



Arboricultural Survey to BS5837 2012

with

Tree Constraints Plan and

Arboricultural Impact Assessment

Site	1 Walnut Close, Eynsford
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Surveyor / Arboriculturalist	Nick Winram
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Date of Survey	2nd Feb 2018
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Date of Report	V3 16th April 2018
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1.0 Introduction

1.1 **Brief:** I was instructed by Alfie Taylor to survey the trees on and adjacent to the site with a view to the construction of one or more properties to the southern side of the existing house. I surveyed the trees that may be affected by the proposal on 2nd February 2018, in accordance with the guidelines of BS5837:2012 *Trees in Relation to design, demolition and construction – Recommendations* (hereafter BS5837).

1.2 **Limitations:** I have based this report on my site observations and tree measurements. No plans have been drawn up as yet and my report is to determine the constraints the trees pose on the site and help inform any architectural decisions and drawings. My conclusions are based on my qualifications and practical working experience in arboriculture. Observations or comments on structural engineering and the law are made from an arboricultural perspective only. Specialist professional advice should be sought to clarify such observations.

1.3 **Documents and information provided:** No previous plans have been drawn up. The plans in this report are from a third party map supplier and the trees and root protection areas have been plotted to scale. Please note that due to this not being a formal topographical plan the tree positions may be inaccurate. **Corroborative measurements should be taken before any structural work is undertaken.**

1.4 Summary

1.4.1 The site is a residential house in Eynsford.

1.4.2 Four trees were surveyed.

1.4.3 The site is bordered by other residential houses in the close with trees and shrubs screening the road from the houses

1.4.4 The proposal is to build one or more new properties to the south of the current dwelling. There is a strip of lawn approximately 20m wide from the current house to the roadside. .

1.4.5 Based on my site visit and survey of the trees there is a developable area of approx. 12.5m from the house to the beginning of the root protection areas of the line of trees.

1.4.6 No trees would be affected or have to be removed as long as the root protection areas (RPAs) of the trees are adhered to.

2.0 Purpose of the report

2.1 This report considers the impact construction works will have on the trees directly on the site and in the near vicinity, with the physiological requirements of the tree as the priority. This report is intended to present supporting information to accompany

the planning design and application process and for any future planning proposals or amendments.

3.0 Scope of the report

- 3.1 This report is concerned only with the arboricultural aspects of the site and trees in relation to construction.
- 3.2 It includes a detailed assessment based on the site visit and any documents provided (listed in Section 1.3 – Documents and information provided).
- 3.3 The Surveyor (Nick Winram) has spoken to the property owner regarding the site and has been given a verbal idea of what the owners would like to build but no formal plans have been drawn.
- 3.4 Any non-arboricultural observations are made from a lay person's view only.
- 3.5 Survey undertaken in accordance with British Standard (BS) 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- 3.6 Any recommended tree management work will be specified in accordance with BS3998:2010 Tree Work – Recommendations.
- 3.7 Trees were inspected using Visual Tree Assessment (VTA) techniques developed by Mattheck & Breloer (1994). This is an industry recognised method of diagnosing ill health and structural defects in trees. A bibliography of other resources used is listed at the end of the report.

4.0 Survey method

- 4.1 All observations were made from ground level, with the aid of binoculars if required. A sounding hammer and metal probe were used if necessary to diagnose decay.
- 4.2 Detailed investigations listed below were not undertaken:
 - Aerial tree inspection
 - Soil or tissue sampling
 - Sub-soil investigations
- 4.3 The height of each tree was estimated using industry recognised techniques.
- 4.4 The stem diameters were measured in millimetres (mm) at 1.5m above ground level on the uphill side of the tree with a diameter measurement tape (where practicable).
- 4.5 The crown spreads were estimated by pacing/striding out (where practicable).

