BS 5837 Arboricultural Report

& Impact Assessment

at
265 Waldegrave Road
Twickenham
TW1 4SU

Dated
3rd July 2024

CROWN
Tree Consultancy
Branching out through England and Wales

Contents

1. Introduction

1.1. Instruction

1.1.1. We are instructed by Georgia Laing of Michael Jones Architects to:

- Undertake a Tree Survey to BS 5837 at 265 Waldegrave Road and assess all trees potentially within influencing distance of proposed development within the site.
- Plot the trees on a Tree Constraints Plan and record the data in a Tree Data Schedule.
- Provide preliminary management recommendations for the tree stock (independent of development proposals).
- Assess the potential impact of the development proposals and provide guidance as to appropriate mitigation measures.
- Produce an Arboricultural Impact Assessment for submission to the local authority.
- Produce a Tree Protection Plan showing locations of tree protection barriers and where ground protection will be required.

1.2. Purpose of this Report

1.2.1. This report is produced according to the guidance and recommendations within *BS 5837: 2012 - Trees in Relation to Design, Demolition, and Construction.* It is tailored to accompany a planning application. It assesses the impact of all proposed construction works on the tree population. Tree removal, canopy pruning, and the impact upon roots from various groundworks are all considered in detail. Best practice mitigation is specified wherever appropriate.

1.2.2. Consideration is also given to the impact of the changed juxtaposition between trees and buildings and how that may influence future tree management.

1.2.3. This document should not be used to inform management decisions relating to liability or risk management. Such decisions should be based on a more detailed inspection of the trees than was carried out for this report.

1.3. References

1.3.1. We have liaised with our client and studied topographical surveys and projected ground levels to attain an adequate understanding of the project to enable us to carry out an accurate assessment of the proposals.

1.4. Author

1.4.1. This report was compiled by Sarah Alway- FdSc (Arboriculture), M.Arbor A. Sarah's resumé can be found in Appendix 3.

2. The Survey

A visual ground-level assessment of all trees was undertaken on the 7th of June 2024 by Carl Lothian. No climbed inspections or specialist decay detection were undertaken.

2.1. Methodology

2.1.1. Structural condition was assessed by inspecting the stem and scaffold branches, looking for weak branch junctions, symptoms of decay, or other structural defects. Any recommended works were made to ensure the trees are in acceptable structural condition. The position of the tree and its potential targets were considered.

2.1.2. Physiological condition was assessed by inspecting the stem, branches, and foliage for symptoms of disease. The vigour of the tree was also considered.

2.1.3. Key measurements were obtained using a diameter tape, clinometer, distometer and logger's tape. Where this was not practical, measurements were estimated.

2.1.4. Some trees may be surveyed as groups, though this is usually avoided close to areas likely to be developed.

The tree locations shown on the accompanying drawings are based on a measured drawing of the site supplied to Crown Tree Consultancy. This drawing had the tree positions already plotted. Where applicable, additional trees have been plotted by us according to measurements taken on-site.

2.1.5. Finally, a *Retention Category* is allocated. The relevant BS5837 2012 cascade chart is duplicated below.

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
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 category U trees (e.g. 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**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or 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)	See Table 2
Category B **Trees of moderate quality** with an 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 significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	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 material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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 no material conservation or other cultural value	See Table 2

2.1.6. Further guidance on interpreting BS 5837 and our survey methodology is given in Appendix 1.

2.2. Survey Extent

2.2.1. The area indicated below[1] shows the extent of the site. Our survey included all trees within the curtilage of the property.

2.3. Summary of Observations

2.3.1. 265 Waldegrave Road is a two-storey detached residential property situated on the corner of Waldegrave Road and Strawberry Hill Road, just south of Twickenham.

2.3.2. The property is surrounded by garden on all sides. There is also a small, detached garage to the west.

2.3.3. Within the curtilage of the site, we identified one Retention Category B tree (T9), eight Retention Category C trees (T1-T8), and one Retention Category U tree (T10).

2.3.4. The Tree Constraints Plan and Tree Data Schedule (see Appendix 4) should be referred to for descriptions and locations of all trees.

[1] Image taken from Google Earth and may not be current

3. Vegetation Overview (independent of proposals)

This section summarises all the recommendations within the Tree Data Schedule regardless of whether trees are to be retained, felled or pruned to facilitate the proposed development. It does not specify works that may be required to facilitate the development proposals.

3.1. Preliminary Management Recommendations

3.1.1. The following recommendations are made to maintain the trees in an acceptable condition:

3.1.2. T9 has significant dead wood within the canopy that overhangs the footpath, we recommend this is removed. This should be prioritised as indicated on the Tree Data Schedule.

3.1.3. All other trees were deemed to be in satisfactory condition.

3.2. Work Priority and Future Inspections

3.2.1. The table below suggests a schedule for completing the works recommended in the Tree Data Schedule based on the perceived risk:

Work Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	None
High	Within 3 Months	None
Moderate	Within 1 year	T9
Low	Within 3 years	None

3.2.2. The table below suggests a schedule of future inspections based on the condition and location of each tree:

Inspection Frequency (years)	Tree Number
0.5	None
1	None
1.5	T9
3	G1, T2, T3, T4, T5, T6, T7, T8, T10

3.2.3. The trees should be inspected sooner if there is a noticeable decline in their condition or following extreme weather events.

3.3. Statutory Protection – TPOs and Conservation Area Status

Before undertaking most works on trees protected by a tree preservation order[2], consent needs to be formally obtained from the local authority. Where trees are in a conservation area (but not protected by a TPO), works are generally not permitted without first giving the local authority six weeks' notice of intention[3]. Unauthorised works to protected trees or trees in a conservation area may result in criminal prosecution and a fine. Where works are required to implement a fully approved development, no such consent or notice is required.

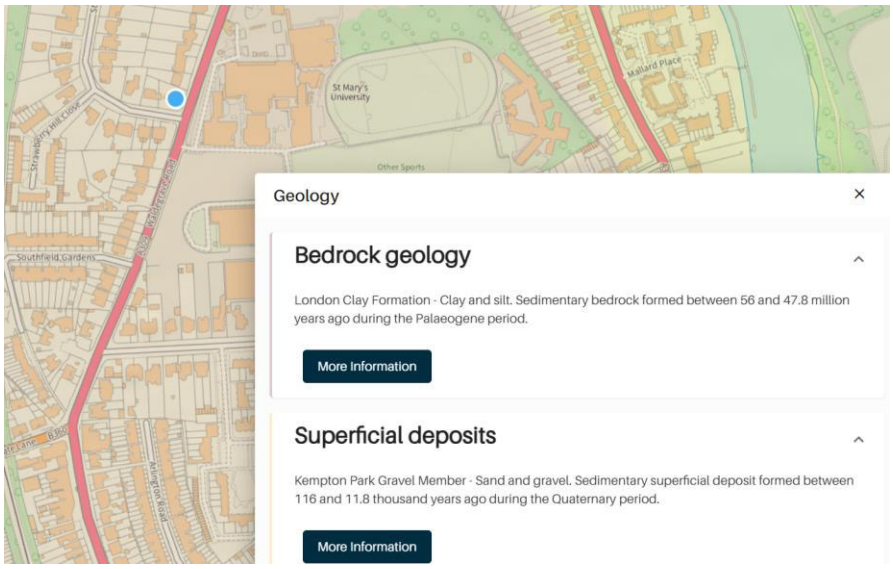
[2] https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas

[3] During this time, the local authority may elect to create a tree preservation order or to inform the applicant that they have no objection to the proposed works. If the local authority does not respond within six weeks, then the intended work may be undertaken. Note: the local authority cannot refuse consent for works to trees within a conservation area; they may only create a tree preservation order if they wish to have further control over what works are undertaken.

