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Trading as Central London Tree Surveys

78 Malden Road, London, NW5 4DA

Arboricultural Report, Tree Constraints Plan & Arboricultural Impact Assessment

Surveyor: John Crawshaw M.Arbor.A.

Survey Date: 4th July 2018

Report Date: 6th July 2018

Contents

1. Introduction

1.1. Brief

I am instructed by, **Mr Jorge Giraldo** of **Projection Architects** to inspect the trees at **78 Malden Road, London, NW5 4DA** and to provide an arboricultural report for the trees located, as shown on the Tree Constraints Plan enclosed and to provide an impact assessment against the proposals.

1.2. Qualifications and experience

I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience and qualifications. RFS Cert Arb. M. Arbor A

1.3. Documents and information provided

I was provided with topographical and proposal plans.

1.4. Scope of this report

This report is only concerned with the trees shown on the enclosed plan. Trees with a diameter of less than 75mm and shrub species have not been surveyed in line with BS5837 2012.

1.5. Limitations of use and copyright

2. Site Visit/Observations & Data Collection

2.1. Site visit

I carried out the tree survey on 4th July 2018 my observations were from ground level only.

2.2. Site description

The survey site is situated within the from and rear gardens area of the property.

2.3 Identification and location of the trees

The trees have been identified and are listed within the Tree Survey Schedule. I have plotted the locations of the trees on the plan included. All the relevant information on it is contained within this report and the provided documents. Only the significant trees are included in this report; trees with a diameter of less than 75mm (BS5837 2012) are not included unless their position was felt to be significant. All trees have been allocated a classification. The classification cascade chart can be found below.

2.4. Tree observation. I visually inspected the trees and recorded the information below. Each tree has been given a classification relevant to BS5837 2012.

CASCADE CHART FOR TREE QUALITY ASSESSMENT (from British Standard 5837:2012 "Trees in Relation to Design, demolition and Construction")

TREES FOR REMOVAL		
Category and Definition	**Criteria**	**Identification on Plan**
Category U **Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years**	➢ **Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other U category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning).** ➢ **Trees that are dead or are showing signs of significant, immediate and irreversible overall decline.** ➢ **Trees infected with pathogens of significance to the health and/or safety of other trees nearby), or very low quality trees suppressing adjacent trees of better quality.** **NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7**	**DARK RED**

TREES TO BE CONSIDERED FOR RETENTION				
Category and Definition	**Criteria - Subcategories**			**Identification on Plan**
	1. Mainly Arboricultural Qualities	**2. Mainly Landscape Qualities**	**3. Mainly Cultural Values, including Conservation**	
Category A **Those of high quality with a estimated remaining life expectancy of at least 40 years**	**Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).**	**Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features**	**Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).**	**LIGHT GREEN**
Category B **Those of moderate quality with a estimated remaining life expectancy of at least 20 years**	**Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of unsympathetic past management and storm damage) such that they are unlikely to be suitable for retention for beyond 40 years; or lacking the merit for Category A**	**Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality**	**Trees with clearly identifiable conservation or other cultural benefits.**	**MID BLUE**
Category C **Those of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.**	**Unremarkable trees of very limited** **merit or such impaired condition that** **they do not qualify in higher categories**	**Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only** **temporary/transient landscape benefits**	**Trees with very limited conservation or other cultural benefits.**	**GREY**

2.4.1. Tree Survey Schedule

ID	Species	H/T	Stems	Dia mm	Canopy N	E	S	W	First Branch	Crown H/T	Age	Yrs	Cat	Observations	Recommendations	RPA (r)	RPA (a)
T1	Lime	15	S	550	4	4	4	4	6N	5	Early Mature	40+	A	Good overall condition, historic pollard, canopy in good condition, close to boundary wall. Within neighbouring property	Maintain management regime	6.6	136.8
T2	Cherry	12	S	250	3	3	2	3	5E	5	Mature	30	B	Good overall condition, within neighbouring property	None	3	28.3
T3	Elder	4	M	150	2.5	2.5	3	3	.5S	0.5	Early Mature	40	C	Low quality tree within property	None	1.5	7.1
T4	Cherry	6	M	100	1	1	1	1	2S	1	Young	10	C	Poor quality specimen, included stems and very close to boundary wall	Monitor/possible removal	1	3.1
T5	Norway Maple	12	S	425	4	3	5	5	4S	4	Mature	40+	A	Good overall condition, Street tree	None	5.1	81.7
T6	Swedish Whitebeam	10	S	400	2.5	3	2.5	2.5	3E	3	Mature	40+	B	Good overall condition, Street tree	None	4.8	72.4