5.0 BS5837:2012 Trees in relation to design, demolition and construction - Recommendations

- 5.1 The British Standard gives recommendations and guidance on the principles applied to achieve a satisfactory juxtaposition of trees, shrubs, hedges and hedgerows with structures. It follows, in sequence, the stages of planning and implementation of the provisions, which are essential to allow development to be integrated with trees.
- 5.2 The process is a logical progression with discussions involving all parties, upheld to ensure those trees which are appropriate for retention will enhance new developments and are suitably incorporated into the final design.
- 5.3 This survey covers the first stage of this process which is the tree survey and preliminary constraints mapping called the Tree Constraints Plan (TCP).
- 5.4 The trees are graded and this is used to identify the good specimen trees worth protecting and the weaker ones which could be removed to allow the development.

6.0 Site details

- 6.1 The house is in a close off the A225. There is a group TPO (Tree Preservation Order) on the trees running along the side of the A225, see map in appendix 4. The TPO was placed in 1993 before Walnut Close was built. The trees concerned are in G1 on the TPO plan.
- 6.2 The site has four main trees and some shrubs along the roadside boundary of the property. The trees individually are poor specimens but collectively they provide screening from the road.
- 6.3 There are residential houses on the north and west side of the house. Walnut Close road is on the east side and to the south beyond the potential development area runs the A225 a 30mph main road through Eynsford.
- 6.4 The proposed work would see the creation of one or more properties on the south section of land between the house and A225.
- 6.5 Detailed underground service plans should be obtained, in conjunction with exploratory CAT and GENNY scanning work before any form of below ground excavation takes place.
- 6.6 Using the online soil mapping website www.landis.org.uk/soilscapes, the identified area shows **Soilscape 3**: Shallow lime-rich soils over chalk or limestone, which is a good medium for uninhibited tree root development and not prone to subsidence. This soil type is less susceptible to potentially damaging root compaction which can occur from constant activity above ground over tree root systems.

- 6.7 It should be noted that due to its proximity to the river Darent the soils may contain alluvial clay which is prone to compaction and subsidence. I would recommend that soil test pits are dug to ascertain the exact soil type before foundation depths are specified.

7.0 Tree retention or removal factors

- 7.1 The full detailed tree survey schedule of the trees surveyed can be found in Appendix 1 – Tree Survey Schedule. Any observations on condition and management recommendations are also listed on this schedule.
- 7.2 Trees are categorised in accordance with the cascade chart in Table 1 of BS5837. The purpose of this categorisation process is to identify and group the existing tree stock with regard to quality, condition and amenity value to ensure an informed decision can be made for its future management. (The descriptions can be found in Appendix 1 of this report.)
- 7.3 The potential development layout has not been designed yet. Any future plans should take into account the RPAs of the trees adjacent which are to be retained.
- 7.4 There is not much evidence of tree management on the site as the trees are quite young. Ivy is heavily affecting several of the trees and it has been severed on some of the trees.

8.0 Below ground constraints: Root Protection Area (RPA)

- 8.1 The Root Protection Area (RPA) is based on a radial measurement from the centre of the tree stem, which is found by multiplying the stem diameter of the tree concerned (measured at 1.5m from ground level on the uphill side of the tree) by a factor of twelve, or in the case of trees with multiple stems in accordance with BS5837 section 4.6.1.
- 8.2 This radial measurement is converted by the arboricultural consultant into the actual area to be protected, having given due regard to prevailing site conditions and how these may have affected the trees, particularly in relation to factors affecting their root structure and underground growth patterns.
- 8.3 The root morphology of the trees will be complex because, within the theoretical RPA, there can be a number of areas that are unattractive to tree roots or where further growth is inhibited by underground structures. This information is understood through research and it is widely understood that roots generally grow towards optimum conditions.
- 8.4 From this, I conclude the majority of root systems of those trees growing on site will be fairly well balanced due to the uniform soil type found in this area and the favourable growing conditions.