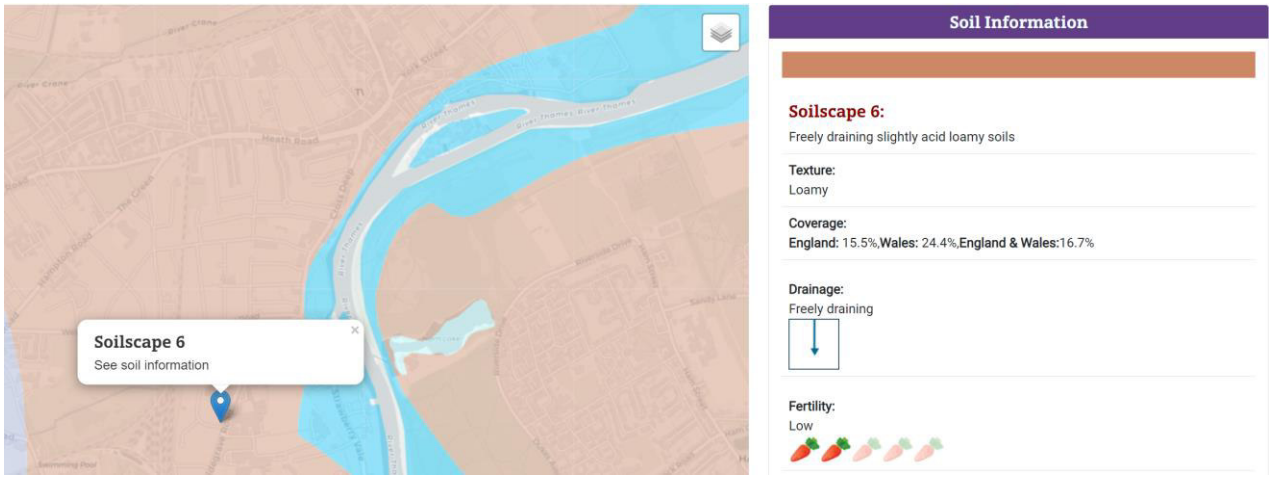
4. Local Geology and Soils

4.1. Desktop Research

4.1.1. Desktop research into local geology based on the postcode TW1 4SU obtained the following results:



Source: https://geologyviewer.bgs.ac.uk/?_ga=2.100849601.17774785.1660229567-1737936254.1660229567



Source http://www.landis.org.uk/soilscapes/

4.2. Site Investigations

4.2.1. We are unaware of any specific investigations into soil properties at the site.

4.3. Conclusion and Relevance

4.3.1. Based on the information reproduced in Section 4.1, local soils are assumed to have a loamy texture.

4.3.2. Loamy soils contain a mixture of clay and sand. Soil compaction may occur due to vehicular activity on building sites, so ground protection is recommended wherever vehicles operate. Most tree species will grow well in loamy soils.

5. Arboricultural Impact Assessment

5.1. Overview

5.1.1. All works proposed are external landscaping works; It is proposed to demolish the existing boundary brick wall around the property frontage and replace it with a 1.8m tall masonry wall. It is also proposed to install a new parking space, which shall be accessed from Waldegrave Road. Where the parking space is proposed, the existing wall shall be demolished, and the existing hard surface shall be replaced. Where indicated on the plan, a rigid cellular confinement system shall also be installed beneath the gravel that is specifically designed for spreading the load of vehicles. A new fence is also proposed.

5.1.2. The existing garage shall be retained and used for storage.

5.1.3. All the above is indicated on the drawings in Appendix 4. The existing layout is indicated in black, the footprint of the proposed layout is indicated in red.

5.1.4. The table below summarises the potential impact on trees due to various activities.

Activity	Trees Potentially Affected
Tree Removal: Retention Category A	None
Tree Removal: Retention Category B	None
Tree Removal: Retention Category C	Mixed shrubs
Tree Removal: Retention Category U	None
Tree Pruning	T6, T7, T8 & T10
RPA: House Foundations	None
RPA: Exterior Wall Foundations	T6, T7, T8 & T9
RPA: New Hard Surface	None
RPA: Replace Existing Hard Surface	T9
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	T9
RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)

5.1.1. Other potentially damaging activities often associated with construction sites include demolition or the careless use of plant machinery, hazardous materials, or fires. All of the above potential impacts are considered in detail throughout this Section.

5.2. Tree Removal

5.2.1. All trees are to be retained.

5.2.2. The only vegetation to be removed are the mixed shrubs that run adjacent to the existing boundary wall. These will need to be removed in order to access the wall.

5.3. Tree Pruning

5.3.1. The table below specifies the proposed pruning works:

Tree No	Recommendation	Reason
T6, T7 & T8	Crown lift the canopy growing over the adjacent boundary wall to a height of 2m.	To enable adequate clearance between the proposed boundary wall and the tree canopy.
Ivy covered stump and mixed shrubs	Crown lift the canopy growing over the boundary wall to a height of 2m.	To enable adequate clearance between the proposed boundary wall and the tree canopy.

5.3.2. The existing canopy height of T6, T7 & T8 is 1.5m. Therefore, only branches growing between 1.5m and 2m require removal. The pruning works should be undertaken sympathetically (working to BS 3998 guidelines).

5.3.3. All other tree canopies shall be unaffected by the proposals.

5.4. Mitigation Planting

5.4.1. The trees/shrubs to be removed are of such low amenity value that no mitigation planting is considered necessary. However, the site offers ample opportunity to plant additional new trees should this be desired.

5.5. Impact of Foundations

5.5.1. Boundary wall foundations are proposed over the Root Protection Areas of T6, T7, T8, T9 & T10. The existing wall foundations are likely to have influenced the roots of these trees and therefore roots are less likely to be prolific within the upper soil horizons. However, due to the proximity of these trees, significant structural roots are still anticipated to be present.

5.5.2. It is also proposed to install a fence within the Root Protection Area of T9. However, less than 2% of the outer RPA shall be affected.