2.4.2. Glossary of Terms

ID: Identification on position plan

Name: Common species name

H/T: Current tree height

Stems: Single or Multiple stems

Dia: Diameter of stem at 1.5m above ground (mm)

Canopy: Canopy measurements N,E,S & W

Crown Height: Height of lowest part of crown

First Branch: Height and direction of first branch

Age: Current age

Yrs: Approximate years of life remaining

Cat: Category of importance in line with current British Standards

Obs: Observations

Recs: Recommendations

RPA (r): Root protection area (approximate area of roots Radius of circle)

RPA (a): Root protection area (approximate area of roots Area of circle)

2.4.3. Tree Survey Methodology

Trees, tree groups and woodlands have been considered following evaluation into one of four categories (U, A, B, C) based on tree quality as outlined in British Standard 5837 (2012) which has been followed. Categorisation of trees, following the British Standard, gives an indication as to the trees' importance in relation to the site and the local landscape and also, the overall

value and quality of the existing tree stock on site. This allows for informed decisions to be made concerning which trees should be removed or retained, should development occur.

For a tree to qualify under any given category it should fall within the scope of that category's definition. In the categories A, B, C which collectively deal with trees that should be a material consideration in the development process, there are three sub-categories which are intended to reflect arboricultural, landscape and cultural values respectively. Category U trees are those which would be lost in the short-term for reasons connected with their poor physiological or structural condition. They are, for this reason, not usually considered in the planning process.

In assigning trees to the A, B or C categories the presence of any serious disease or tree related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.

Category (A) – trees whose retention is most desirable and is of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (a minimum of 40 years) and may comprise:

- Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups); and
- Trees or groups or woodlands of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

Category (B) – are trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution (a minimum of 20 years) and may comprise:

- Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site; and
- Trees with clearly identifiable conservation or other cultural benefits.

Category (C) – are trees that could be retained and are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150mm and may comprise:

- Trees not qualifying in higher categories;

- Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit; and
- Trees with very limited conservation or other cultural benefits.

Category (U) – trees for removal are those trees in such a condition that any existing value would be lost within 10 years and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:

- Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees;
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; and
- Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low quality trees suppressing adjacent trees of better quality.

Species has been recorded by common name and recorded as such in the Arboricultural Data schedule. Height has been estimated in meter and stem diameters have been measured at 1.5 metres above ground level and recorded in millimetres. Crown spreads have been measured in half meters and taken to the point of greatest spread unless the crown has presented a pronounced asymmetrical form and therefore measurements have been taken for the four cardinal points. The measurements have always been considered in the following sequence, North, East, South, and West, and therefore appear as such within the Arboricultural Data Tables.

In the assessment particular consideration has been given to the following when deciding the most appropriate British Standard Category and Sub-Category allocation:

a. the health, vigour and condition of each tree;

b. the presence of any structural defects in each tree and its life expectancy;

c. the size and form of each tree and its suitability within the context of the proposed scheme; and

d. the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

Age class is assessed according to the age class categories referred to in BS 5837.

1. Y: Young trees up to five years of age;
2. SM: Semi-mature, trees less than 1/3 life expectancy;
3. EM: Early mature, trees 1/3 – 2/3 life expectancy;
4. M: Mature trees over 2/3 life expectancy;
5. OM: Over mature – declining or moribund trees of low vigour; and
6. V: Veteran - Characteristics have been noted where a tree exhibits certain characteristic features of veteran trees.

Major defects or diseases and relevant observations have also been recorded under Structural Condition. The assessment for structural condition has included inspection of the following defects:

1. The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay;
2. Soil cracks and any heaving of the soil around the base indicating possible root plate movement;
3. Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay;
4. Tight or weak 'V' shaped unions and co-dominant stems;
5. Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994);
6. Cavities as a result of limb losses or previous pruning;
7. Broken branches;
8. Storm damage;
9. Canker formations;
10. Loose bark;
11. Damage to roots;
12. Basal, stem or branch / limb cavities;
13. Crown die-back;
14. Abnormal foliage size and colour;
15. Any changes to the timing of normal leaf flush and leaf fall patterns; and
16. Other pathological diseases affecting any part of the tree.
17. Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:
18. Twigs and small branch material up to 5cm in diameter;
19. Minor dead wood 5cm to 10cm in diameter; and
20. Major dead wood 10cm in diameter and above.