- 8.5 The road and paving will possibly have reduced the root growth of the trees to the south sides.
- 8.6 The tree root protection areas form a roughly parallel block running along the side of the pavement extending approximately 7m into the site. Beyond that there is developable space and also a developable corridor approx. 2.5m wide along the western boundary free of RPAs which could potentially be used for access.
- 8.7 No unauthorised construction work should take place inside the Root Protection Areas (RPA). These are plotted on the Tree Constraints Plan.
- 8.8 Machinery and plant equipment movement will be necessary for the works. I would advise that where possible protective fences are used during development to protect the RPA of the trees during any works.
- 8.9 Material storage and cement mixing should also not be carried out within the RPAs of the trees.
- 8.10 The site provides plenty of hard standing and working area to the front of the building and the grass area to the SE of the current building. With good working practices and use of these areas then damage to the tree roots will be avoided.

9.0 Above ground constraints: Tree crown protection

- 9.1 The crown spread and height parameters of the subject trees generally do not exceed the dimensions of the RPAs. The tree crowns do not pose any constraint on the proposed extensions.
- 9.2 Damage or unsympathetic pruning to the tree's branches and crown can lead to serious health and condition issues for the trees and, therefore, should any pruning need to be carried out, it should be by a competent and qualified professional arborist, who adheres to BS3998:2010 Tree Work - Recommendations.
- 9.3 'Arboricultural Association Approved Contractors' are the industry recognised standard for competent, qualified contractors. A list of local contractors can be found on the Arboricultural Association website <http://www.trees.org.uk/Find-a-professional>

10.0 Tree Survey Schedule overview (identification colours below correspond to RPA plan)

10.1 Low quality and value – Category ‘U’ trees: One tree is graded as Category U

10.2 Low quality and value – Category ‘C’ trees: Three trees are graded as Category U/C.

10.3 Moderate quality and value – Category ‘B’ trees: One tree is graded as Category B

10.4 High quality and value – Category ‘A’ trees: No trees are graded as Category A.

11.0 Conclusion

11.1 From an Arboricultural perspective the site provides a developable area from the current house to 7m from the road without any negative impact on the tree stock in and around the site.

11.2 If this area is utilised and adequate tree protection is used then the RPAs of the trees are outside of any planned development work.

11.3 In using adequate protection during construction to minimise damage to the tree roots and crowns then I see no long term detrimental effects of development on the site.

11.4 After taking into account the information provided to me and my own on-site observations, I am satisfied that the development potential of this site can be achieved in a sound manner with regards to arboriculture and the long term health and retention of the adjacent trees maintained sufficiently.

12.0 Ongoing recommendations

12.1 Any remedial tree work should fully adhere to BS3998:2010 - Tree Work - Recommendations.

12.2 It is also advised that throughout the on-going planning and construction phases of the proposed development, an arboriculturalist's advice is sought in conjunction with the architect's, to ensure the most practical and least invasive construction methods and practices are used at all times, especially if any alterations to the plans are made.

12.3 The correct stages and integration of any future and final proposals should strictly follow The British Standard, using the stages as outlined in Section 5.0 - BS5837:2012

13.0 Pruning pressure post development

- 13.2 Due to the proximity of the trees to any new buildings they will require some pruning work over the coming years. This would be expected under general maintenance of trees in proximity to buildings.

Appendix 1

Tree survey schedule key & survey table

Tree Survey Schedule Key

Categories

Below is an explanation of the categories used in the attached Tree Survey.

Tree reference No

Identifies the tree on the drawing

Species

Common names are given to aid understanding for the wider audience.

Stem Diameter

Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

Branch Spread

As plotted on the topographical plan unless otherwise stated for reflecting asymmetric crowns or heavy lean of a tree.