5.5.3. The table below assesses the impact of proposed foundations in Root Protection Areas:

Tree No	Nature of Foundation	Portion of RPA	Recommended Mitigation
T6, T7, T8, T9 & T10	Boundary Wall Foundations	<10%	• In the direction of the trees, excavation is not to exceed 250mm beyond the build-line. • Trench footings shall be dug using hand tools only. • Where any roots in excess of 50mm are found, the footings shall stop, and a concrete lintel shall be placed over the roots. • Exposed roots over 25mm diameter shall be retained and protected with damp hessian if practicable, else pruned by the arborist. • Excavation to be supervised by the project arborist.
T9	Fence Post Foundations	<2%	• None (impact shall be minimal)

5.5.4. These measures accord with industry best-practice[4] and shall ensure minimal impact on roots.

[4] BS 5837 (2012 section 7.5 and 7.6)

5.6. Impact of Surfacing

5.6.1. It is proposed to remove the existing paving that provides pedestrian access to the front door from the entrance on Waldegrave Road and replace it with gravel to match the existing surface. The proposed surface for the new parking space will also be gravelled to match the existing surface.

5.6.2. The area indicated in yellow on the Impact Assessment Plan shows where it is also proposed to install a rigid cellular confinement system that is specifically designed for spreading the load of vehicles.

5.6.3. To minimise any impact on the roots of T9, excavation shall be limited to the removal of the existing surface to a maximum depth of 200mm. If any roots in excess of 50mm are encountered, all excavation shall cease, and the new surface shall be installed above them.

5.7. Underground Services

5.7.1. The proposal requires no underground services to be excavated through any Root Protection Areas.

5.8. Changes in Ground Levels

5.8.1. Where the new driveway is proposed, ground levels on the pavement shall be lowered by approximately 100mm to meet the road. So long as excavation is limited to a maximum depth of 200mm, the impact on T9 shall be minimal.

5.9. Soil Compaction

5.9.1. The majority of tree roots lie within the upper soil horizons. This is because the availability of oxygen decreases with depth, and roots need to breathe to stay alive. In addition, nutrients are more readily available in the form of organic matter close to the soil surface.

5.9.2. Healthy soils contain about 25% air space between solid particles. Increased loading of the soil caused by construction activity causes air to be squeezed out as the soil becomes compacted, preventing roots from breathing. Even an increase in pedestrian activity may cause some soil compaction.

5.9.3. It is important, therefore, that ground compaction and soil disturbance over Root Protection Areas should be avoided during the construction phase. Where access is required over Root Protection Areas, suitable ground protection measures must be installed.

5.10. Demolition Activities

5.10.1. Care is required to avoid damaging trees when removing adjacent surfaces or structures. Surfaces must be lifted using hand tools or a carefully marshalled mechanical excavator. Walls must be demolished away from stems and in a manner that doesn't damage branches. Removal of underground foundations requires extra special care to avoid root damage. During the implementation of this project, the following activities require special care:

- Removal of surfacing close to T9.
- Demolition of boundary wall close to T6, T7, T8 & T9.
- Removal of wall foundations close to T6, T7, T8 & T9.

5.11. Waste and Materials Storage

5.11.1. All hazardous materials (including cement and petrochemical products) will need to be controlled according to COSHH regulations in order to ensure there is no detrimental impact on tree health. Provision shall need to be made to ensure that cement spillage avoids all Root Protection Areas.

5.11.2. Areas designated for the storage of building materials and waste products will need to be approved by the local authority. Root Protection Areas should be avoided. Where this is not possible, suitable ground protection measures will need to be installed.

5.12. Cabins and Site Facilities

5.12.1. Any cabins and welfare facilities should be located outside of Root Protection Areas wherever possible. Otherwise, the project arborist should be consulted, and approval obtained from the local authority.

5.13. Impact of Retained Trees on the Development

5.13.1. The replacement of the boundary wall shall not alter the juxtaposition between the wall and the retained trees, so there shall be no post-development pressures to overly prune or remove them.

5.13.2. New surfaces should be designed to accommodate all potential impacts due to future tree-rooting activity.

5.14. Arboricultural Method Statement

5.14.1. BS 5837 recommends that a detailed methodology is agreed in the form of an Arboricultural Method Statement, which shall ensure that trees are well protected during the construction phase. This should detail all tree protection measures and limitations on construction activity. All of the issues raised within this Impact Assessment should be covered by the Method Statement.

6. Photographs

Refer also to the Tree Constraints Plan for photo locations

Photo 1.

Photo 2.

Photo 3.

Photo 4.

Photo 5.

Photo 6.

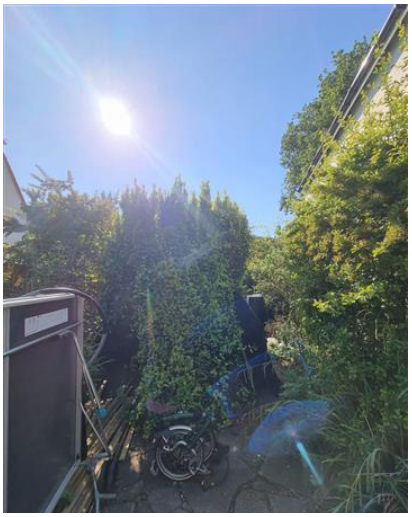


Photo 7.

Photo 8.

Photo 9.

Photo 10.

Photo 11.

Photo 12.

Appendix 1: BS 5837: 2012 – Interpretation Guide

This Standard prescribes the principles to be applied to achieve a satisfactory juxtaposition of trees and structures. It sets out to assist those concerned with planning applications to form balanced judgments.

Stage 1: Survey Details and Notes

A ground-level visual survey is undertaken. Only trees with a stem diameter over 75mm, which lie within the site boundary or relatively close to it, are included.

Where applicable, trees with significant defects are highlighted and appropriate remedial works are recommended.

Wherever practicable dimensions are obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third-party land are surveyed from the best available vantage point and observations relating to the condition of these trees should be treated accordingly. All height measurements should be regarded as approximate.

Data is recorded for each tree and is presented in a Tree Data Schedule. Each tree is allocated a ***Retention Category*** according to its size, amenity value, condition, and safe useful life expectancy. The categories are allocated independently of development proposals. Our interpretation of the Retention Categories is explained below:

Retention Categories

A Category: Trees of high quality and amenity value. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

B Category: Trees of moderate quality and amenity value. Usually these are maturing trees or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

C Category: Trees of low quality or small specimens with a relatively low amenity value. These trees are not considered to be a material planning constraint and their removal will generally be seen as acceptable in order to facilitate development.

U Category: Trees of such low quality that their removal is recommended regardless of development proposals.

Occasionally trees are borderline and do not fall neatly into one of these categories. In such cases we apply a superscript (**+/-**) such that:

C^{+} Indicates borderline C/B, though Category C is deemed to be most appropriate.