The survey was completed from ground level only, aerial inspection of trees was not undertaken. Investigations as to the internal condition of a tree have not been undertaken. Further investigations of this type can be made and have been recommended where it has been considered necessary, within the report although these investigations are beyond the scope of this report.

Evaluation of the trees condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

The individual positions of trees and groups of trees recorded in the Arboricultural Data Tables have been shown on the Tree Constraints Plan, in Appendix 2.0. The positions of trees are based on a topographical / land survey supplied by the development and client in dwg. format for the purpose of plotting the trees.

The Root Protection Areas (RPA) to be required by the individual and groups of trees are indicated by the Tree Constraints element of the above plans. The Root Protection Areas are formulated as described below.

Below ground constraints to future development is represented by the area surrounding the tree that contains sufficient rooting volume to ensure survival of the tree, which need protecting in order for the tree to be incorporated into any future scheme, without adverse harm to the tree or structural integrity of buildings. This is referred to as the RPA and is shown as a circle of a given radius.

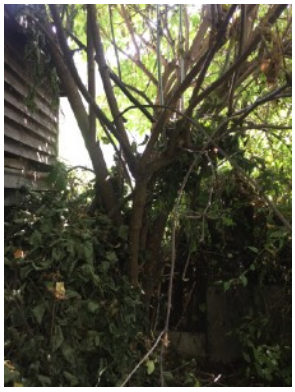
The circle may be modified in shape to maintain a similar total area depending on the presence of surrounding obstacles. Where groups of trees have been assessed, the RPA has been shown based on the maximum sized tree in any one group and so would automatically exceed the RPA's required for many of the individual specimens within the group. A RPA is equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising less than 1.5 meters above ground level.

