can additionally be found in the attached Tree Data Table (Appendix 1). Recommendations are as follows;

11.2 The following works should be undertaken as a **Priority 2:**

The tree is to be removed to ground level and the stump chemically treated according to the following stages. All works are to be undertaken whilst the tree is dormant (during winter and autumn months):

Stage 1 – Reduce tree to 10 metres in height, equivalent to a 50% reduction of the overall trees height.

Stage 2 - After 2 growing seasons of completion of stage 1, (2 years) remove the tree to ground level and chemically treat stump to prevent any regrowth.

12. Glossary of Terms

Target

For the purpose of this report the term target is used as defined in British Standard 3998:2010 Tree Work Recommendations. A target is a person or object, whether mobile or fixed, within the potential zone of impact of a tree or its branches, which might be harmed as a result of the partial or total failure of the tree.

Anchorage Roots

The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree.

Root Plate

That part of the root system (excluding the small outermost roots) needed to keep a tree wind firm.

Signed

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13. Appendices

Appendix	**1**	Tree Data Table
Appendix	**2**	Site Plan
Appendix	**3**	Photographs

Appendix 1

Tree Data Table

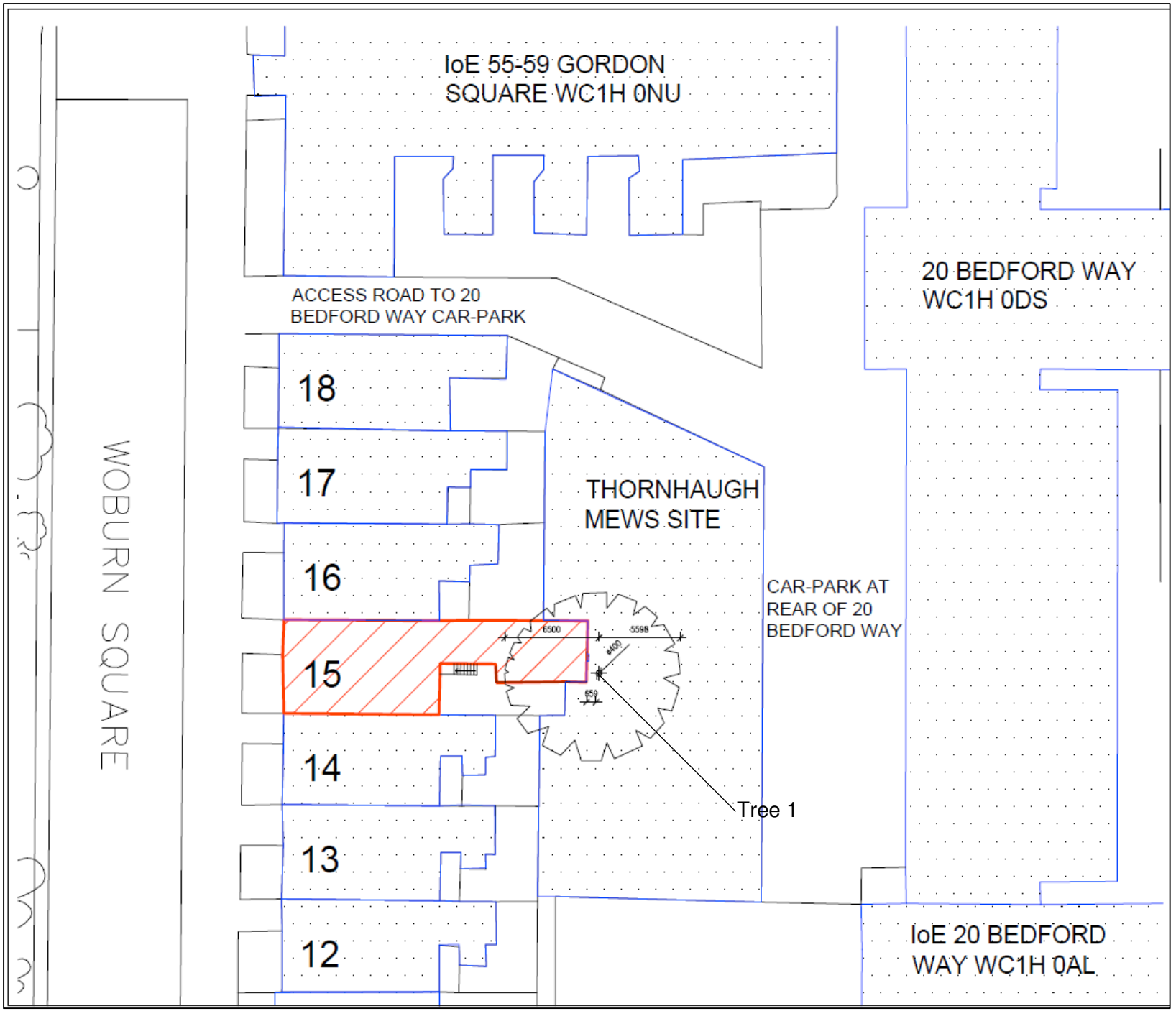
Tree Data Table – Tree Condition Survey					**Site: 15 Woburn Square, London**					
Tree / Group No.	*Species* (Common name)	Height (m)	DBH (mm)	Age Class	Physiological Condition	Structural Condition	Observations	Recommendations	Re-inspect	Works Priority
1	*Acer pseudoplatanus* (Sycamore)	19	490	Middle aged	Normal	Normal	**Non Arboricultural Observations:** Cracks on inside of building emanating from location of tree. No visible damage to external wall emanating from tree. Buttress roots pushing against bricks in direct contact with subject wall. **Arboricultural Observations:** Buttress roots occluding bricks on south west facing side of stem. Historically crown raised to approximately 3 to 4 metres form ground level Co-dominant at 8 metres from ground level, no visible defects in branch union. No significant visible defects.	Reduce the tree to ground level according to the following stages during winter or autumn months: **Stage 1 –** Reduce tree to 10 metres in height, equivalent to a 50% reduction of the overall trees height. **Stage 2 -** After 2 growing seasons of completion of stage 1, (2 years) remove the tree to ground level and chemically treat stump to prevent any regrowth.	2 years	2