B^{-} Indicates borderline C/B, though Category B is deemed to be most appropriate.

The British Standard suggests that each of the A, B and C categories may be further subdivided (A1, A2, A3, B1, B2, B3 etc) such that subcategory 1 denotes mainly arboricultural values, subcategory 2 denotes mainly landscape values and subcategory 3 denotes mainly cultural values (including conservation). Multiple subcategories may be used.

Our experience suggests that these subdivisions lack clarity and can be confusing. Within this report subcategories are **not** denoted. Where appropriate, the use of phrases such as '*Part of a formal group'*, or '*Has a high ecological value'*, or '*Offers good screening to the site'* are incorporated into the observation section of the Tree Data Schedule. We believe this conveys all relevant landscape and cultural information without any confusion.

Tree Constraints Plan (TCP). This indicates the position, crown spread, Retention Category and Root Protection Area of each tree. It is used to inform where development may proceed without causing damage to trees.

Root Protection Area (RPA). This is the area around each tree likely to contain the majority of roots. It should ideally remain undisturbed to avoid a detrimental impact on tree health. For single stemmed trees It is calculated according to the formula "radius of RPA" = "12 x stem diameter". Where a tree has more than one stem, the equivalent-single-stem diameter is usually recorded. This is calculated by adding the squares of the stems and then finding the square root of this total. The radius of the Root Protection Area is then calculated by multiplying the equivalent-stem-diameter by 12.

Stage 2: Arboricultural Impact Assessment

After the initial survey and the production of the Tree Constraints Plan, arborists and designers are encouraged to work together to establish a design proposal with minimal impact on the high-quality trees. An assessment should be made of all possible impacts including the impact that the trees may have on the proposal. The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees.

Stage 3: Arboricultural Method Statement

This type of report specifies the measures necessary to protect trees against damage from construction activity. The Method Statement should be written in a manner that it may be conditioned and enforced by the local authority upon granting of planning permission. The site manager should be familiar with all aspects of the Method Statement and should ensure that all persons working on the site are aware of those aspects which appertain to their work. This includes service installation engineers and operators of plant machinery.

Appendix 2: Glossary of Tree Data

This section explains the terms used in the **Tree Data Schedule** (see Section 3 and Appendix 4).

A2.1 General Observations

Numbering System: Each item of vegetation has its own unique number prefixed by a letter such that T1=Tree 1, G2=Group 2, H3=Hedge 3 and W4=Woodland 4, S5=Shrub 5.

Age Categories:

Young	Usually less than 10 years old.
Semi-Mature	Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
Early-Mature	Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
Mature	Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
Veteran	A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
Over Mature	As for veteran except management is not considered worthwhile.

Species: Common names and Latin names are given.

Height: Measured from ground level to the top of the crown.

Stem Diameter: Taken at 1.5m above ground level where possible. On multi-stemmed trees this measurement may be taken at ground level, though usually an indication of the number of stems and average diameter is given, e.g. 3 x 30cm.

Crown Height: Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

Tree Diagram: This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.

Crown Spread: Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest metre.

Observations: If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.

Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

Priority Scale: Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

Urgent	To be carried out as soon as possible.
Very High	To be carried out within 1 month.
High	To be carried out within 3 months.
Moderate	To be carried out within 1 year.
Low	To be carried out within 3 years.

Inspection Frequency: An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.

Vigour: An indication of growth rate and the tree's ability to cope with stresses:

High	Having above average vigour.
Moderate	Having average vigour.
Low	Having below average vigour.
Very Low	Tree is struggling to survive and may be dying.

Physiological Condition:

Good	Healthy and with no symptoms of significant disease.
Fair	Disease present or vigour is impaired.
Poor	Significant disease present or vigour is extremely low.
Very Poor	Tree is dying.

Structural Condition:

Good	Having no significant structural defects.
Fair	Some defects observed though no high priority works are required.
Poor	Significant defects found. Tree requires monitoring or remedial works.
Very Poor	Major defects which will usually require significant remedial works or tree removal.

Amenity Value:

Very High	Exceptional specimen, observable by a large number of people.
High	Attractive specimen, observable by a significant number of people.
Moderate	One of the above factors is not applicable.
Low	Unattractive specimen or largely hidden from view.

Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

Retention Category: These are explained in detail in Appendix 1.

A2.2 Evaluation of Defects

Cavities, wounds, deadwood etc are all evaluated as follows:

Major	Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
Significant	A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
Minor	A defect thatis unlikely to develop into a major defect.

Appendix 3: Author's Qualifications

Qualifications & Experience of Ivan Button N.C.H. (Arb), FDSc (Arb), BSc (Hons), P.G.C.E., M. Arbor. A.

Early Career

Before and whilst attending college and university (1983 – 1990) Ivan worked as a gardener and also within the building industry where he received training in a broad range of building skills. In 1989 Ivan obtained a BSc (Hons) in psychology at Leeds University followed by a P.G.C.E at The University of Wales in 1990. After one year of teaching he returned to the construction activity and worked on new builds, refurbishments and groundworks until 1995.

Arboriculture

In 1996 Ivan obtained a NCH (Arboriculture) at the University of Lincoln and became a member of the Arboricultural Association. He then received further arboricultural consultancy training with Peter Wynn Associates for one year before establishing a tree surgery and landscaping business in 1998.

In 2005 Ivan commenced full time employment with JCA Ltd, an Arboricultural Association registered consultancy where he soon adopted a senior role responsible for five consultants. During this time he obtained a FDSc (Arboriculture) at the University of Lancashire, which he passed with distinction.

Since 2013, Ivan has been the Director and Principal Consultant of Crown Consultants Ltd which provides Arboricultural Reports for the purposes of Development, Safety, Management, Mortgage, Subsidence, Mitigation and Litigation. In 2015, he acted as tree officer for Barnsley Council and has since provided consultancy services to other local authorities.

He has obtained the LANTRA *Professional Tree Inspector* Qualification promoted by the Arboricultural Association and recognised as appropriate for all levels of tree inspection.

He is a long-standing member of the Consulting Arborist Society and has obtained CAS accreditations for Tree Inspection, Planning, Mortgage Reports (Subsidence Risk Assessment) and for his expert witness work.

At the time of writing, he has written approximately sixty CPR-compliant reports (civil and criminal) covering a range of subjects including Subsidence Damage, Personal Injury, Direct Root Damage, Professional Negligence, TPO Breaches.

Ivan is a long-standing professional member of the Arboricultural Association and the International Society of Arboriculture.

He is a licensed Quantified Tree Risk Assessment user.

Ivan has undertaken Bond Solon expert witness training and has obtained the University of Cardiff Expert Witness certificate. He has given written and oral evidence.

Between 2008 and 2017 he was registered as a Sweet and Maxwell Checked Expert Witness.