3. Photographs

T's 1 & 2

T1 & T3 & undergrowth

T1 main stem



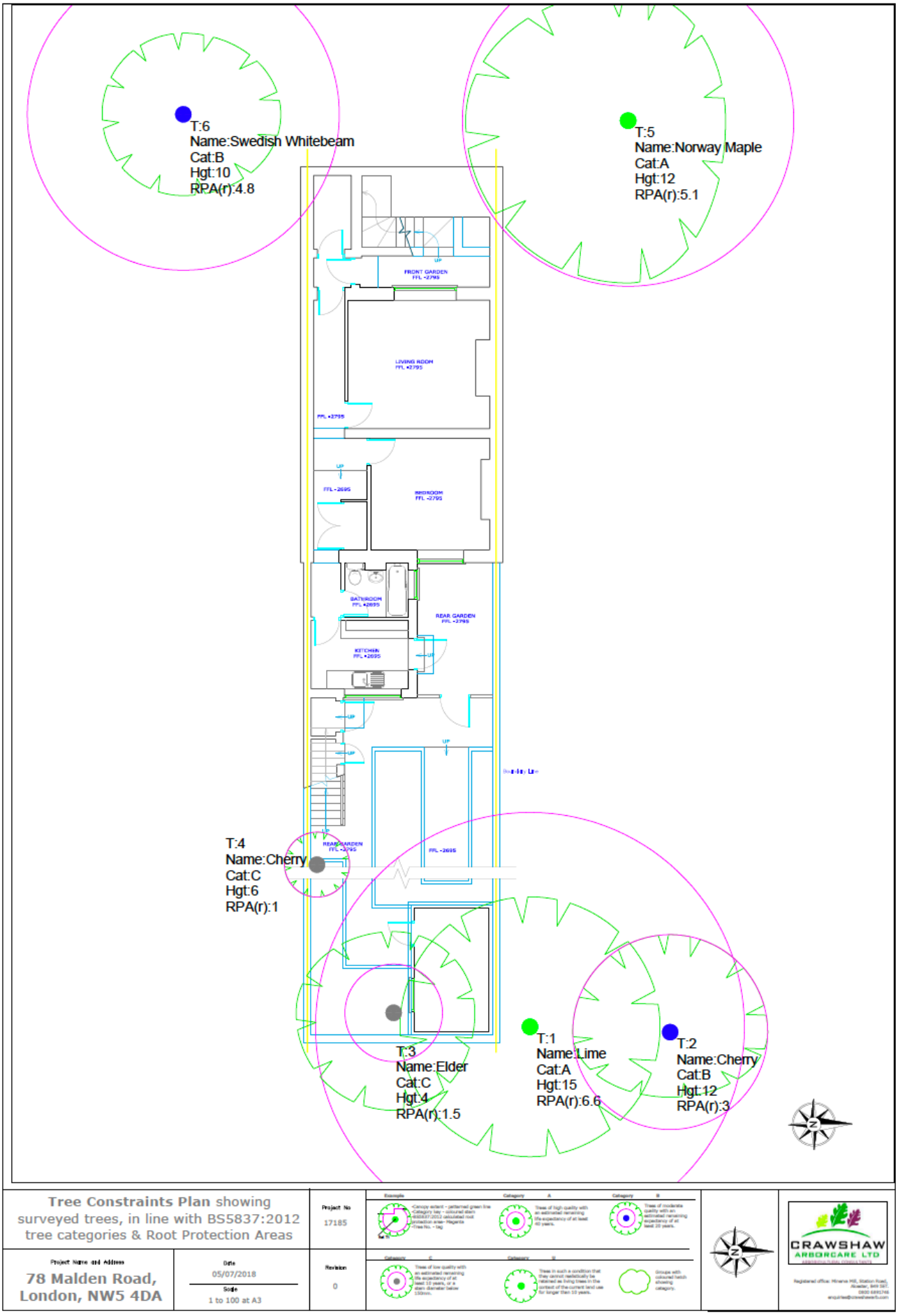
T3 Elder

T4 Cherry with included stems

T's 5 & 6 Street trees

4. Tree Constraints Plan

Plan below not to scale as PDF. Please refer to original drawing for scaling



5. Impact Assessment

5.1 Proposals

The proposals are to refurbish the interior of the property and to replace the existing timber shed with a timber office as shown on the Impact Plan below.

5.2 Assessment

The internal refurbishment of the property will have no impact upon the trees within the garden and the street.

There is an existing large timber structure within the rear garden and is laid on paving slabs and sub-base.

The new timber structure would be turned at 90 degrees to the existing and run along the entire rear boundary

T3 Cat C and other undergrowth would have to be removed to facilitate the new structure.

T4 Cat C could also be removed due to structural issues and facilitate soft landscaping/ improvements. Mitigation planting could be accommodated within the scheme.

T2 would be unaffected.

T3 is very close to the boundary and the new structure would be situated largely within the RPA. The existing structure is situated within the RPA and some excavation has obviously taken place to accommodate this. The garden containing T1 appears to be slightly lower than the proposed garden and it maybe that the roots from T1 are low in the soil structure as a result.

Depending on the depth of the new proposed footings, a small excavation may be possible without damaging any significant roots. Further investigation is recommended to establish:-

- Existing footing depth
- Proposed footing depth
- Depth of significant roots (above 25mm dia) from T1

5.3 Impact Assessment Plan

Plan below not to scale as PDF. Please refer to original drawing for scaling

6. Conclusions

Trees categorised, as U should be considered for felling for Safety reasons or limited life expectancy and/or potential future problems. Category C trees should be considered on their merit and could be removed to facilitate the development. Trees categorised as B should be retained where possible, with regard to incorporating them into the new scheme. Category A trees should be conserved and protected by incorporation into any proposed scheme. Attention should be drawn to the Root Protection Areas depicted in Magenta for all retained trees (See Tree Constraints Plan).
Light and shade should be taking into consideration with any development proposals as should foundation type and position to any RPA's.

2x Cat C trees are suitable for removal with no significant loss to local amenity value.

T2 will be unaffected

T1 should have further investigation to establish root depth and possibility of shallow excavation for new footing.

Pile and floating beam footings could also be considered to avoid excavation within the RPA if significant roots are discovered near the surface.

7. Recommendations

At least 3 trial holes should be dug by hand within the location of the proposed structure to establish root depth and potential impact from excavation.