Tree Data Table Key:

Height	Measured with the use of a clinometer from ground level and shown in metres.	
DBH	**Diameter at Breast Height –** Stem diameter measured at 1.5 metres from ground level.	
Crown Spread	Measured in metres at four cardinal points.	
Age Class	**NP**	**Newly Planted** – Tree still requires additional support to prevent from failing.
	Y	**Young -** Within the first third of life expectancy for species.
	MA	**Middle Aged -** Within the second third of life expectancy for species.
	M	**Mature -** Within the last third of life expectancy for species.
	OM	**Over Mature –** Beyond the normal life expectancy for species and showing signs of natural decline.
	V	**Veteran -** An age that is old relative to others of the same species with extensive decay or hollowing of central wood. Additionally, the tree possesses exceptional cultural, landscape and/or nature conservation value.
Physiological Condition	**N**	**Normal -** Free from fungal, bacteria and insect infection/infestation and showing normal vitality and ability to resist pathogens, typical of species
	F	**Fair -** Showing low vitality that is reversible and/or the early presence of fungal or bacterial infection.
	P	**Poor -** Tree in irreversible decline due to fungal, bacteria and/or insect infections or infestation.
Structural Condition	**N**	**Normal –** A form typical of species and age, free from significant structural defects, I.e. broken, torn, cracked and/or included branches
	F	**Fair -** Showing significant defects that can be remediated by the removal or reduction of damaged branches
	P	**Poor -** Showing significant structural defects that require substantial works or removal
Work Priority	**U**	**Urgent -** Recommended works should be undertaken within 30 days or sooner if stated.
	1	**1 -** Recommended works should be carried out within 6 months
	2	**2 -** Recommended works should be carried out within 12 months
	3	**3 -** Recommended works should be carried out within 12 to 24 months
	N/A	**N/A** - Not Applicable (No works required at present)
Specific Defect Terms key:		
Significant deadwood	Dead branch or branches greater in length than 1 metre in length and 50mm in diameter.	
Insignificant deadwood	Dead branch or branches less than 1 metre in length and smaller than 50mm in diameter.	
Defect location measurements	Location of defect given in metres and detailed in relation to centre of main stem at ground level.	

Appendix 2

Site Plan



SALCEY GROUP

Client:
Fernando Martins

Site:
15 Woburn Square
London
WC1H 0NS

Key:

O - **Tree**

North:

Appendix 3

Photographs

Figure A: Tree in close proximity to property pushing bricks towards wall

Figure B: Internal damage to wall within property

Figure C: Bricks being pushed towards wall

Figure D: Healthy looking vitality displayed by crown

Figure E: Buttress root occluding adjacent brick and pushing towards property