Qualifications & Experience of Emma Hoyle FDSc (Arboriculture), ED (Forestry & Arboriculture), M. Arbor. A.

Emma is a qualified Arboricultural Consultant educated to Level 5 in Arboriculture at Askham Bryan College, is a professional member of the Arboricultural Association and is a LANTRA-accredited *Professional Tree Inspector*. She has worked for Crown Consultants since 2015 and has since written numerous reports relating to all aspects of arboriculture including; planning and development, vegetation-related subsidence, tree preservation orders and tree risk assessment. Emma regularly attends seminars and events in order to keep abreast with current knowledge and best practice in Arboriculture.

Prior to becoming an arboricultural consultant, Emma worked for two reputable tree surgery firms from 2008 and became an NPTC Qualified tree surgeon after completing a Level 3 Extended Diploma in Forestry and Arboriculture at Askham Bryan College. Emma also has experience in other areas of arboriculture such as forest clearance, tree planting, tree maintenance and landscaping.

Qualifications & Experience of Joe Taylor - MArborA, FdSc (Arboriculture)

Joe began his career in Arboriculture as a tree surgeon/climber. During his time as a tree surgeon, Joe has achieved City & Guilds NPTC qualifications in Chainsaw Maintenance and Cross Cutting, Tree Climbing and Rescue, Safe Use of Manually Fed Wood-chipper and Supporting Colleagues Undertaking Tree Related Operations.

Joe obtained a Foundation Degree in Arboriculture at Askham Bryan College in 2015 which he passed with merit. Joe is a professional member of the Arboricultural Association, the International Society of Arboriculture, and the Royal Forestry Society and regularly attends industry-related seminars in to keep abreast of industry best practices.

Studying at Askham Bryan College reinforced Joe's passion for trees and drove his enthusiasm to learn more. Learning how trees interact with their surrounding environment and their importance within our urban and rural landscapes highlighted an interest in pursuing a career in consultancy.

Since working for Crown Consultants Joe has undertaken numerous surveys and produced numerous reports for the purpose of planning (BS 5837), tree condition surveys, subsidence risk assessments, root surveys and decay detection investigations.

Qualifications & Experience of Sarah Alway - TechArborA, FdSc (Arboriculture).

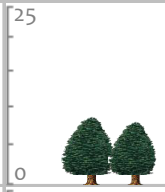
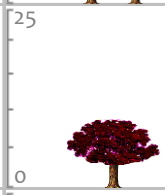
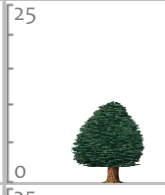
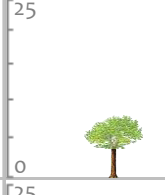
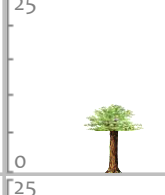
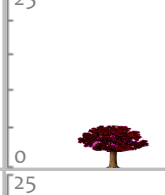
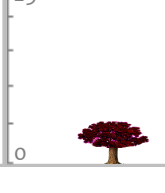
Sarah recently obtained an FdSc in Arboriculture and Tree Management at the University of Central Lancashire which she passed with distinction. She is a member of the Arboricultural Association and regularly attends seminars and events to keep abreast of developments in industry knowledge and current best practice in Arboriculture.
Sarah has been working closely alongside the principal consultant and managing director of Crown Consultants since the company was established in 2008. During that time, she has gained experience in all aspects of the business such as reporting, CAD, administration, accounting, and business management. Additionally, she has assisted consultants with numerous reports relating to all aspects of arboriculture including BS:5837 planning and development, vegetation-related subsidence, tree preservation orders, and tree risk assessment. She has also assisted with tree surveys for several years and since qualifying has been undertaking her own surveys.
In addition to working for Crown Tree Consultants Ltd producing reports, Sarah also likes to expand her knowledge of the wider Arboricultural industry by training in other areas of tree services and management. She has recently completed a training programme in tree-planting and volunteer management, including education in tree planting and natural dam building to help mitigate against the risks of heavy flooding (Natural Flood Management). Sarah also regularly volunteers with two local climate action groups who plant trees and build leaky dams.
As Sarah's career develops, she intends on focusing her attention on sustainable innovation in arboriculture and how green urban spaces could pave the way for the forests of the future.

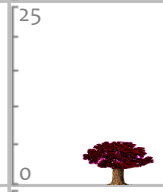
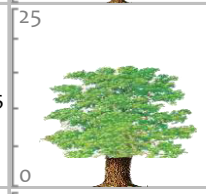
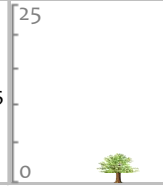
Qualifications & Experience of Carl Lothian – BSc (Hons) (Arboriculture).