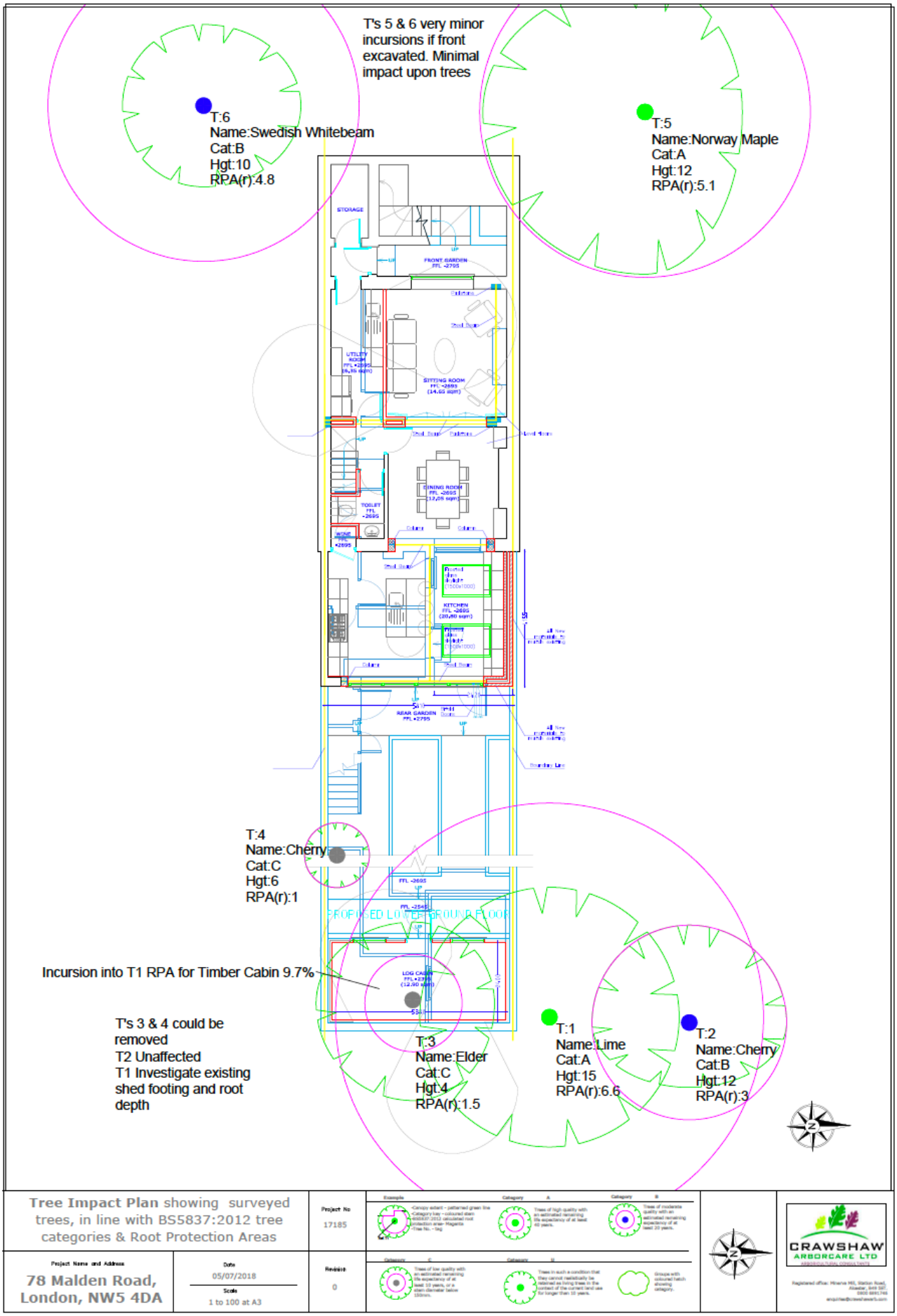
Attention should be given to establishing the presence of roots from different species. Identification between Lime and Elder are critical and may be done by eye or laboratory testing. The area will undoubtedly be covered with Elder roots and these should be eliminated from the survey if it is to be removed.