Low Branches

Any significant low branches are noted which couldn't be managed as part of general maintenance of the tree

Age Class

Recorded as one of seven categories:

- **Y** Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.
- **S/M** Semi-mature. An established tree, but one which has not reached its prospective ultimate height.
- **E/M** Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.
- **M** Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.
- **O/M** Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.
- **V** Veteran. An over-mature specimen, usually of high value due to either its age, size and/or ecological significance
- **D** Dead.

General Observations

This should include physiological comments which cover an assessment of the visible health and vitality of the tree. Structural Condition, an assessment of the visible structural integrity of the tree, sounding or probing may be used to aid this assessment. Any general relevant comments on the tree or its root zone

Preliminary Management Recommendations

Any remedial or suggested works for the tree. Generally specified in line with BS 3998.

Estimated remaining contribution

Less than or greater than 10 years

BS 5837 Main Category

Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

Category A Those of high quality with an estimated remaining life expectancy of at least 40 years;

Category B Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

Category C Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

Category U Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

BS 5837 Sub Category

Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

Sub Category 1 - Mainly arboricultural qualities;

Sub Category 2 - Mainly landscape qualities;

Sub Category 3 - Mainly cultural values, including conservation.

Sub category is automatically 1 unless otherwise stated.

RPA Radius

This is a distance in metres equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level for multi stemmed specimens. (BS 5837:2012, section 4.6). It is the basis for calculating the RPA

RPA

This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as “a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority”. The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority’s tree officer.

Tree Survey Schedule

In accordance with BS5837:2012 Trees in relation to design, demolition and construction 2012

Client: Alfie Taylor **Site:** 1 Walnut Close, Eynsford **Arboricultural Consultant/Surveyor:** Nick Winram
Date of survey: 2nd February 2018 **Weather:** Fine and dry, the weather did not hamper the inspection

Tree Reference Number	Species	Height m	Stem diameter mm	Branch spread N, E, S, W	Low branches Y/N	Age Class	General Observations	Preliminary management recommendations	Estimated remaining contribution on years	Category grading	RPA Radius m	RPA M ²
T1	Horse Chestnut	14	522	3 5 5 5	N	SM	4 Stem old coppiced tree, included unions and weak attachments, 2 small stems recently removed	No action	>10	C	6.3	123
T2	Lime	17	600	7 5 4 4	N	M	Heavy bleeding on SE side of trunk 1.5-2m. Deadwood in crown	Monitor and remove deadwood. Sever Ivy	>10	B	7.2	163
T3	Lime x3	10	290	3 3 3 5	N	SM	Small saplings under T3, lopsided crowns	No action	>10	C	3.5	38
T4	Walnut	15	325	4 3 3 4	N	SM	Young tree, lower growth slightly suppressed by limes	No action	>10	C	3.9	48