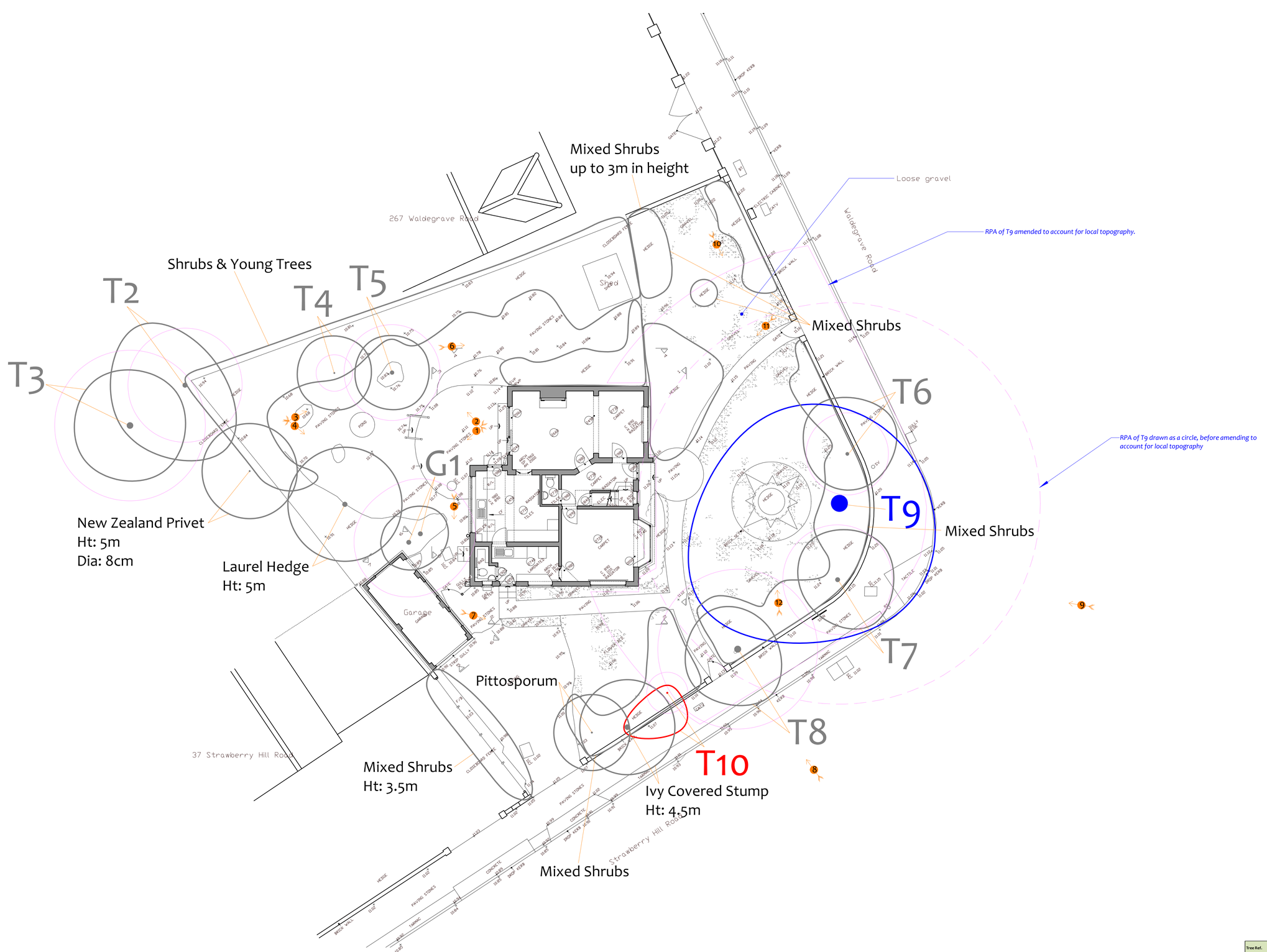
Carl began his career undertaking a Level 3 extended diploma in arboriculture and forestry at Merrist Wood College in 2015. Upon completion of his diploma, Carl worked with several tree surgery firms completing a range of arboricultural works. In 2018 Carl began his BSc (Hons) in arboriculture and urban forestry, graduating with a first-class degree and attaining the Institute of Chartered Foresters student of the year award.
After graduating, Carl worked as a TreeRadar technician where he carried out tree root and decay surveys with specialist ground-penetrating radar equipment. During this time Carl was fortunate enough to work at prestigious sites, such as the Palace of Westminster and the National Maritime Museum.
Whilst working at Crown, Carl has undertaken a range of tree surveys and written reports relating to development, safety, subsidence, and decay detection. Carl is a professional member of the Consulting Arborist Society and an associate member of the Institute of Chartered Foresters.

Appendix 4: Tree Data Schedule and Drawings

The Tree Data Schedule and any drawings accompanying this report follow this page. They are also provided as separate documents for ease of printing and screen viewing.

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) W N E S	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals) Priority	Inspect Freq (yrs)	Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
G1	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	av 7.5	av 0.5	av 24	av 1.5 1.5 1.5 1.5 each		Position: Situated within the rear garden. Form: Two close growing specimens both single stemmed and vertical with a narrow, upright habit. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C
T2	Semi-Mature **Purple Plum** Prunus sp.	8	3	25	4 4 2 4		Position: Situated on third party land. Form: Single stemmed and vertical with an unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Limited inspection, dimensions estimated.	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C
T3	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	10	2	33	3 3 3 3		Position: Situated on third party land. Form: Single stemmed and vertical with a narrow, upright habit. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Limited inspection, dimensions estimated.	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C
T4	Young **Eucalyptus** Eucalyptus sp.	7	4	8	2 2 2 2		Position: Situated within the rear garden. Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Spindly specimen.	No action required.	n/a	Moderate / Good / Fair	Low / 40+ / C
T5	Semi-Mature **Chusan Palm** Trachycarpus fortunei.	8.5	6	21	2 2 2 2		Position: Situated within the rear garden. Form: Single stemmed and vertical with a compact crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C
T6	Semi-Mature **Purple Plum** Prunus sp.	4.5	1.5	18	3 2 3 2		Position: Situated within the front garden. Form: Twin-stemmed at 0.5m with an unbalanced crown. History: Previously topped at 3m. **Defects: No significant defects observed.** Other: Recorded stem diameter is equivalent for two stems (14cm, 12cm).	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C
T7	Semi-Mature **Purple Plum** Prunus sp.	4.5	1.5	24	2.5 2 3 3		Position: Situated within the front garden. Form: Multi-stemmed at 1m with a slightly unbalanced crown. History: Previously topped at 3m. **Defects: No significant defects observed.** Other: Ivy prevented detailed inspection. Vegetation prevented detailed inspection. Recorded stem diameter is equivalent for three stems (8cm, 13cm, 19cm).	No action required.	n/a	Moderate / Good / Good	Low / 40+ / C

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m) 9 0 9	Notes	Recommendations (Independent of any development proposals) Priority / Inspect Freq (yrs)	Vigour Physiological Condition Structural Condition	Amenity Value Life Expectancy (yrs) Retention Category
T8	Semi-Mature **Purple Plum** Prunus sp.	4.5	1.5	35	2.5 3 2 3		Position: Situated within the front garden. Form: Multi-stemmed at ground level with a balanced crown. History: Previously topped at 3m. **Defects: No significant defects observed.** Other: Vegetation prevented detailed inspection. Recorded stem diameter is equivalent for five stems (16cm, 16cm, 19cm, 13cm, 13cm).	No action required. n/a / 3	Moderate Good Good	Low 40+ C
T9	Mature **Oak** Quercus robur.	16	4	88	6 9 4.5 6.5		Position: Situated within the front garden. Form: Multi-stemmed at 6m with a balanced crown. History: Reduced. Pruned back on the road side. **Defects: Significant dead wood over the footpath.**	Remove dead wood. M / 1.5	Moderate Good Good	High 40+ B +
T10	Semi-Mature **Golden Rain Tree** Laburnum anagyroides.	2	1	9	0.5 3 0.5 2		Form: Heavily leaning. History: Occasional pruning wounds due to crown reduction. **Defects: Poor condition.**	No action required. n/a / 3	Low Poor Poor	Low <10 U



Drawing No:	CCL 11902 / TCP Rev: 1
Title:	Tree Constraints Plan (Existing Layout)
Site:	265 Waldegrave Road TW1 4SU
Scale:	1:100
Paper Size:	A1

CROWN
Arboricultural Consultants
01422 316660

Tree Retention Categories
Stems & canopies shown

Category A tree	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
Category B tree	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees
Category C tree	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
Category U tree	Trees unsuitable for retention due to their very poor condition.

Tree Constraints Plan

Status: Final

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of exising road or building.