Any practical tree work should be carried out by a competent contractor with the relevant insurance and experience. The contractor should carry out all tree works to BS 3998 *Recommendations for Tree Work* (2010) as modified by research that is more recent.

Reference should be made to the Wildlife and Countryside Act (1981), protection of bird and bat species, European Protected Species legislation and local planning policy.

This report has been written in accordance with BS 5837. If planning permission is granted, further works would be required to detail mitigation and protection measures.

Appendix 1. List of Tree Names



Ash	*Fraxinus excelsior*
Aspen	*Populus tremula*
Atlas cedar	*Cedrus atlantica*
Austrian pine	*Pinus nigra*
Bay willow	*Salix pentandra*
Beech	*Fagus sylvatica*
Bird cherry	*Prunus padus*
Black cottonwood	*Populus trichocarpa*
Black poplar	*Populus nigra*
Black walnut	*Juglans nigra*
Box	*Buxus sempervirens*
Caucasian fir	*Abies nordmanniana*
Cedar of Lebanon	*Cedrus libani*
Coast redwood	*Sequoia sempervirens*
Common alder	*Alnus glutinosa*
Common juniper	*Juniperus communis*
Common lime	*Tilia x vulgaris*
Common silver fir	*Abies alba*
Common walnut	*Juglans regia*
Corsican pine	*Pinus nigra*
Crab apple	*Malus sylvestris*
Crack willow	*Salix fragilis*
Cricket-bat willow	*Salix alba*, var *caerulea*
Deodar cedar	*Cedrus deodara*
Douglas fir	*Pseudotsuga menziesii*
Downy birch	*Betula pubescens*
English elm	*Ulmus procera*
Eucalypts	*Eucalyptus* species
European larch	*Larix decidua*
Fig	*Ficus carica*
Field maple	*Acer campestre*
Giant fir	*Abies grandis*
Grey alder	*Alnus glutinosa*
Grey poplar	*Populus x canescens*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Holm oak	*Quercus ilex*
Honey Locust	*Gleditsia triacanthos*
Hornbeam	*Carpinus betulus*
Horse chestnut	*Aesculus hippocastanum*
Italian alder	*Alnus cordata*
Japanese larch	*Larix kaempferi*
Japanese zelkova	*Zelkova serrata*
Large-leaved lime	*Tilia platyphyllos*
Lawson cypress	*Chamaecyparis lawsoniana*
Lodgepole pine	*Pinus contorta*

Lombardy poplar	*Populus nigra* var. *italica*
London plane	*Platanus x hispanica*
Maritime pine	*Pinus pinaster*
Midland thorn	*Crataegus laevigata*
Monkey puzzle	*Araucaria araucana*
Monterey cypress	*Cupressus macrocarpa*
Monterey pine	*Pinus radiata*
Noble fir	*Abies procera*
Norway maple	*Acer platanoides*
Norway spruce	*Picea abies*
Oriental plane	*Platanus orientalis*
Pedunculate oak	*Quercus robur*
Red alder	*Alnus rubra*
Red oak	*Quercus rubra*
Robusta poplar	*Populus x robusta*
Rowan	*Sorbus aucuparia*
Sallow (Goat willow)	*Salix caprea*
Scots pine	*Pinus sylvestris*
Serotina poplar	*Populus serotina*
Sessile oak	*Quercus petraea*
Silver birch	*Betula pendula*
Sitka spruce	*Picea sitchensis*
Small-leaved lime	*Tilia cordata*
Smooth-leaved elm	*Ulmus carpinifolia*
Snakebark Maple	*Acer capillipes*
Southern beech	*Nothofagus antarctica*
Swamp cypress	*Taxodium distichum*
Swedish whitebeam	*Sorbus intermedia*
Sweet chestnut	*Castanea sativa*
Sycamore	*Acer pseudoplatanus*
Tree of Heaven	Ailanthus altissima
Turkey oak	*Quercus cerris*
Wellingtonia	*Sequoiadendron giganteum*
Western hemlock	*Tsuga heterophylla*
Western red cedar	*Thuja plicata*
White poplar	*Populus alba*
White willow	*Salix alba*
Whitebeam	*Sorbus aria*
Wild cherry (Gean)	*Prunus avium*
Wild service tree	*Sorbus torminalis*
Wych elm	*Ulmus glabra*
Yew	*Taxus baccata*

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