Appendix 2

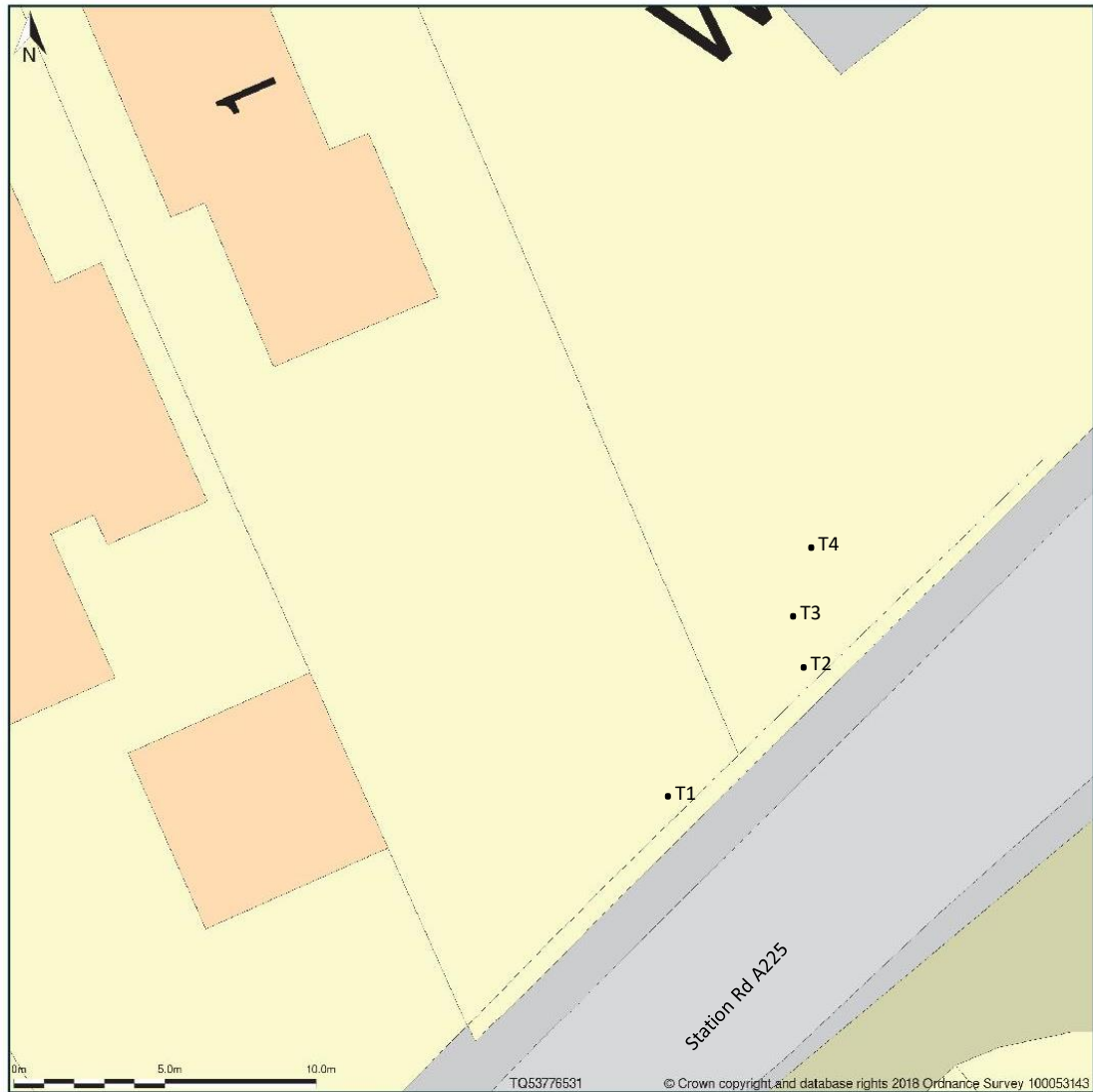
Site plan

Site Plan with tree locations

Key

- T1 Tree location and ID

1, Walnut Close, Eynsford, Dartford, Kent, DA4 0ES



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Appendix 3

Tree constraints plan showing retained tree RPAs

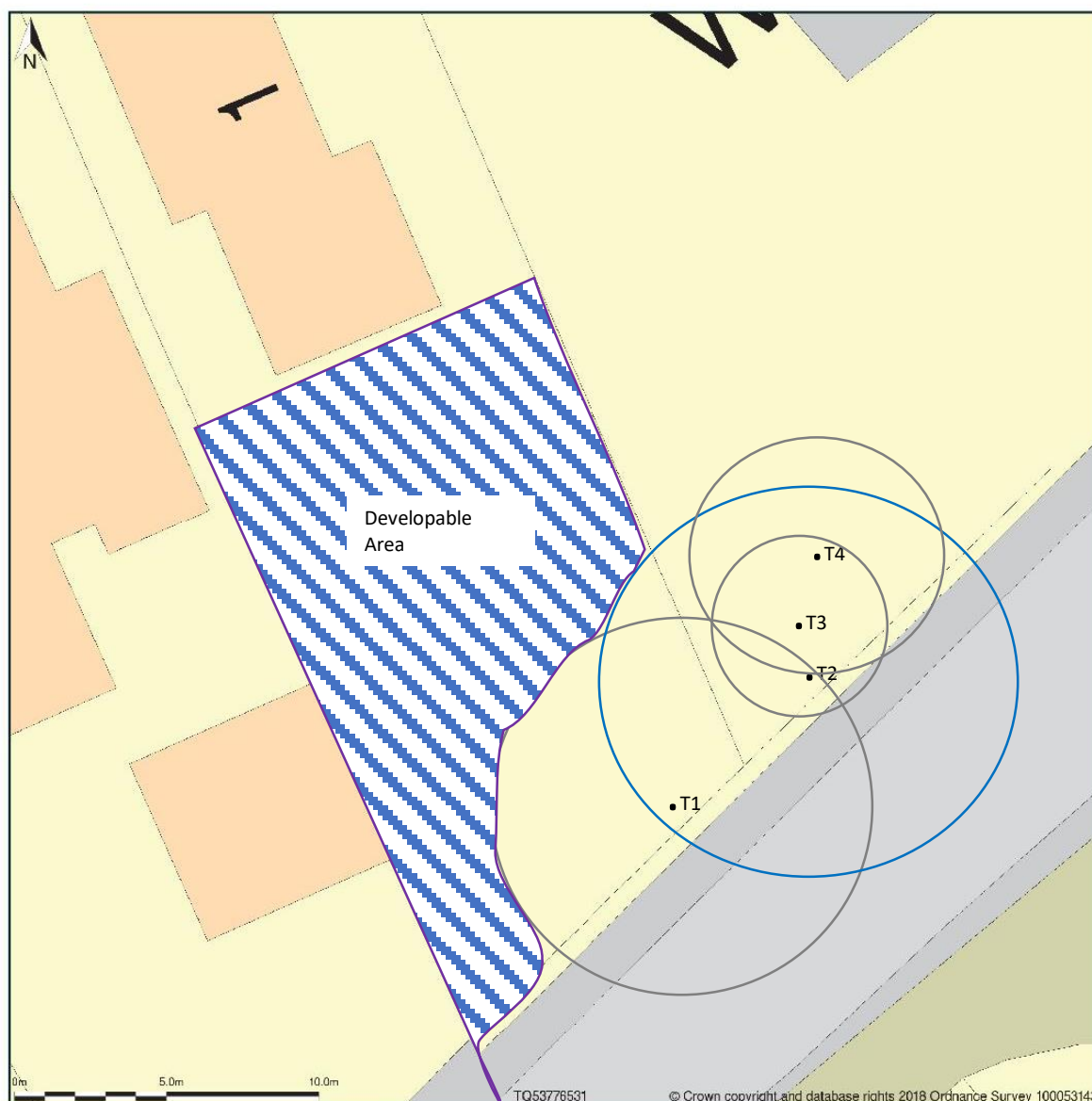
**Tree Constraints Plan with tree
root protection areas shown**

Key

•T1 Tree location and ID

○ RPA colour coded

1. Walnut Close, Eynsford, Dartford, Kent, DA4 0ES



Please note tree locations are not guaranteed to be exact so site measurements should be undertaken before any designs are drawn up. RPA measurements are in the Tree Survey Schedule, Appendix 1, of this report

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Appendix 4

TPO Area Map



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Appendix 5

Bibliography

<u>Book or Reference Literature</u>	<u>Author or Publisher</u>
The Body Language of Trees	Mattheck & Breloer 1994
Diagnosis of Ill Health in Trees	Strouts & Winter 1994
Principles of Tree Hazard Assessment & Management	Lonsdale 1999
B.S 5837:2012 Trees in relation to demolition, design and construction – Recommendations	British Standard Institute
B.S 3998:2010 Tree work - Recommendations	British Standard Institute