Root Protection Area having been amended to account for for site conditions

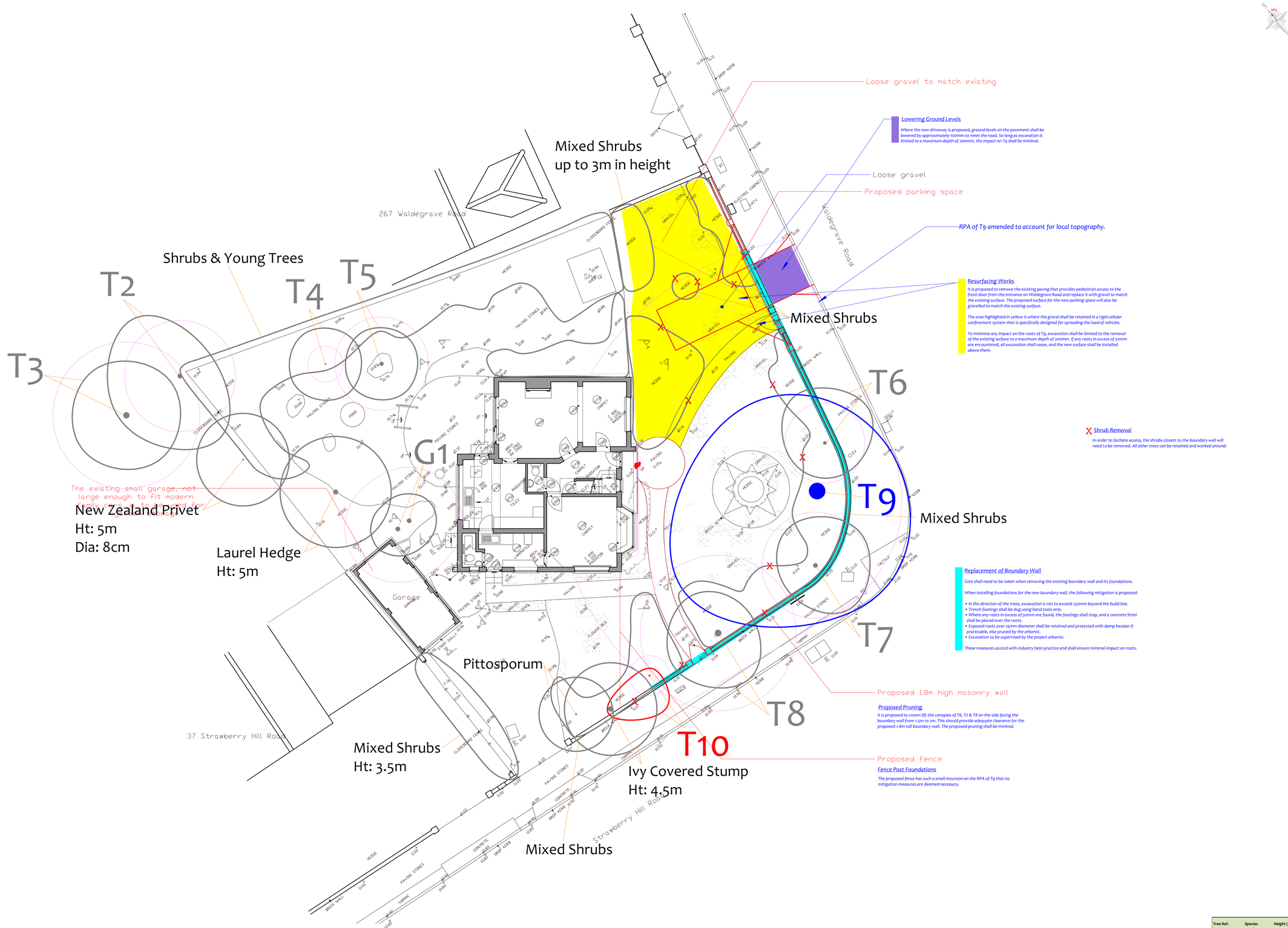
T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3

1 Photo 1

MN = Measured North:

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m²	Square (m)
G1	Lawson Cypress	7.5	2.9	26	5.1
T2	Purple Plum	8	3.0	28	5.3
T3	Lawson Cypress	10	4.0	49	7.0
T4	Eucalyptus	7	1.0	3	1.7
T5	Chusan Palm	8.5	2.5	20	4.5
T6	Purple Plum	4.5	2.2	15	3.8
T7	Purple Plum	4.5	2.9	26	5.1
T8	Purple Plum	4.5	4.2	55	7.4
T9	Oak	16	10.6	350	18.7
T10	Golden Rain Tree	2	1.1	4	1.9



Drawing No:	CCL 11902 / IAP Rev: 2
Title:	Impact Assessment Plan
Site:	265 Waldegrave Road TW1 4SU
Scale:	1:100
Paper Size:	A1

CROWN
Arboricultural Consultants
01422 316660

Tree Retention Categories
Stems & canopies shown

Category A tree	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
Category B tree	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees
Category C tree	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
Category U tree	Trees unsuitable for retention due to their very poor condition.

Impact Assessment Plan

Status: Final - for submission

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of exising road or building.

Root Protection Area having been amended to account for for site conditions

T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3

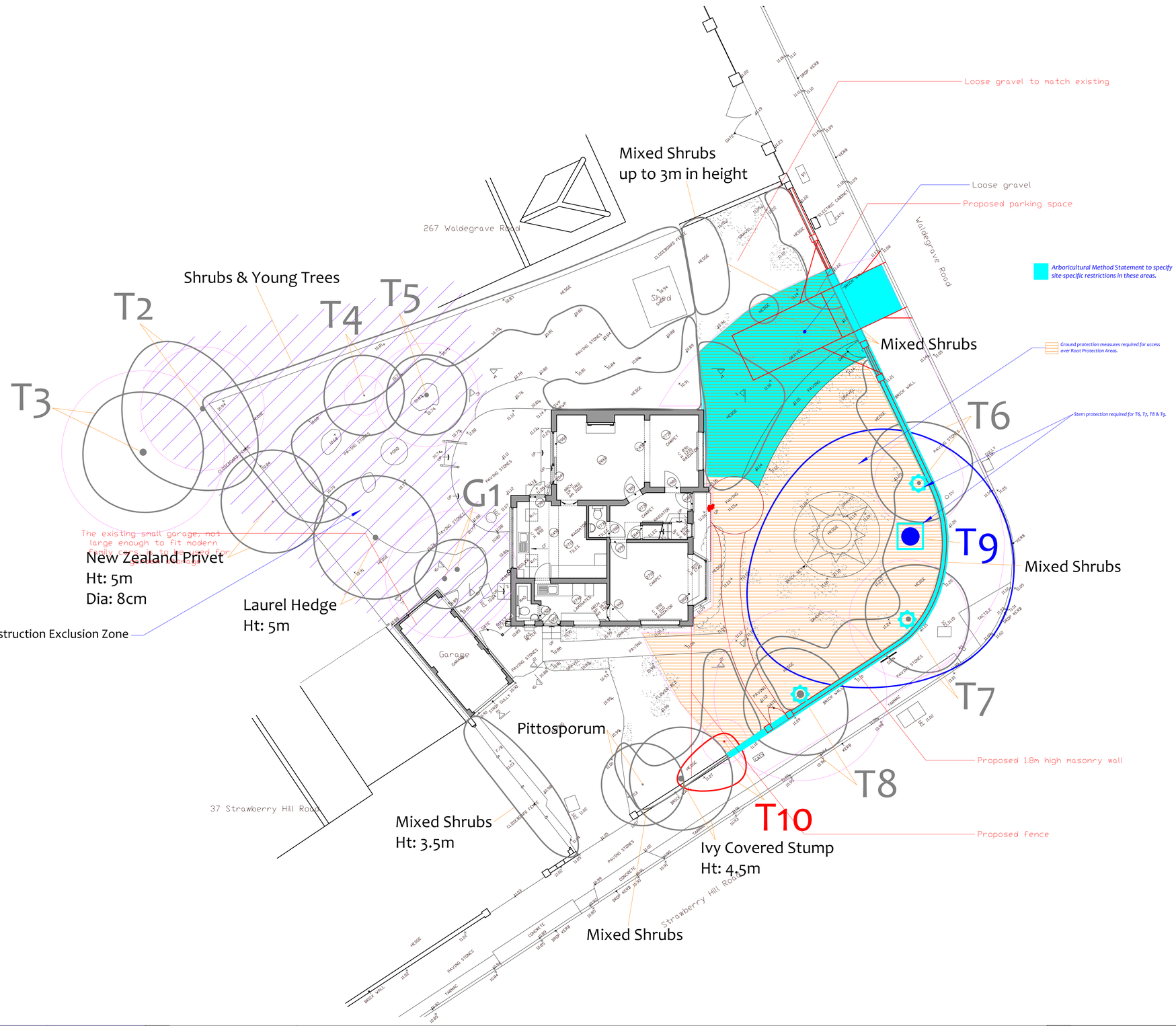
X Tree to be removed to facilitate the proposal

X Tree to be removed due to its low quality

Proposed pruning

MN = Measured North:
Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area Radius (m)	m²	Square (m)
G1	Lawson Cypress	7.5	2.9	26	5.1
T2	Purple Plum	8	3.0	28	5.3
T3	Lawson Cypress	10	4.0	49	7.0
T4	Eucalyptus	7	1.0	3	1.7
T5	Chusan Palm	8.5	2.5	20	4.5
T6	Purple Plum	4.5	2.2	15	3.8
T7	Purple Plum	4.5	2.9	26	5.1
T8	Purple Plum	4.5	4.2	55	7.4
T9	Oak	16	10.6	350	18.7
T10	Golden Rain Tree	2	1.1	4	1.9



Tree Protection Plan

Tree Protection Barriers:

- Construction Exclusion Zone
- Stem protected to a height of 2.5m with thick cloth & wire
- Tree Protection Boxing 1.2 x 1.2 x 2.4m high 25mm plywood

Construction Exclusion Zone

Within this area the following restrictions shall apply:

No excavation or land regrading whatsoever.
No storage of materials, rubble, soil or spoil.
No fires within the exclusion zone or within 10m of any tree canopy.
No site cabins or other temporary structures.
No discahrge of polluted water, cement or chemicals of any kind.
No use of any machinery, or passage or parking of vehicles.
No tree works without council consent.

Stem Protection – Timber Boxing

Where indicated by a turquoise square on the Tree Protection Plan, it shall be necessary to install robust plywood boxing to protect a tree stem, The plywood boxing specification is indicated in the diagram opposite. The actual size of the plywood boxing shall be determined by the extent of the root flare at the base of each stem. The box shall be large enough to avoid contact with any part of the tree that it surrounds. No fixings shall be attached to any part of the tree. Instead, it shall be free standing or attached to the ground or adjacent structures (e.g. walls or fences). It shall be made firm enough to withstand occasional knocks from any plant machinery that may be operate in its vicinity.

Stem Protection – Cloth and Chestnut Paling Wrap

Where indicated by a turquoise star on the Tree Protection Plan, it is proposed to protect a tree stem using sturdy cloth and chestnut paling double-wrapped around the stem and. Other tree protection barriers, such as those specified above, are not considered appropriate due to the proximity of the tree stem to proposed activity.

The tree stem and any low limbs shall be protected from ground level to a height of 2.5m by wrapping them at least three times with a sturdy material such as hessian cloth or similar. Around this, chestnut paling shall be wrapped at least twice around and secured.

The wrappings shall be secured using string, wire or plastic cable clips. They shall not be secured by driving nails or tacks into the tree stem or bark.

Ground Protection Measures

Within Restricted Activity Zones, soils containing roots may be subject to compaction due to general construction activity (including pedestrian activity and use of plant machinery). In order to minimise compaction, it is proposed to ensure that a suitable load-spreading surface is in place at all times.

Any existing hard surfacing may be retained where engineers consider it adequate to spread the load of construction traffic. Otherwise, it will be reinforced or replaced with adequate ground protection measures.

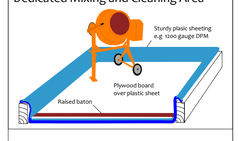
Unless specified otherwise, ground protection will consist of 34mm OSB boards laid at double thickness and screwed together to prevent slippage. The ground will be made even by raking, and by adding a roomm of sand or woodchip, wherever vehicular access is proposed. Where only pedestrian traffic will occur, boards or planks may be laid directly onto the ground or supported by a scaffold framework. The scaffold will be founded on poles driven into the ground and/or onto blocks (to raise the scaffold) with additional couplings to make the framework secure.

Where engineers consider OSB boards to be inadequate (e.g. for large plant machinery where the tracks may chew up the timber) stiffer ground protection measures will be installed such as road plates, or 100mm of 7–40mm angular gravel installed in 3D cellular confinement system (e.g. Cellweb®TRP).

If a piling mat is required, specifications will be agreed between engineers and the project arborist.

The ground protection measures will be installed and approved before commencement of demolition and construction activity and before the arrival of plant machinery or materials. They shall remain in place until all heavy construction activity is complete or until they are due to be replaced with a new hard surface.

Dedicated Mixing and Cleaning Area



Drawing No:	CCL 11902 / TPP Rev: 2
Title:	Tree Protection Plan (Existing Layout with Proposals Overlaid)
Site:	265 Waldegrave Road TW1 4SU
Scale:	1:100
Paper Size:	A1

CROWN
Arboricultural Consultants
01422 316660

Tree Retention Categories
Stems & canopies shown

Category A tree	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
Category B tree	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees
Category C tree	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
Category U tree	Trees unsuitable for retention due to their very poor condition.

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of exising road or building.

Root Protection Area having been amended to account for for site conditions

T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3

MN = Measured North:

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.